THE ECONOMIC HISTORY SOCIETY

Annual Conference

University of Warwick

28 – 30 March 2014

Programme including

New Researchers’ Papers
&
Abstracts of the other Academic Papers
<table>
<thead>
<tr>
<th>NEW RESEARCHERS' SESSIONS</th>
<th>Page no.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>I/A WOMEN AND WORK</strong></td>
<td></td>
</tr>
<tr>
<td>1 Amanda Wilkinson</td>
<td>1</td>
</tr>
<tr>
<td>Do the Victorian censuses of England and Wales offer an accurate representation of married women's occupations in provincial towns and cities: 1851-1901?</td>
<td>1</td>
</tr>
<tr>
<td>2 Xuesheng You</td>
<td>9</td>
</tr>
<tr>
<td>Women's work in the 1881 Census Enumerators’ Books (CEBs)</td>
<td>9</td>
</tr>
<tr>
<td>3 Mafalda Moura Pereira</td>
<td>10</td>
</tr>
<tr>
<td>Using cemetery records as a source to estimate women's class and occupational identities: the case of Coimbra, Portugal, 1885-1910</td>
<td>10</td>
</tr>
<tr>
<td><strong>I/B TWENTIETH-CENTURY BRITISH INDUSTRY</strong></td>
<td></td>
</tr>
<tr>
<td>1 Pieter Woltjer</td>
<td>16</td>
</tr>
<tr>
<td>The Great Escape: technological lock-in vs appropriate technology in early twentieth-century British manufacturing</td>
<td>16</td>
</tr>
<tr>
<td>2 Nikita ES Bos</td>
<td>24</td>
</tr>
<tr>
<td>The role of international trade in Britain's relative economic decline: the link between productivity and trade examined</td>
<td>24</td>
</tr>
<tr>
<td>3 Tae Hoon Kim</td>
<td>30</td>
</tr>
<tr>
<td>Supporting the ‘white heat’: re-examining the expansion of Britain's civil nuclear energy programme, 1965-70</td>
<td>30</td>
</tr>
<tr>
<td><strong>I/C APPRENTICESHIP AND YOUTH</strong></td>
<td></td>
</tr>
<tr>
<td>1 Ruben Schalk</td>
<td>35</td>
</tr>
<tr>
<td>From orphan to artisan: the apprenticing of orphaned boys in Leiden and Utrecht during the eighteenth and nineteenth centuries</td>
<td>35</td>
</tr>
<tr>
<td>2 Caroline Withall</td>
<td>42</td>
</tr>
<tr>
<td>Shipped out? A fresh look at pauper apprenticeship during the industrial revolution</td>
<td>42</td>
</tr>
<tr>
<td>3 Charlotte Clements</td>
<td>47</td>
</tr>
<tr>
<td>Youth voluntary organizations in London and Liverpool, 1958-85</td>
<td>47</td>
</tr>
<tr>
<td><strong>I/D FAMINE AND MIGRATION</strong></td>
<td></td>
</tr>
<tr>
<td>1 Charles Read</td>
<td>53</td>
</tr>
<tr>
<td>Laissez-faire, the Irish Famine, and British financial crisis c.1846-50</td>
<td>53</td>
</tr>
<tr>
<td>2 Francisco Beltrán Tapia</td>
<td>59</td>
</tr>
<tr>
<td>Migrants’ self-selection in the early stages of economic growth: Spain, 1880-1930</td>
<td>59</td>
</tr>
<tr>
<td><strong>I/E REGIONAL INDUSTRY AND INSTITUTIONS</strong></td>
<td></td>
</tr>
<tr>
<td>1 Keith Sugden</td>
<td>68</td>
</tr>
<tr>
<td>J.H. Clapham revisited: an occupational study of the transference of the worsted industry from Norfolk to the West Riding</td>
<td>68</td>
</tr>
<tr>
<td>2 Albert Serramontmany</td>
<td>74</td>
</tr>
<tr>
<td>Becoming owners or not: the reasons for a regional divergence seen from below: Catalonia, 1750-1850</td>
<td>74</td>
</tr>
<tr>
<td>3 James Boyd</td>
<td>81</td>
</tr>
<tr>
<td>How do we approach the Zollverein? Local institutions and the early customs union</td>
<td>81</td>
</tr>
<tr>
<td><strong>I/F EDUCATION AND ECONOMIC DEVELOPMENT</strong></td>
<td></td>
</tr>
<tr>
<td>1 Alexandra Semrad</td>
<td>86</td>
</tr>
<tr>
<td>Modern secondary education and economic performance: the introduction of the Gewerbeschule and Realschule in nineteenth-century Bavaria</td>
<td>86</td>
</tr>
<tr>
<td>2 Ruth Maria Schueler</td>
<td></td>
</tr>
<tr>
<td>Educational production functions as of 1886: how primary schooling shaped economic development in end-of-</td>
<td></td>
</tr>
<tr>
<td>Contents</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td></td>
</tr>
<tr>
<td>3 Rima Ghanem</td>
<td>Human capital development in the Middle East: is secularism a solution? Evidence from Turkey in the nineteenth and twentieth centuries</td>
</tr>
<tr>
<td>I/G LABOUR AND WAGES</td>
<td>1 Svenja Gärtner</td>
</tr>
<tr>
<td></td>
<td>2 Steven Ivings</td>
</tr>
<tr>
<td></td>
<td>3 Steven Parfitt</td>
</tr>
<tr>
<td>I/H MEDIEVAL ECONOMY AND SOCIETY</td>
<td>1 Melanie Meng Xue</td>
</tr>
<tr>
<td></td>
<td>2 Mingjie Xu</td>
</tr>
<tr>
<td></td>
<td>3 Alex Brayson</td>
</tr>
<tr>
<td>II/A EARLY MODERN CRAFTS, WAGES AND CONTRACTS</td>
<td>1 Judy Stephenson</td>
</tr>
<tr>
<td></td>
<td>2 Esther Sahle</td>
</tr>
<tr>
<td>II/B RAILWAYS AND ECONOMIC GROWTH</td>
<td>1 Avni Önder Hanedar</td>
</tr>
<tr>
<td></td>
<td>2 Theresa Gutberlet</td>
</tr>
<tr>
<td></td>
<td>3 Gabriel Geisler</td>
</tr>
<tr>
<td>II/C BUSINESS PRACTICES</td>
<td>1 Karolina Hutkova</td>
</tr>
<tr>
<td></td>
<td>2 Meike Fellinger</td>
</tr>
<tr>
<td></td>
<td>3 Michael Aldous</td>
</tr>
<tr>
<td>II/D FISCAL POLICY, FINANCE AND INVESTMENT</td>
<td>1 Pamfili Antipa</td>
</tr>
<tr>
<td></td>
<td>2 Jérémy Ducros</td>
</tr>
<tr>
<td></td>
<td>3 Géraldine David</td>
</tr>
<tr>
<td>II/E TWENTIETH-CENTURY GERMANY</td>
<td>1 Robin Winkler</td>
</tr>
<tr>
<td></td>
<td>2 Alan de Bromhead</td>
</tr>
<tr>
<td></td>
<td>3 Alexander Sohn</td>
</tr>
<tr>
<td>II/F STATE, COMMUNITY AND ECONOMY</td>
<td>1 Giada Pizzoni</td>
</tr>
<tr>
<td>#</td>
<td>Authors</td>
</tr>
<tr>
<td>----</td>
<td>--------------------------</td>
</tr>
<tr>
<td>2</td>
<td>Carol Beardmore</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Felix Selgert</td>
</tr>
<tr>
<td>III/G</td>
<td>Modern Industrial Growth</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Joost Veenstra</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 Taylor Jaworski</td>
</tr>
<tr>
<td>III/H</td>
<td>Climate and the Economy</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Gregori Galofré-Vilà</td>
</tr>
<tr>
<td>Academic Sessions - I/A Japan</td>
<td>1 Jean-Pascal Bassino &amp; Masanori Takashima</td>
</tr>
<tr>
<td></td>
<td>2 John Tang</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 Bishnupriya Gupta &amp;</td>
</tr>
<tr>
<td></td>
<td>Tetsuji Okazaki</td>
</tr>
<tr>
<td></td>
<td>4 Ryo Kambayashi</td>
</tr>
<tr>
<td>I/B</td>
<td>Financial Crises</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Oliver Accominotti</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 Kerstin Enflo &amp; Juan</td>
</tr>
<tr>
<td></td>
<td>Rosés</td>
</tr>
<tr>
<td></td>
<td>4 Christopher Coyle &amp;</td>
</tr>
<tr>
<td></td>
<td>Gareth Campbell &amp; John</td>
</tr>
<tr>
<td></td>
<td>Turner</td>
</tr>
<tr>
<td>I/C</td>
<td>World War and Women in the Twentieth Century</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 Sheena Evans</td>
</tr>
<tr>
<td>I/D</td>
<td>Height and Health</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2 Eric Schneider</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3 Bernard Harris &amp;</td>
</tr>
</tbody>
</table>
## Contents

### I/E  THE STATE AND THE SHAPING OF GOOD TASTE

<table>
<thead>
<tr>
<th></th>
<th>Author(s)</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Giorgio Riello</td>
<td>The state and the textile industry in early modern Europe</td>
<td>292</td>
</tr>
<tr>
<td>2</td>
<td>Luca Mola’</td>
<td>Textile manufactures and state policies in Renaissance Italy</td>
<td>292</td>
</tr>
<tr>
<td>3</td>
<td>Klas Nyberg</td>
<td>The Swedish textile trade in the early modern period</td>
<td>293</td>
</tr>
</tbody>
</table>

### I/F  OCCUPATIONAL STRUCTURE I

<table>
<thead>
<tr>
<th></th>
<th>Author(s)</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tony Wrigley &amp; Richard Smith</td>
<td>Reconsidering recent estimates of the occupational structure</td>
<td>294</td>
</tr>
<tr>
<td>2</td>
<td>Sebastiaan Keibek</td>
<td>Probate records as a source of occupational information for</td>
<td>294</td>
</tr>
<tr>
<td></td>
<td></td>
<td>early modern England and Wales</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Leigh Shaw-Taylor</td>
<td>The occupational structure of England and Wales, 1381-1951</td>
<td>296</td>
</tr>
</tbody>
</table>

### I/G  WHITE COLLAR WORKERS

<table>
<thead>
<tr>
<th></th>
<th>Author(s)</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Michael Heller</td>
<td>British clerical workers, career ladders and the rise of internal</td>
<td>297</td>
</tr>
<tr>
<td></td>
<td></td>
<td>labour markets, 1880-1914</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Nicole Robertson</td>
<td>The occupational health and welfare of clerical workers in</td>
<td>297</td>
</tr>
<tr>
<td></td>
<td></td>
<td>twentieth-century Britain</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Alan McKinlay &amp; Scott Taylor</td>
<td>Strategy, technology and gender: making and unmaking the</td>
<td>298</td>
</tr>
<tr>
<td></td>
<td></td>
<td>marriage bar in twentieth-century British clerical work</td>
<td></td>
</tr>
</tbody>
</table>

### I/H  STATE CAPACITY AND CONFLICT

<table>
<thead>
<tr>
<th></th>
<th>Author(s)</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mark Koyama, Chiu Yu Ko &amp; Tuan-Hwee Sng</td>
<td>Unified China and divided Europe</td>
<td>300</td>
</tr>
<tr>
<td>2</td>
<td>Jordi Vidal-Robert &amp; Francisco Pino</td>
<td>Habemus Papam? Polarization and conflict in the Papal States</td>
<td>302</td>
</tr>
<tr>
<td>3</td>
<td>Marc Dincecco &amp; Massimiliano Onorato</td>
<td>Military conflict and the economic rise of urban Europe</td>
<td>302</td>
</tr>
<tr>
<td>4</td>
<td>Harold Carter</td>
<td>From slums to slums in three generations: housing policy and</td>
<td>302</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the political economy of the welfare state, 1945-2005</td>
<td></td>
</tr>
</tbody>
</table>

### II/A  AFRICA

<table>
<thead>
<tr>
<th></th>
<th>Author(s)</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Stephen Broadberry &amp; Leigh Gardner</td>
<td>Africa’s growth prospects in a European mirror: a historical</td>
<td>304</td>
</tr>
<tr>
<td></td>
<td></td>
<td>perspective</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Wasiq N Khan</td>
<td>Evaluating economic explanations for the transatlantic slave trade:</td>
<td>304</td>
</tr>
<tr>
<td></td>
<td></td>
<td>labour productivity, relative exploitability and transportation costs</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>between the West Indies and West Africa, 1680-1830</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Joerg Baten</td>
<td>Long-run welfare development in Africa: an anthropometric study on</td>
<td>306</td>
</tr>
<tr>
<td></td>
<td></td>
<td>the influence of colonialism and slavery</td>
<td></td>
</tr>
</tbody>
</table>

### II/B  CAPITAL MARKETS

<table>
<thead>
<tr>
<th></th>
<th>Author(s)</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Nathan Foley-Fisher &amp; Eoin McLaughlin</td>
<td>Capitalizing on the Irish ‘land question’: Irish land bonds,</td>
<td>308</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1891-1938</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Anand Swamy &amp; Latika Chaudhary</td>
<td>Protecting the borrower: an experiment in colonial India</td>
<td>308</td>
</tr>
<tr>
<td>3</td>
<td>Nicolas Degive &amp; Kim Oosterlinck</td>
<td>Cholera and the effect of empire: the case of Indian</td>
<td>309</td>
</tr>
<tr>
<td></td>
<td></td>
<td>‘sovereign’ debts</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>David Gill</td>
<td>Rating the United Kingdom: the British government’s first</td>
<td>310</td>
</tr>
<tr>
<td></td>
<td></td>
<td>sovereign credit rating, 1976-78</td>
<td></td>
</tr>
</tbody>
</table>

### II/C  GENDER AND ECONOMIC SURVIVAL

<table>
<thead>
<tr>
<th></th>
<th>Author(s)</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Jane Humphries &amp; Jacob Weisdorf</td>
<td>How much did English women earn in the past? Female</td>
<td>312</td>
</tr>
<tr>
<td></td>
<td></td>
<td>wages from before the Black Death through the industrial revolution</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Judith Spicksley &amp; Amanda Capern</td>
<td>Sex, science and economics: the problem of infertility</td>
<td>313</td>
</tr>
<tr>
<td></td>
<td></td>
<td>c.1650-c.1750</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Author(s)</td>
<td>Title</td>
<td>Page</td>
</tr>
<tr>
<td>---</td>
<td>------------------------------------------------</td>
<td>----------------------------------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>3</td>
<td>Richard Zijdeman &amp; Tine de Moor</td>
<td>Making the household work: non-kin deployment as a survival strategy in the early modern household (Gilze and Rijen, The Netherlands, eighteenth century)</td>
<td>314</td>
</tr>
<tr>
<td>II/D</td>
<td>MIGRATION AND IDENTITY</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Costanza Biavaschi, Corrado Giulietti &amp; Zahra Siddique</td>
<td>The economic payoff of name Americanization</td>
<td>315</td>
</tr>
<tr>
<td>2</td>
<td>Matthew Gregg</td>
<td>Inheritable traits and turn-of-the-century wealth inequality: evidence from an American Indian reservation, 1894-1906</td>
<td>316</td>
</tr>
<tr>
<td>3</td>
<td>Drew Keeling</td>
<td>Reinterpreting pre-World War I mass migration by using travel statistics</td>
<td>317</td>
</tr>
<tr>
<td>4</td>
<td>Marc di Tommasi</td>
<td>Hidden communities: a quantitative assessment of international migration to Edinburgh at the turn of the twentieth century</td>
<td>318</td>
</tr>
<tr>
<td>II/E</td>
<td>COMPANIES AND THE STATE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Chris Nierstrasz</td>
<td>A strange thirst for tea: East India Companies, private trade, smuggling and the popularization of the consumption of tea in Western Europe, 1700-60</td>
<td>320</td>
</tr>
<tr>
<td>2</td>
<td>Santhi Hejeebu</td>
<td>Managerial sway within the English East India Company</td>
<td>321</td>
</tr>
<tr>
<td>3</td>
<td>Leos Müller</td>
<td>The business strategy of an interloper: the Swedish East India Company, 1731-83</td>
<td>322</td>
</tr>
<tr>
<td>II/F</td>
<td>OCCUPATIONAL STRUCTURE II</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Osamu Saito</td>
<td>Economic development and structural change since 1700: new evidence in a global perspective</td>
<td>324</td>
</tr>
<tr>
<td>2</td>
<td>M Erdem Kabadayi</td>
<td>Economic transformation from the late Ottoman Empire to the early Turkish Republic: de-industrialization or urban economic growth?</td>
<td>324</td>
</tr>
<tr>
<td>3</td>
<td>Natalia Mora-Sitja</td>
<td>Female employment, occupational structure and industrialization in comparative perspective</td>
<td>325</td>
</tr>
<tr>
<td>II/G</td>
<td>FRENCH BUSINESS AND WEBER</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Guillaume Daudin &amp; Pierre Gervais</td>
<td>Recording precision and tracking efforts in eighteenth century bookkeeping</td>
<td>327</td>
</tr>
<tr>
<td>2</td>
<td>Cheryl McWatters</td>
<td>Enemy mine: merchant networks, neutrality and wartime</td>
<td>327</td>
</tr>
<tr>
<td>3</td>
<td>Jean-Pierre Dormois &amp; James Foreman-Peck</td>
<td>What drove (or choked) French entrepreneurship under Napoleon III? A department-level analysis</td>
<td>327</td>
</tr>
<tr>
<td>II/H</td>
<td>GROWTH AND DIVERGENCE</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Robert Allen &amp; Ekaterina Khaustova</td>
<td>Russia in the world economy</td>
<td>329</td>
</tr>
<tr>
<td>2</td>
<td>Max-Stephan Schulze, Paul Caruana Galizia &amp; Nicholas Crafts</td>
<td>Geography and the great divergence: market access and economic growth in the nineteenth century</td>
<td>329</td>
</tr>
<tr>
<td>3</td>
<td>Leandro Prados de la Escosura</td>
<td>Assessing negative freedom: economic liberty in the long run</td>
<td>330</td>
</tr>
<tr>
<td>III/A</td>
<td>RUSSIA</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Steven Nafziger</td>
<td>Understanding the process of Russian serf emancipation</td>
<td>332</td>
</tr>
<tr>
<td>2</td>
<td>Amanda Gregg</td>
<td>Factory productivity and the concession system of incorporation in late Imperial Russia</td>
<td>332</td>
</tr>
<tr>
<td>3</td>
<td>Andre Markevich &amp; Paul Castañeda Dower</td>
<td>Did property rights matter in Russia? The case of the Stolypin Reform</td>
<td>334</td>
</tr>
</tbody>
</table>
### Contents

#### III/B MONEY MARKETS
1. **Joost Jonker & Oscar Gelderblom**
   - Smoothing the flow: currency circulation and payment techniques in the Low Countries, 1500-1800  
   - Page 335
2. **Christiaan van Bochove**
   - Ferries and finance: the financial infrastructure of the Dutch Republic  
   - Page 335
3. **Clemens Jobst & Stefano Ugolini**
   - The coevolution of money markets and central banks  
   - Page 336
4. **Anne Murphy & Jennifer Basford**
   - Britannia as a symbol of credible commitment  
   - Page 337

#### III/C WOMEN’S COMMITTEE 25TH ANNIVERSARY SESSION
1. **Pat Thane**
   - Varieties of family life in twentieth-century Britain  
   - Page 339
2. **Maxine Berg**
   - Skill, craft and histories of industrialization in Europe and Asia  
   - Page 340
3. **Pat Hudson**
   - The rise and fall of the Welsh woollen industry: some questions for historians  
   - Page 340

#### III/D MORTALITY TRANSITION IN URBAN POPULATIONS
1. **Richard Smith**
   - The law of ‘urban natural decrease’: interpreting baptism:burial ratios and infant mortality rates across the English urban hierarchy c.1540-c.1840  
   - Page 342
2. **Romola Davenport John Black & Jeremy Boulton**
   - The first stages of the epidemiological transition in British cities: a comparison of Manchester and London, 1750-1820  
   - Page 343
3. **Alice Reid & Eilidh Garrett**
   - Death in town and country: Scotland 1861-1901  
   - Page 343

#### III/E SILK
1. **Hanna Hodacs**
   - Asian silk in eighteenth-century Scandinavia: quantities, colour schemes and impact  
   - Page 345
2. **Ben Marsh**
   - ‘The silk manufacture has a claim to particular attention’: silk consumption and the American Revolution  
   - Page 346
3. **William Farrell**
   - Smuggling silks in eighteenth-century Britain: supply, distribution and product design  
   - Page 347

#### III/F RE-EVALUATING THE ENGLISH LAND TAX
1. **John Broad**
   - The Land Tax of 1798 and patterns of landownership and farm tenancy: a county case study, Buckinghamshire  
   - Page 349
2. **Richard Hoyle**
   - A new approach to the Land Tax: the Redemption Certificates and the structure of landowning and tenancies in Yorkshire and Essex  
   - Page 349
3. **Stephen Hipkin**
   - Land ownership and land occupation in the wider hinterland of the Romney Marsh region during the mid and later eighteenth century  
   - Page 349

#### III/G MODERN SCOTTISH ECONOMY
1. **Jim Tomlinson**
   - The economic basis of Scottish nationhood c.1870-2014  
   - Page 350
2. **Duncan Ross**
   - The Scottish experience of foreign direct investment, 1945-97  
   - Page 350
3. **Jim Phillips**
   - The moral economy of deindustrialization in post-1945 Scotland  
   - Page 351

#### III/H MARKETS AND INTEGRATION
1. **Markus Lampe & Florian Ploeckl**
   - The gravity of information: the rise of global communications systems and their impact on the first globalization  
   - Page 352
2. **Liam Brunt & Edmund Cannon**
   - Variations in the price and quality of grain, 1750-1914: quantitative evidence and empirical implications  
   - Page 353
## Contents

<table>
<thead>
<tr>
<th>IV/A Economic Nationalism</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Xavier Duran</td>
<td>The colony strikes back: the case of Colombia, Jersey Standard and the United States 356</td>
</tr>
<tr>
<td>2 Valerio Cerretano</td>
<td>Autarky and the building up of technological capabilities in Italy: rayon firms and the domestic production of wood-pulp, 1934-44 356</td>
</tr>
<tr>
<td>3 Eva Fernández</td>
<td>Political regimes, ideology and protection in western agriculture, 1920-80 357</td>
</tr>
<tr>
<td>4 Nikolaus Wolf &amp; Marvin Suesse</td>
<td>Market integration and the origins of economic nationalism 358</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IV/B Financial Bubbles</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Richard Kleer</td>
<td>Riding a wave: the Company’s role in the South Sea Bubble 359</td>
</tr>
<tr>
<td>2 Stefano Condorelli</td>
<td>The Mississippi and South Sea Bubbles, 1719-20: a European perspective 360</td>
</tr>
<tr>
<td>3 Carlo Taviani</td>
<td>San Giorgio and the Mississippi Company: a hypothesis on the origins of John Law’s Scheme 361</td>
</tr>
<tr>
<td>4 Koji Yamamoto</td>
<td>Behavioural foundations of financial speculation during the South Sea Bubble 361</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IV/C Women and Work</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Jesús Carro Matilde P Machado &amp; Ricardo Mora</td>
<td>The onset of female labour market participation and the role of mothers 363</td>
</tr>
<tr>
<td>3 Beatric Moring</td>
<td>Women, well-being and the female industrial inspector 364</td>
</tr>
<tr>
<td>4 Tobias Karlsson</td>
<td>Work attendance, gender and marital status: evidence from the Swedish tobacco industry, 1919-50 365</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IV/D Survival Strategies in Europe</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Arie van Steensel</td>
<td>Complementary institutions? Guilds and social provision in medieval urban Europe 367</td>
</tr>
<tr>
<td>2 John McCallum</td>
<td>Poor Relief in seventeenth-century Dundee 367</td>
</tr>
<tr>
<td>3 Samantha Williams</td>
<td>Mother, father or parish? The maintenance of illegitimate children in Southwark in the late eighteenth and early nineteenth centuries 368</td>
</tr>
<tr>
<td>4 Julie Marfany &amp; Montserrat Carbonell</td>
<td>Gender, lifecycle and family strategies among the poor: Barcelona, 1762-1803 369</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IV/E Innovation and Energy</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Michelangelo Vasta &amp; Alessandro Nuvolari</td>
<td>The geography of innovation in Italy, 1861-1913: evidence from patent data 370</td>
</tr>
<tr>
<td>2 Luis Angeles</td>
<td>The great divergence and the economics of printing 370</td>
</tr>
<tr>
<td>3 John Pezzey, David Stern &amp; Astrid Kander</td>
<td>Malthus to Solow with coal: modelling the industrial revolution as if energy mattered 371</td>
</tr>
<tr>
<td>4 Peter W King</td>
<td>Charcoal consumption by the iron industry in early modern England and Wales 372</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IV/F Rural Economies</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 David Celetti</td>
<td>Spinners, weavers and hemp growers 374</td>
</tr>
</tbody>
</table>
**Contents**

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Author(s)</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Dave Postles</td>
<td>Capital accumulation and formation in provincial society: 'non-agrarian' activity</td>
<td>374</td>
</tr>
<tr>
<td>3</td>
<td>Philip Slavin</td>
<td>The beginning of the end: sheep panzootics and the fortunes of the wool industry in England, 1250-1330</td>
<td>375</td>
</tr>
<tr>
<td>4</td>
<td>Elizabeth Gemmill</td>
<td>Valuations of ecclesiastical property in inquisitions post mortem</td>
<td>376</td>
</tr>
</tbody>
</table>

**IV/G MASS CONSUMPTION AND MARKETING**

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Author(s)</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Peter Scott &amp; James Walker</td>
<td>Producer-driven supply chains for the interwar US radio equipment sector: were dealers 'over-sold' on marketing?</td>
<td>378</td>
</tr>
<tr>
<td>2</td>
<td>David Clayton</td>
<td>Radio broadcast technologies and African consumers: the puzzling case of the 'Saucepan Special', c.1947-53</td>
<td>378</td>
</tr>
<tr>
<td>3</td>
<td>Michael French</td>
<td>‘Slowly becoming sales promotion men’: negotiating the career of the sales representative in Britain, 1930s-60s</td>
<td>379</td>
</tr>
<tr>
<td>4</td>
<td>David Churchill</td>
<td>Product design and public competitions in the lock and safe industry of Victorian Britain</td>
<td>380</td>
</tr>
</tbody>
</table>

**IV/H INSTITUTIONS AND EDUCATION**

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Author(s)</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sascha Becker &amp; Markus Nagler &amp; Ludger Woessman</td>
<td>Education promoted secularization</td>
<td>382</td>
</tr>
<tr>
<td>2</td>
<td>Patrick Wallis &amp; Chris Minns</td>
<td>Human capital before the industrial revolution: institutions and the ‘decline’ of apprenticeship in eighteenth-century England</td>
<td>382</td>
</tr>
<tr>
<td>3</td>
<td>Dan Bogart</td>
<td>Governance after the Glorious Revolution: evidence on the enforcement of property rights in Britain’s transport sector, 1690-1750</td>
<td>382</td>
</tr>
<tr>
<td>4</td>
<td>Giovanni Favero</td>
<td>From bunches of privileges to bunches of contracts: large firms at the fall of the Venetian Republic</td>
<td>383</td>
</tr>
</tbody>
</table>

Economic History Society Annual Conference 2015: call for Academic papers 385
Economic History Society Annual Conference 2015: call for New Researchers’ Papers 387
Welcome to the University of Warwick

Welcome back to the University of Warwick. Located on the edge of the historic city of Coventry and adjacent to the beautiful landscape of Warwickshire, the university offers an attractive setting for students, staff and visitors. The area is steeped in history from the medieval grandeur of Warwick Castle and the ruins of Kenilworth Castle and the well-known town Stratford-upon-Avon. Close by is the nineteenth-century spa town of Leamington.

Coventry was an industrial centre. From the early days of ribbon-weaving and watch making, the city became the centre of the automobile industry and was greatly affected by the decline of this industry. The history of car production in Coventry is well displayed at the Coventry Road Transport Museum. The display covers a range of products from public transport vehicles to what were once the world’s fastest cars.

The University was founded in the early 1960s with 450 students. Today it is a vibrant place of learning with students from 125 different countries. Over one-third of the student community of 23,000 come from overseas. Nearly 40 per cent are studying for a postgraduate degree. The University has 29 academic departments and over 50 research centres and institutes, in four Faculties: Arts, Medicine, Science and Social Studies.

The Departments of Economics and History are among the top ranked departments in the UK. The Economics Department has a strong group of economic historians and the teaching of economic history is an important part of the curriculum. The department includes the Centre for Competitive Advantage in the Global Economy (CAGE), which has a keen interest in economic history and historians from other universities in the UK and abroad have affiliations with the Centre. The Centre has organized seminars, conferences and public lectures on different themes of economic history. The History Department hosts the Global History and Culture Centre, which has played an active role in organizing conferences and seminars in the field and has hosted renowned scholars in World History.

The conference will be held in the central campus of the University. The campus has woodland and lake walks, excellent sports facilities and the Warwick Arts Centre. There are several cafes and bars. The conference venues will be centred around a relatively small area of the Ramphal building and the Rootes building. We do hope you will enjoy the conference and your visit to this University.

Bishnupriya Gupta (Local Organizer)  
Maureen Galbraith (Administrative Secretary, Economic History Society)
Summary Conference Programme
(See Contents for details of each session)

Friday 28 March

0915-1045  EHS Publications Committee Meeting  Library 1
1045-1345  EHS Council Meeting  Library 2
1200-1700  Registration  Ramphal Foyer

1400-1530  New Researchers’ Session I
I/A  Women and Work  Ramphal 0.12
I/B  Twentieth-Century British Industry  Ramphal 0.14
I/C  Apprenticeship and Youth  Ramphal 1.03
I/D  Famine and Migration  Ramphal 1.04
I/E  Regional Industry and Institutions  Ramphal 1.13
I/F  Education and Economic Development  Ramphal 1.15
I/G  Labour and Wages  Ramphal 2.41
I/H  Medieval Economy and Society  Ramphal 3.41

1530-1600  Tea  Ramphal Foyer

1600-1730  New Researchers’ Session II
II/A  Early Modern Crafts, Wages and Contracts  Ramphal 0.12
II/B  Railways and Economic Growth  Ramphal 0.14
II/C  Business Practices  Ramphal 1.03
II/D  Fiscal Policy, Finance and Investment  Ramphal 1.04
II/E  Twentieth-Century Germany  Ramphal 1.13
II/F  State, Community and Economy  Ramphal 1.15
II/G  Modern Industrial Growth  Ramphal 2.41
II/H  Climate and the Economy  Ramphal 3.41

1730-1830  Open meeting for women in economic history  Ramphal 0.12
1815-1900  Council reception for new researchers & 1st time delegates  Ramphal 0.14
1900-2015  Dinner  Panorama Suite
2030-2130  Plenary Lecture: Professor Mark Harrison  Ramphal 0.12
            Myths of the Great War  Lecture Theatre
2135-2145  Meeting of new researcher prize committee  Ramphal 0.12
Bar available until late  Panorama Suite

Saturday 29 March

0800-0900  Breakfast  Rootes Restaurant

0900-1045  Academic Session I
I/A  Japan  Ramphal 1.03
I/B  Financial Crises  Ramphal 2.41
I/C  World War and Women in the Twentieth Century  Ramphal 0.12
I/D  Height and Health  Ramphal 3.41
I/E  The State and the Shaping of Good Taste  Ramphal 1.04
I/F  Occupational Structure I  Ramphal 1.13
I/G  White Collar Workers  Ramphal 0.14
I/H  State Capacity and Conflict  Ramphal 1.15

1045-1115  Coffee  Ramphal Foyer
1115-1300  **Academic Session II**

II/A  *Africa*  Ramphal 1.03
II/B  *Capital Markets*  Ramphal 2.41
II/C  *Gender and Economic Survival*  Ramphal 0.12
II/D  *Migration and Identity*  Ramphal 3.41
II/E  *Companies and the State*  Ramphal 1.04
II/F  *Occupational Structure II*  Ramphal 1.13
II/G  *French Business and Weber*  Ramphal 0.14
II/H  *Growth and Divergence*  Ramphal 1.15

1300-1400  Lunch  Rootes Restaurant

1415-1600  **Academic Session III**

III/A  *Russia*  Ramphal 1.03
III/B  *Money Markets*  Ramphal 2.41
III/C  *Women’s Committee 25th Anniversary Session*  Ramphal 0.12
III/D  *Mortality Transition in Urban Populations*  Ramphal 3.41
III/E  *Silk*  Ramphal 1.04
III/F  *Re-Evaluating the English Land Tax*  Ramphal 1.13
III/G  *Modern Scottish Economy*  Ramphal 0.14
III/H  *Markets and Integration*  Ramphal 1.15

1600-1630  Tea  Ramphal Foyer

1600-1730  Numerical Analysis Skills for Historians: report on a skills development project  Ramphal 1.15

1615-1715  Meeting of Schools & Colleges Committee  Ramphal 0.14

1730-1830  Economic History Society AGM  Ramphal 1.13

1930-2000  Conference Reception  Panorama Suite

(Kindly supported by the Department of Economics and the Global History & Culture Centre, University of Warwick)

2000  Conference Dinner  Panorama Suite

Bar available until late  Panorama Suite

---

**Sunday 30 March**

0800-0900  Breakfast  Rootes Restaurant

0930-1130  **Academic Session IV**

IV/A  *Economic Nationalism*  Ramphal 0.14
IV/B  *Financial Bubbles*  Ramphal 2.41
IV/C  *Women and Work*  Ramphal 0.12
IV/D  *Survival Strategies in Europe*  Ramphal 1.04
IV/E  *Innovation and Energy*  Ramphal 3.41
IV/F  *Rural Economies*  Ramphal 1.03
IV/G  *Mass Consumption and Marketing*  Ramphal 1.13
IV/H  *Institutions and Education*  Ramphal 1.15

1130-1200  Coffee  Ramphal Foyer

1200-1315  Tawney Lecture: Professor Pat Hudson  Ramphal Lecture Theatre
            *Industrialization, global history and the ghost of Rostow*

1315-1415  Lunch  Rootes Restaurant

1415-1715  Careers and Publishing Session for New Researchers  Ramphal 0.12
Brief guide to conference arrangements

The conference will take place in the Ramphal Building on the Central Campus of the University of Warwick. The University is located in the heart of England, adjacent to the city of Coventry – 3 miles (5 kilometres) from the city centre – and on the border with Warwickshire.

Conference accommodation on campus

Ensuite accommodation will be in Arthur Vick or Jack Martin (Nos. 3 and 31 respectively on the campus map on page xvi), which are located a short distance from the Ramphal Building (No.53). A campus map can also be found at: www2.warwick.ac.uk/about/visiting/maps/campusmap/

On arrival, residential delegates should check in at Conference Reception in the Students Union Building (No. 62), where keys will be available from 15:00 – 23:00; a luggage storage facility is available for those arriving before 15:00. If you plan to arrive after 23:00, please advise Maureen Galbraith (ehsocsec@arts.gla.ac.uk); who will arrange for your bedroom key to be left with security at the Gatehouse (No. 19) for you to collect.

Registration

Registration will take place between 12:00 and 17:00 in the Foyer of the Ramphal Building. The registration desk will be staffed for the duration of the conference.

Car parking

Delegates may park, free of charge, in the car parks numbered: 7, 8, 8a and 15 on the campus map; please look out for the green Warwick Conferences signage to direct you to the car park and conference venues. In 8 or 8a, conference delegates need not pay and display. In 7 and 15 you will receive a blue token at the barrier, keep it with you and have it validated at the conference reception when you check in – the token is valid for 6 days.

Book displays

Publishers’ and booksellers’ displays will be in the Ramphal Building

Meals and Morning Tea/Afternoon Coffee

All meals will be served in Rootes Building. Breakfast and lunch in the dining room (Rootes Restaurant, 1st floor), the Friday and Saturday dinner in the Panorama Suite. Teas and coffees will be served in the Ramphal Building.

Receptions and Bar

The Council Reception for new researchers and first-time conference delegates (Friday, 18:15-19:00 hours) will take place in room 0.14 in the Ramphal Building and the Saturday evening Conference Reception will take place in the Panorama Suite, Rootes Building.

Meeting rooms for New Researchers, Academic Sessions etc

All meeting rooms for academic, plenary and new researcher sessions will be located in the Ramphal Building.

Internet Access

There are computers (but not printers) available at Conference Reception in the Students Union Building. If you have your own mobile computer you can access the wifi network by requesting a login code at Conference Reception or at any of the Information Points around campus. Wifi access is available in all bedrooms using your login code, alternatively if you bring an Ethernet cable you can use a hardwired connection.
Social Media
Social media is increasingly used to share thoughts and ideas about and during academic conferences. As a first step in a broader social media strategy for the Society, the Public Engagement Committee would like to encourage the use of the

#EHS2014

hashtag in the days before and during the annual conference in Warwick.

Caveats:
As a participant please be mindful as to whether the presenter is happy to have live running commentary and/or pictures during his/her presentation. Do aim for verbatim quotes and please make sure that you clearly distinguish these from your own comments. Above all, keep things civil and constructive.

Presenters: it would help if your first slide informs the audience whether or not you are happy for running commentary through social networks during your presentation.

Useful Contacts
Warwick: Tel: +44 (0)2476 523 222 Email: conferences@warwick.ac.uk
Karly Thomson Tel: +44 (0)2476 573 913 Email: karly.thomson@warwick.ac.uk
Maureen Galbraith Tel: +44 (0)141 330 4662 Email: ehsocsec@arts.gla.ac.uk
How to reach the University of Warwick

How to reach the University of Warwick

Comprehensive information on travelling to the University of Warwick can be found by following the links at: http://www.warwickconferences.com/about-us/how-to-find-us#tab-3

Regional location

![Map of University of Warwick region](image)

Typical Travel Times to Coventry

<table>
<thead>
<tr>
<th>From</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birmingham</td>
<td>40 minutes</td>
</tr>
<tr>
<td>Kenilworth</td>
<td>10 minutes</td>
</tr>
<tr>
<td>Leamington Spa</td>
<td>20 minutes</td>
</tr>
<tr>
<td>Leicester</td>
<td>45 minutes</td>
</tr>
<tr>
<td>London</td>
<td>2hr</td>
</tr>
<tr>
<td>Oxford</td>
<td>1hr 15mins</td>
</tr>
<tr>
<td>Warwick</td>
<td>20 minutes</td>
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</tbody>
</table>

(A copy of this map can be found at: www2.warwick.ac.uk/about/visiting/maps/access/)

By Road: Using a Sat Nav

CV4 7AL – directs you to Gibbet Hill Road, the main road which runs through the University. Main campus (the Conference Park) is signposted from this road.

From the North

From the M69/M6 interchange (M6 Jct 2) take A46 towards Warwick and Coventry S & E. After approximately 3.5 miles you will reach Toll Bar End roundabout (junction with A45). At the roundabout, follow signs for A45 Birmingham. After approximately 3 miles you will cross the A429 (Kenilworth Road), half a mile after this junction take the left-hand turn signposted ‘University of Warwick’. Follow signs for University of Warwick (and Warwick Arts Centre) across two roundabouts. You are now approaching the University of Warwick from Kirby Corner Road.

From the South East

From M45 Jct 1 take A45 towards Coventry. After approximately 7 miles you will reach Toll Bar End roundabout (junction with A46) follow signs for A45 Birmingham. After approximately 3 miles you will cross the A429 (Kenilworth Road), half a mile after this junction take the left-hand turn signposted ‘University of Warwick’. Follow signs for
University of Warwick (and Warwick Arts Centre) across two roundabouts. You are now approaching the University of Warwick from Kirby Corner Road.

**From the South**
From M40 Jct 15 take A46 towards Coventry. After approximately 8 miles leave A46 at junction signposted ‘University of Warwick and Stoneleigh’. After a further 1.5 miles you will cross the A429 (Kenilworth Road). You are now approaching the University of Warwick from Gibbet Hill Road.

**From the West**
From M42 Jct 6 take A45 towards Coventry. After approximately 9 miles you will pass a large Sainsbury store on your left. At the next roundabout (Fire Station on right) take the right-hand exit, signposted ‘University and Canley’. Follow signs for University of Warwick (and Warwick Arts Centre) across two roundabouts. You are now approaching the University of Warwick from Kirby Corner Road.

**By Rail**
The nearest railway station for the University of Warwick is **Coventry**. Coventry station is easily reached from London (Euston), Birmingham (New Street) and Leicester, all of which run regular and frequent services direct to Coventry. From Coventry station, there are frequent local bus services to the University. The station that serves Birmingham Airport is Birmingham (International).

Detailed travel information and timetables can be found at:
http://nationalrail.co.uk/times_fares/

**By Bus**
Visitors should follow the signs from the station to Warwick Road (a 2-minute walk) and from there catch the Travel Coventry services 12/12A or U1 which travel onto the main campus. The Stagecoach service U1 travels along Warwick Road and onto the Central Campus. It is also possible to catch the Travel Coventry number 42 which goes to Cannon Park Shopping Centre which is a 5-10 minute walk from Central Campus.

**By Taxi**
Taxis are available from the railway station and Birmingham airport to the campus. A local Taxi Company is ‘Trinity Taxis’: 024 7699 9999 Costs are approximately:

- Birmingham airport-University of Warwick: £30 (30 minutes)
- Coventry railway station-University of Warwick: £11 (15 minutes)

**By Air**
The University of Warwick is 18 miles from Birmingham Airport. To get to the University from Birmingham airport either (cheapest): take the train to Coventry (£3.50, 10 minutes) and then local bus (£1.60, 25 minutes; exact fare must be paid to driver) or: taxi from the station (about £11, 15 minutes) to the University of Warwick.

London Heathrow has many more flights, and is about two hours from Coventry either by bus (National Express: www.nationalexpress.com/) or by rail (via London Euston) – the bus option is simpler, and cheaper.

London Luton also has various international flights, and is under two hours from Coventry by bus (National Express).

East Midlands (near Nottingham) has some international flights, and has an infrequent National Express service to Coventry.
NEW RESEARCHER PAPERS
Do the Victorian censuses of England and Wales offer an accurate representation of married women’s occupations in provincial towns and cities: 1851-1901?

Amanda Wilkinson, University of Essex (aaustia@essex.ac.uk)
Supervisor: Professor Edward Higgs

Over the last 25 years a debate has been ongoing amongst historians as to the reliability of the enumeration of women’s occupations in the Victorian censuses. The overwhelming conclusion from studies of the published Census Reports, beginning with the work of Edward Higgs, and further research into small numbers of Census Enumerator’s Books (hereafter CEBs), has been that the quality of female occupational enumeration in the censuses was so poor as to make the source virtually unusable for those wishing to understand women’s working patterns.1 This paper will examine the recording of married, working-class women’s work in three provincial towns and cities in East Anglia: Norwich, Ipswich and Colchester during the period 1851-1901.

Methodology

The study involved examining the CEBs relating to districts in each of the towns concerned, analysing the rate of occupational enumeration and the types of occupations recorded, and comparing the census enumeration of the women who were living in these locations with contemporary sources such as wage books, asylum case books, poor law records, and local histories. The primary research question posed in this paper is: is women’s work in provincial towns well enumerated?

Each of the towns studied comprised a wide spectrum of social classes, encompassing a diverse range of accommodation within differing neighbourhoods. As the research primarily involves the study of working-class women, it was important to locate enumeration districts that were found within working-class areas. This was achieved by examining local histories and then consulting contemporary maps of the areas in order to identify potential road names and parish boundaries. The locations identified by this process as being suitable for study were the parishes of St Swithin’s in Norwich, St Peter’s in Ipswich, and St Botolph’s in Colchester.

The initial process involved gathering data from the respective CEBs for each year within the time period covered, noting each variable for every woman of employment age (for the purposes of this study – this is defined as those of 14 years and over), and then placing them into four categories:

• Married or widowed women recorded as working.
• Married or widowed women with no stated occupation and therefore recorded as not working.
• Single women who had a stated an occupation.
• Single women whose entry into the occupation column was left blank.

Once all the relevant data had been collected, the number of women in each of the four categories was calculated, and these figures were then expressed as a percentage of the total number of women involved. Additionally, the numbers of married and widowed women working were expressed as a percentage of the total number of married and widowed women, to show what proportion of the women in this particular group were recorded as having an

occupation. All of this data was then used to analyse the changing levels of recorded female participation in the workplace for each city.

To provide further analysis of the recording of women’s labour within the censuses in these locations, details were taken of every single occupation listed relating to women within the respective CEBs and entered into a spreadsheet. This makes it possible to see at a glance the variety of employment opportunities that were available within a given district, which occupational titles remained stable and a source of employment throughout the time period covered, when new occupations appeared within the census record, and when others cease to be listed. This data was then used to compare the recorded occupations and the changes in these occupations as time progressed with details of occupational opportunities known to exist within the towns concerned from other sources.

**Enumeration District Analysis**

By the end of the nineteenth century, Norwich had attained a national reputation for boot and shoe making, engineering and brewing.\(^2\) Christine Clark describes how domestic service, shoemaking and the production of clothing provided employment opportunities for women living in the city in the nineteenth century.\(^3\) Furthermore, seasonal and casual factory and piece-work was available to women and girls in such diverse occupational sectors as food production, brush making and hair weaving. In *Norwich, a Social Study* (1910), C.B. Hawkins discusses how working opportunities for women were plentiful within the city, primarily due to the availability of low paid factory work, which, he observed, was leading to increased migration into the city from the surrounding countryside.\(^4\) This marks Norwich out as a location where there would appear to have been ample opportunities for women to find employment. It therefore offered an interesting opportunity to test the suggestion that the census under-enumerates the work of women. Figure 1 shows the results of the initial analysis of Norwich St Swithin’s.

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\(^3\) C. Clark, ‘Work and Employment,’ in Rawcliffe and Wilson, p. 389.
Figure 1: The % of women recorded in the census in the parish of Norwich, St. Swithin who were as working or who were recorded as having no occupation

It can be seen that the percentage of women who were married or widowed and who were recorded as having an occupational title in the district remained relatively stable throughout the time period covered. No other enumeration district examined during the course of my PhD maintained such a consistently high rate of occupational enumeration of married and widowed women. Adding the percentage of married and widowed women working to the percentage of single women working it can be seen that between 50 and 60 per cent of women over the age of 14 years are consistently recorded as carrying out paid work.

Turning to the analysis of the types of occupations recorded, a total of 143 separate occupational titles appeared in the CEBs for this district. Of these, dressmaker, milliner, silk weaver, charwoman, and servant appeared at every census. On average between 15 and 20 new and distinct occupational titles appeared in each census, some of which appear only once never to be repeated. The vast majority of the women who record an occupation in the CEBs were working in stable employment sectors – dressmaking, service, charring and manufacturing. Where they were recorded as working in an unusual occupation (for example,
a medical galvaniser) the majority were single cases implying either a temporary move to a
different career, or more likely a short term residence in the city. All of this would suggest an
element of stability within the workforce in the city, with new avenues of employment
opening up on a regular basis over the course of the study, replacing the opportunities lost
through the shifts in fashions and manufacturing trends.

Ipswich, however was, and still is, a totally different type of urban centre from
Norwich. Norwich was a large city that had once been the second largest in the country,
whereas nineteenth-century Ipswich still appeared in nature far more a country market town
than a bustling metropolis despite its considerable size.

Stay-making was just one of the industries that had established itself in the town. Whilst those employed in the production of stays do appear in the CEBs for other towns and
cities, in Ipswich factories which produced this most essential of Victorian garments became
one of the biggest providers of employment to the female population. By 1850 there were
over a dozen stay making businesses in the town employing a considerable number of
women, and this continued throughout the nineteenth century.

Figures were gathered as previously described and the initial results of the analysis of
the data collected from this enumeration district are presented in figure 2 below.

**Figure 2:** The % of women recorded in the census in the parish of Ipswich, St. Peter, who
were working or who were recorded as having no occupation

![Graph showing percentage of women by marital status and occupation over time]

<table>
<thead>
<tr>
<th>Year</th>
<th>Married and widowed working</th>
<th>Married and widowed no occupation</th>
<th>Single working</th>
</tr>
</thead>
<tbody>
<tr>
<td>1851</td>
<td>11.5</td>
<td>55.1</td>
<td>28.2</td>
</tr>
<tr>
<td>1861</td>
<td>27.4</td>
<td>39.5</td>
<td>22.9</td>
</tr>
<tr>
<td>1871</td>
<td>24.2</td>
<td>41.3</td>
<td>29.6</td>
</tr>
<tr>
<td>1881</td>
<td>16.3</td>
<td>50.0</td>
<td>31.8</td>
</tr>
<tr>
<td>1891</td>
<td>18.0</td>
<td>39.0</td>
<td>39.9</td>
</tr>
<tr>
<td>1901</td>
<td>14.1</td>
<td>53.9</td>
<td>26.1</td>
</tr>
</tbody>
</table>

*Source: Census of England and Wales 1851-1901 – Ipswich St Peter.*
It can be seen immediately that the percentage of women who were married or widowed and who were recorded in the censuses as being in employment was significantly lower than in Norwich. These results were initially puzzling, as the analysis of the range of occupations available to the women of Ipswich revealed similarities to those found in Norwich.

A total of 106 different occupations were recorded over the time period, but rather than offering occupational stability they appear, and then disappear just as quickly. Only 19 job titles were recorded in 1851 and the number of those that appeared in the majority of subsequent censuses was as low as 12. With the exception of those occupations traditionally considered to be ‘women’s work’, such as shop assistant, charwoman, washerwoman, etc, the majority of occupations tended to appear on only one occasion. This would suggest that rather than these being occupations that were available to the female population en masse, they were either specific to one woman or one family, or were employments that became available for only a very short while. When comparing the results of the analysis of the district with what is known of the employment landscape in Ipswich at the time, it does appear that there was a good match, and the census mirrors what is known of the work carried out by women in the town at this time.

Colchester, like Norwich, had been famous for its wool and weavers, but by the mid-nineteenth century had become known as a centre for the production of boots and clothing as a source of industry and employment for women in the town. A.J. Brown also reported how in the new large shops in the town centre hundreds of assistants were employed, how an outfitter in Lexden Road employed 30 women, many of whom were seamstresses, and how in the six large tailoring firms in the town over 2,500 women were able to find work.5

The nature of Colchester itself meant that it was more difficult to find a district with the same type of back-to-back slum housing seen in the districts studied in Ipswich and Norwich. It was decided, however, that the town centre parish of St Botolph’s offered the closest match to St Peter’s and St Swithin’s since it was situated to the east of the town centre in what could be considered the poorest part of Colchester town. Figure 3 below shows the results of the analysis of the CEBs for this district and provides an interesting comparison with that of St Swithin’s and St Peter’s.

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As the types of occupational opportunities in Colchester seem to have been similar to those found in Norwich, it might reasonably be expected that the percentage of married, widowed and single women recorded as working would also be similar. When examining the CEBs themselves, however, the percentage of women who were married or widowed and recorded as working in Colchester was significantly lower than that found in Norwich. To explain this apparent contradiction it is necessary to look beyond the town centre and to take into account what was happening in the surrounding villages. Rather than simply employing women in the town, the clothing manufactories sent the majority of their piecework out into the surrounding villages such as Rowhedge, Wivenhoe, Aldham and West Bergholt. Indeed, the results of further studies into agricultural communities showed that the percentage of married and single women living in the surrounding villages who were recording an occupation rose during this period by quite a significant amount. Therefore, although the opportunities for employment in the Borough as a whole were increasing, the numbers in employment in the town itself, though still relatively high, were not as high as may be expected due to the placing of work in the surrounding villages.

Analysis of the occupations recorded in Colchester St Botolph’s shows only 92 separate job titles recorded over 60 years of study. The majority of those which remained
constant throughout the latter half of the nineteenth century were in the service industries and positions in retail establishments. Only the titles domestic servant, dressmaker and tailoress appear in every census year. Upholsteress appears yearly from 1861, but the majority of the other job titles, such as bonnet maker, appear only once or twice suggesting that they are either relics from a bygone age or that they were occupations where the industry failed to gain a foothold in the town centre.

To examine the occupational enumeration of women within the three towns more closely, those who were recorded as being unmarried at the time of the census were then removed from the data in order to ascertain whether fluctuations in the numbers of single women altered in any way the patterns of enumeration for married and widowed women. Figure 4 shows the results:

Figure 4: The % of married and widowed women recorded as being in employment in the CEBs in the parishes of Norwich St. Swithin, Ipswich St. Peter and Colchester St. Botolph

With the single women removed from the equation, it is possible to see how closely Colchester did indeed mirror Norwich, reflecting the fact that the occupational opportunities in the two locations were similar. Colchester continually returned a lower percentage of married and working women recorded as being in employment, but with fewer factories and a
smaller economy it might be expected that the opportunities for gaining employment which existed, although similar in nature, would have been less in number. From 1861, which marks the point at which Colchester’s clothing and shoemaking industries expanded, the percentage of married and widowed women working in Colchester ran almost exactly parallel to those returned in Norwich. Ipswich, on the other hand, showed a completely different pattern and one which is rather erratic in nature reflecting the different working patterns in that town and the lack of consistent employment opportunities to the women residing there. It can be seen, therefore, that the CEBs for the districts studied appear to accurately reflect the changing circumstances and opportunities for women living in these towns.

Given that such a high proportion of women were recorded as being in employment, and such a large variety of occupations were recorded in the CEBs, it would appear probable that this district of Norwich was very well enumerated. None of the occupations that would be expected to be seen in the records is missing, and the appearance and disappearance of occupational titles mirrors what is known from the history of the city itself.

This paper has sought to answer a key question: is women’s work in provincial towns well enumerated in the censuses? The answer is that certainly in the case of the enumeration districts studied for this particular paper, women’s work would definitely appear to be well enumerated. The types of employment listed in the occupation column for married, widowed and single women within the districts studied in Norwich, Ipswich and Colchester, match closely what is known regarding occupational opportunities available to women living in these towns at that time. Everything contained within the CEBs correlates with information contained in other sources and there is very little to suggest that the percentages of women recorded as being in employment are significantly lower than would be expected.

In conclusion, the recording of women’s work in the CEBs studied for the provincial towns of Norwich, Ipswich and Colchester could be considered to provide an accurate reflection of the reality of the lives and experiences of the women concerned and there is little reason to suggest that they were under enumerated to any great extent. This is corroborated by the results of other research undertaken to compare the CEBs with other sources.
Women’s work in the 1881 Census enumerators’ books (CEBS)

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This paper utilizes a 100% sample of the 1881 CEBs (Schurer and Woollard, 2000) to study women’s employment in England and Wales. Drawing on sources such as autobiographies, parliamentary reports, household budgets, and wage books, previous studies on women’s working experience have focused on issues such as the gender gap in wages and skills, the relationship between women’s domestic duties and gainful employment, and women’s diverse experience in different industries. However, limited by the scope of their evidence, most of these studies have been confined to particular locations or industries. In terms of women’s labour force participation rate, occupational structure, and relationship between women’s participation and work by other family members, we still know surprisingly little. Though censuses have been criticized for the under-enumeration of women’s irregular, seasonal, and part-time work, new studies by McGeevor (2012) and Potter (2013) show that the censuses are reliable sources for studying women’s regular employment. The 100% sample of the 1881 CEBs offer us an unparalleled opportunity to address the aforementioned issues in a very systematic fashion covering the whole of England and Wales. This paper aims to shed light on these issues with considerations of regional diversity, women’s age profile and marital status.

Several novel findings emerge from this study. First, through various cartographical representations, it can be shown that, regardless of women’s marital status, women’s labour force participation rate was heavily influenced by the demand side of the labour market. Second, the regional diversity and geographical concentration of women’s employment in different economic sectors have been fully identified for the first time. New patterns can be found in this analysis. For instance, it can be shown that in the areas where there were staple female industries, women’s level of activities in the secondary sector decreased over the lifecycle. However, in the areas where there were no staple female industries, the secondary sector’s share of female employment actually increased with women’s age due to reduced competition from their younger counterparts. Third, women’s sectoral employment showed different patterns by age. On one hand, the primary and tertiary sectors became more important in women’s employment as women became older. On the other hand, the secondary sector’s share of women’s employment decreased with women’s age. Fourth, a substantial number of women had the same or related occupations as their co-resident kin, which suggests common human capital among kin and also women’s cooperative role within the household economy. Fifth, the occupational mis-specification of kin as ‘servants’ of the household head was heavily influenced by the sex, birth-rank, and composition of co-resident kin. For instance, a motherless spinster with an older co-resident male sibling was much more likely to be enumerated with a domestic service occupational title than a counterpart who lived with both parents and an older male sibling. This in turn suggests that the enumeration of ‘kin-servant’ was far from random and it reflects women’s actually familial role within the household. However, the enumeration of married women’s work as ‘xxx’s wife’, (for instance, ‘farmer’s wife’) was by and large a random practice, which depended on the personal preferences of individual census enumerators. Last but not least, it will be shown that the previous argument that women’s labour force participation rate declined after the mid-century is groundless.
Using cemetery records as a source to estimate women’s class and occupational identities: the case of Coimbra, Portugal, 1885-1910

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Introduction
This paper explores the usefulness of cemetery records, particularly of type of grave, as a source for reconstructing: 1) women’s distribution among social classes and 2) women’s labour force participation in Coimbra, Portugal, at the turn of the twentieth century. Burial records represent a fresh source for estimating women’s role in the labour force, not least because, elsewhere, these data offer the least revealing information vis-à-vis women’s occupation. However, supposing that burial data may be linked to information on women’s professional identities, the source presents certain advantages over other archives. Court records are partial, and neither priests’ communicant books nor household-level Censuses returns have survived from the period. Trusting, rather, to the gender-neutrality of death, this paper turns to cemetery data to round out facts provided by two other main sources, parish death-books and hospital records. In particular, it tests the assumption that class-of-grave data will support more accurate socio-economic classifications of women uniformly listed as ‘domestic workers’ and those of ‘unclassified’ occupation. The interest of the work is both substantive, in determining women’s classes and occupations, and methodological, in characterizing the strengths and weaknesses of cemetery records as a basis for inferring women’s social and occupational structure.

Background
The research deals with Coimbra, Portugal’s third city by size. To the best of my knowledge, my work is the only project reconstructing Portuguese nineteenth-century demography on the basis of nominal, individual-level records. This particular investigation focuses on burials, augmented by entries in the county hospital’s admission books and ecclesiastical registers for baptisms, marriages, and deaths for Coimbra’s six parishes.

In this period Coimbra is notably the site of the country’s only university. Museums, presses, a teaching hospital, and botanical garden sit in its purlieus, while a law court, barracks, penitentiary, and tax-and-customs offices fulfil governmental functions at council and county levels. The city also houses private colleges and religious institutions for both sexes. It is likely that many male students, together with family members and maids, were excluded from the Censuses on account of its dates in 1890, 1900, and 1911; 1 December in each case. Inconveniently, national Censuses data are aggregated for age-groups and households at council level. Two of Coimbra’s six metropolitan parishes – Sta. Clara and Olivais – were heavily rural in 1890 but urbanized over the period. A headcount for the city aggregating parish population in 1890 gives Coimbra 23,143 inhabitants, around 45.2% of the council. This rises to 25,188 in 1900 (46%) and 29,115 (46.6%) in 1911.

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The manuscript sources yield granular data for cause of death, facilitating reconstruction of Portugal’s epidemiological transition and comparison with other countries. The current paper is ancillary to a PhD which assesses the effect, if any, of the provision of piped water on infant mortality. Socio-economic categorizations are especially germane to child death, in that class, as distinct to occupational or sectoral, classifications were first framed by the Registrar-General, T.H.C. Stevenson, in 1911 in the expectation they would support an ‘environmentalist position on infant mortality and its preventability’ by demonstrating a correlation between class and child survival. Portugal’s 1890 census was the first to group people into households supported by one of 12 occupational categories, covering branches of labour like agriculture, fishing, industry, and trade. ‘People exclusively living on their private income’ and the ‘[u]nproductive’ featured in non-occupational categories. The categorization is occupational, not class-based, and substantially follows the Jacques Bertillon system reported in its third revision to the International Statistical Institute at Chicago in 1893. At a later stage of my research, individual infant deaths will be assigned social-class classifications, and ‘class’ evaluated against a range of variables as a determinant in mortality.

Study Question

However informative parish records in capturing life-events, they pass over some aspects of social composition. How does Coimbra’s population break down in terms of social structure and occupation? This paper reviews 26 years of burials in the city’s main municipal cemetery, the Conchada, attempting to assess the degree to which the occupational identities of 3,838 deceased women as stated in the clerk’s burial records correspond to women’s share of Coimbra’s labour force. It also breaks ground in using type-of-grave as an indicative measure for women’s social class. Assuming that status differentials carry over into distinct burial practices – within sepulchres, plots-with-headstones, and common graves – how many women can be reconstructed as belonging to a social elite and how many as living in poverty? Type of grave may be especially useful for class identifications in the absence of information for women described in death records as doing some variety of ‘domestic work’ or without stated occupation.

Methods

From a computerized dataset of 14,855 records, this study stripped out the deaths of men, non-city residents, and females under nine, leaving a cohort of 3,838. The youngest Coimbra resident for whom burial records state an occupation was a nine year-old serving-maid. The oldest was a 98 year-old agricultural labourer from Coimbra’s hinterland, the oldest dweller a 90 year-old tremoceira (vendor of the snack lupin beans). These two ages form the endpoints of study’s range, reducing the dataset to 3,838. The assumption that girls in their early teens formed part of the labour market is borne out by a priest’s annotation of the death of a 14 year-old as ‘without occupation’ and by press cuttings.

10 For an outline of the contemporary Portuguese system of social classification, see António Pinto Ravara, ‘A classificação socioprofissional em Portugal (1806-1930)’, Análise Social (1988) 24, 1161-84.
11 For the report presented by different countries’ statistical services to the 1891 Vienna session, see the Bulletin de l’Institute international de statistique, tome VIII, 1 (Rome, 1895), pp. 226-39, followed by Bertillon’s ‘Project de nomenclature des professions’, pp. 240-61.
12 Three girls – one 12, the others 11 – were crushed to death by the collapse of the municipal adega (wine cellar). Burial data identify these workers as ‘jornaleiras’ – a descriptor apt to misclassification because of its agricultural connotations, which mean the presence of female labour in urban building-sites is easily missed. See O Conimbricense, 18 July 1905, 3, col. 1-2.
Manuscript sources

The study accessed data from the city’s largest municipal cemetery. Coimbra had three other, rural graveyards, for which records are assimilated through information in parochial books. It lacked a crematorium in the period. Its population was overwhelmingly Catholic, meaning only negligibly few non-Catholics do not appear in ecclesiastical records. Cemetery burials state the deceased’s name, age, civil status, occupation, and place and cause of death, together with information about parents, place of baptism, and type of grave. Parish death-records are patchy in giving occupational information about the deceased, especially women. Burial and hospital admissions augmented parish data in this parameter. Civil sources are generally more informative about women in the period than ecclesiastical; however, 226 married women of ‘no occupation’ died at home and do not feature in hospital records. Parish records intermittently supply occupational data for dying women, though this seems sometimes to have been at priests’ discretion. Priests still tend to be the best-informed authorities about the dead due to house visits and administering extreme unction during the Viaticum.13

Coimbra’s cemetery charged eleven levels of burial fee, sub-divided into four categories: 1) the cost of a plot, on which families would raise elaborate house-like sepulchres; 2) that of permanent or temporary burial in the municipal mausoleum; 3) that of below-ground graves with headstones; and 4) the common grave, free on receipt of proof of poverty from the priest or civil parish clerk. Plots cost 50$000 (fifty thousand réis), a hundred times the amount of the lowest burial-class and ten times ‘perpetual deposition’ beneath a headstone. The cemetery charged a recurring fee of 10$000 rs. for a family’s continuing lease on sepulchre or private plot and half this sum for renewal of a grave-with-headstone. Adult exhumations were worth 2$000 rs.. (The average monthly wage for agricultural work in 1899 was 240 rs.). The corpses of non-renewing families were disinterred and transferred to the mass pit.14

While men’s graves were adorned with occupational tools, women’s bore symbols of moral qualities like violets and bay. Families’ funeral costs were divided between private undertakers, parish priests, and the cemetery chaplain. Some graves or corteges were not familial but raised by public subscription. An itinerant woman fishmonger balancing a pail of river water on her head slipped on the tracks and was dashed by rocks from a freight-train; she was buried at public expense and the signalwoman who had left the barrier up fired.15 A law student from Cape Verde dying of double-pneumonia was buried bearing wreaths footed by his classmates and female servant.16

Results

This paper reports early results in stating the occupations and type-of-grave of women buried in Coimbra between 1885 and 1910. Of 3,838 deaths, 295 (7.7%) were of young women under 20. There were 1,769 deaths of adults aged 20-64 (46.1%) and 1,774 deaths (46.2%) of women aged 65 and over (figure 1).

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13 O Conimbricense, 11 April 1893, p. 4, col. 2-3.
14 Corpses’ internment was governed by the Regulamento para o Cemiterio Municipal de Coimbra. Coimbra, 1884. For internment prices, see tab. pp. 15-6.
16 Idem, 4 March 1902, p. 3, col. 4.
The four-year dip in numbers from 1895-98 derives from missing parish burial-records from all wards.

Perhaps the most incontrovertible finding from burials concerning women’s class identities comes from the type of grave bought by their families (figure 2).

421 of 3,838 females were interred in family mausoleums, a mark of social status; 2,343 in graves with headstones, and 909 in the common or paupers’ grave. The proportion of women receiving an elite burial is relatively constant around 15 a year, suggesting both that records not captured in missing parish data are broadly representative of society and that social stratification was constant.
Remaining women came to rest in the municipal mausoleum, typically a temporary abode from which bodies were moved into plots or not-yet-built sepulchres. It is plausible that this breakdown for type-of-grave closely corresponds to a class or status stratification in society. If we take the *de facto* headcount of Coimbra’s geographical council, then the sub-population of those living in a family headed by a liberal professional or person of private means, less their servants, comes in at around 8.8 per cent of the whole; adding to this an elite of industrialists, businessmen, and landowners living outside Coimbra, we get a figure comparable to the share for mausoleums.

It would be unwarranted to assume that the incidence of women’s occupations in the dead population recapitulates the distribution of women’s work among the living. For a start, certain occupations will have specific mortality ratios; if this study captures a distinctive time-period, rates of female participation in these will be misstated. Women will also engage in, and abandon, occupations over their life-course. Women’s participation here will be undercounted. Evidence from Coimbra’s marriage and baptismal registers suggest that brides often gave up labour outside the home by the time of their first child’s baptism. We can theoretically get some kind of read on the share of the female population doing certain work by taking an age-point at which we assume no woman has fallen out of the profession. The study has identified 124 seamstresses, 68.5 per cent of whom were single. At ages 33 to 37, when women can still be expected to be working, six seamstresses make up 3.5 per cent of all female deaths. Taking some of the most common professions, 8.6 per cent were maids, 3.8 per cent servants, 2.4 per cent fieldworkers, and 1 per cent some variety of seller (this last likely understates; 11 per cent of Coimbra’s female population in the early modern period have been accounted vendors). 17 Conchada burials from 1860-70 suggest an incidence of about three-and-a-half maids to one manservant. 18 843 (21.7 per cent) of the cohort had no stated occupation at death (see table 3).

There may be observable differences between the occupational identities of the whole group and wives’ occupations. Of 971 wives, 785 are detailed in burial records; 486 (61.9%) had occupations, 306 not. Linkage to parochial records further recovers occupations for 75 women, four working outside the house. By far the most frequent set of quasi-occupational descriptors for the cohort refer to ‘domestic’ labour. Priests use different descriptors (*serviço doméstico*), *trabalho doméstico*, *governo de casa* (household management) and, as a personal descriptor, *governante de sua casa*. Breaking down women so designated into type-of-grave, 54 of 442 (12.2%) went into mausoleums – comparable to the share of the wider cohort.

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Table 1  *Women’s civil status by type of grave*

<table>
<thead>
<tr>
<th>Type of grave</th>
<th>Single</th>
<th>Married</th>
<th>Widow</th>
<th>Unknown</th>
<th>Tot.:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family mausoleum</td>
<td>152</td>
<td>9</td>
<td>126</td>
<td>13</td>
<td>421</td>
</tr>
<tr>
<td>Municipal mausoleum</td>
<td>56</td>
<td>4</td>
<td>57</td>
<td>6</td>
<td>165</td>
</tr>
<tr>
<td>Grave-with-headstone</td>
<td>968</td>
<td>59</td>
<td>640</td>
<td>66</td>
<td>2,343</td>
</tr>
<tr>
<td>Common grave</td>
<td>465</td>
<td>28</td>
<td>148</td>
<td>15</td>
<td>909</td>
</tr>
<tr>
<td>Tot.</td>
<td>N=1,641</td>
<td>N=971</td>
<td>N=1,207</td>
<td>N=19</td>
<td>N=3,838</td>
</tr>
</tbody>
</table>

*Source: Conchada burials, 1885-1910*

The work has also placed 95 women in class terms by tracking down their husbands’ profession. These vary considerably, from lower-middle and middle-class innkeepers and carriage-painters to class-dominant roles like academics and architects. It is possible to conceive of women’s class status as entailing her hold on unevenly distributed tangible-and-intangible resources as these govern marital choice. Yet of thirteen women with distinguished occupations, all teachers, only six were married or widowed, and one buried in a mausoleum. Coimbra had the first women’s association or ‘friendly society’ in Portugal, founded in 1867; this paid for medical care and burial on a pooled basis and worked to improve female education.19

Type-of-grave classification also illuminates another occupational descriptor, ‘not classified’.

Table 2  *Women with unstated occupation by civil status and grave*

<table>
<thead>
<tr>
<th>Type of grave</th>
<th>Single</th>
<th>Married</th>
<th>Widow</th>
<th>Unknown</th>
<th>Tot.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Family mausoleum</td>
<td>58</td>
<td>19</td>
<td>42</td>
<td>17</td>
<td>139</td>
</tr>
<tr>
<td>Municipal mausoleum</td>
<td>19</td>
<td>6</td>
<td>14</td>
<td>6</td>
<td>48</td>
</tr>
<tr>
<td>Ground-headstone grave</td>
<td>200</td>
<td>64</td>
<td>173</td>
<td>72</td>
<td>570</td>
</tr>
<tr>
<td>Common grave</td>
<td>33</td>
<td>11</td>
<td>12</td>
<td>5</td>
<td>86</td>
</tr>
<tr>
<td>Tot.</td>
<td>N=310</td>
<td>N=241</td>
<td>N=284</td>
<td>N=8</td>
<td>N=843</td>
</tr>
</tbody>
</table>

*Source: Conchada burials, 1885-1910*

These women were disproportionately high-status (buried in mausoleums). 95% died at home, meaning hospital records are uninformative vis-à-vis occupation.

A particular value of civil burial data lies in correcting church-record biases. Ecclesiastical records understate the degree to which wives worked in professions complementary to their husbands – seamstresses with tailors, tooth-pick sellers with woodworkers, and as fellow cobblers. Of eight seamstresses dying between 1885 and 1893, four married tailors or cobblers. The church also tends to call prostitutes maids. Baptisms in particular fail to identify mothers’ occupation in cases where babies were born in hospital and taken by orderlies for baptism.

**Conclusions**

While burials iron out some misperceptions, they have anomalies of their own as a basis for reading across from type-of-grave to class identity. Subscriptions to friendly societies or work associations, as well as families’ largesse to servants, skew representations of class hierarchy derived from grave-type data. Nevertheless, this study hopes to have stimulated demographic and social history interest in a plausible method for assigning deceased women to class strata in turn-of-the-century Portugal.

19 Roque, ibid., tome 2, pp. 604-9.
The great escape: technological lock-in vs appropriate technology in early twentieth-century British manufacturing

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From the late nineteenth century onwards the US forged ahead of Britain in terms of productivity levels. Britain’s falling behind during the nineteenth century and its inability to catch-up in the twentieth century has traditionally been explained by local circumstances; i.e. factor and resource endowments as well as demand patterns (Habakkuk 1962). In Britain natural resources were scarce, whereas skilled labour was in ample supply. This provided British producers with an incentive to economize on fixed capital in the form of machinery (Temin 1971; Field 1985). In contrast, the US was well endowed with natural resources, while skilled labour was relatively expensive; here machinery was substituted for skilled labour, resulting in a capital-intensive production process. Furthermore, as the American demand for goods was more homogenous, manufacturers could standardize production methods and implement high throughput systems, thereby raising productivity levels (Broadberry 1994). This advantage was denied to British producers, who faced heterogeneous markets characterized by a demand for customized goods. Thus, local circumstances determined the initial choice of technology. Technological progress was subsequently directed towards the particular technological path a country had chosen, leading to lock-in effects. Particularly David (1975) puts path dependency centre stage when explaining the evolution of distinctive transatlantic systems of production.

In the twentieth century, the transatlantic productivity gap continued to widen up to the 1950s (see figure 1). Broadberry (1997) argues that this lack of productivity convergence reflected the persistence of distinct industrial technologies in both countries. British producers continued to pursue a crafts-based production system, losing both productivity and technological leadership to the American system of mass-production that, up to the 1970s, proved to be technologically more progressive. In the period since the 1970s, according to Broadberry, craft production once again became more progressive and technological leadership reverted back to Britain.

As pointed out by Bowden and Higgins (2004), the problem with the above interpretation is that it is essentially static. ‘It traces the misfortunes of the interwar years to technical choices made in the previous century which depended upon specific supply- and demand-side factors’. Basu and Weil (1998) developed an alternative analytical framework which illustrates that, regardless of static differences in factor and resource endowments, countries have the potential to rapidly converge in terms of labour-productivity levels if they successfully adopt the leaders’ production technologies. They emphasize the fact that technological change appears to be biased towards the capital intensive technologies and that spillovers occur only in a limited range of technologies. Countries operating on a technical level far below the range of the world’s technology leaders are thus likely to fall behind in terms of productivity growth. This will eventually induce them to adopt more capital-intensive production techniques in order to benefit from knowledge spillovers.

A number of recent studies have found empirical evidence that strongly supports Basu and Weil’s appropriate-technology hypothesis (Kumar and Russell 2002; Allen 2012). These studies rely on a novel framework, the data envelopment analysis (DEA), that emphasizes the role of technology and the potential for technology transfer; factors that, thus far, have received little attention in the empirical convergence literature (Bernard and Jones 1996). They confirm the importance of localized innovation – i.e. technological improvement that is
confined to a particular mix of capital and labour – and stress the finding that global technological change is decidedly biased towards capital-intensive production techniques; supporting the premise behind the Basu and Weil model.

Figure 1: Output per hour worked in manufacturing, US and UK (UK=100, 1890-1990)

In this paper I adopt the DEA framework and apply it to the case of productivity and technology convergence in Great Britain and the United States. The main findings of this paper can be summarized in three points. First, for the first half of the twentieth century I confirm previous studies’ findings that technological change at the frontier was decidedly non-neutral. Because of this bias labour productivity grew fastest for capital-intensive production techniques. Secondly, in terms of capital-intensity levels, British manufacturing converged on the US between 1907 and 1930, creating a large growth potential. Thirdly, British entrepreneurs did not take full advantage of the growth potential they had created. Despite the process of rapid capital deepening, low levels of efficiency stood in the way of Britain catching up in terms of labour productivity levels. These findings are more in line with Basu and Weil’s model of localized technological change than David’s concept of technical lock-in.

For this study I have constructed a new set of internationally comparable, industry specific output, employment and capital measures, spanning the 1899-1939 period. As convergence in terms of labour productivity driven by technology diffusion typically occurs at the level of products or industries rather than at the total economy level, I retain a highly disaggregate level of analysis on the basis of original census data (Timmer and Los 2005). This allows me to study technological change and transfer at the industry level, which sets my study apart from previous studies that typically maintained a strong macroeconomic viewpoint.

Data Envelopment Analysis (DEA)

Figure 2 depicts a basic example of a DEA involving three producers which use two inputs (capital K and labour L) to produce a single output (Y). Assuming constant returns-to-scale, I can represent the world production frontier in (k,y) space, where y is labour productivity (Y/L) and k is capital intensity (K/L).
Figure 2: Illustration of data envelopment

(a) Observations

(b) Frontier

The frontier (τ) for the observations in figure 2 is formed as linear combinations of observed ‘best practice’ activities. An observation is said to be a best-practice activity if increasing any output or decreasing any input is possible only by decreasing some other output or increasing some other input (Koopmans 1951). The identification of these fully efficient observations can be reduced to a basic linear programming problem in the form of a distance function (Färe et al. 1994). The frontier is then shaped by tightly enveloping the fully efficient observations with linear segments, as illustrated in the right-hand panel of figure 2. This panel also shows that the last remaining observation (A) is located below the frontier. Observation A’s vertical distance to the frontier indicates the potential for labour-productivity increase. Farrell (1957) shows that this distance can be interpreted as a measure of technical efficiency.

Growth decomposition

The DEA approach can be used in a decomposition of labour- or total-factor productivity (TFP), a process described by Kumar and Russell (2002) as ‘growth accounting with a twist’. To illustrate this decomposition, I have extended the example of figure 2 to include a second period. To form the new frontier, I again utilize the distance functions to locate the fully efficient observations among the six in the sample. These observations are then enveloped by linear segments, as shown in the right panel of figure 3.

Figure 3 also displays two inefficient observations (A and D) which represent the same producer at time 0 and 1 respectively. Labour-productivity change, between these observations can be decomposed according to equation (1) below.

$$\frac{Y_d}{Y_a} = \left(\frac{y_a(k_a)}{y_a(k_a)}\right) \cdot \left(\frac{y_b(k_a)}{y_b(k_a)}\right)^{0.8} \cdot \left(\frac{y_c(k_a)}{y_c(k_a)}\right)^{0.8}$$

(1)
The first right-hand side factor measures the change in efficiency. Kumar and Russell (2002) characterize this component as movements towards (or away from) the frontier, as countries adopt best practice technologies and reduce (or exacerbate) technical and allocative inefficiencies. The second factor, technological change, reflects shifts in the global production frontier. Since the vertical shift of the frontier can be observed both at capital intensity $k_a$ as well as $k_d$, I report the geometric average of the two measures. The last factor, accumulation, represents the potential change in labour productivity resulting from a shift in the capital-labour ratio. This component represents the average productivity gains or losses as a result of the movement along both frontiers.

**Data**

For the analysis of transatlantic labour-productivity differentials between 1907 and 1930, I have constructed a new dataset of industry-specific real value added (in constant 1929 dollars), employment (hours worked) and capital statistics (horsepower capacity). My panel observes 10 benchmark years for the US (spanning the period 1899 to 1939) and two years for Great Britain (1907 and 1930). In addition, I also included two benchmark years for Germany (1907 and 1936). The set thus includes data for the three greatest industrial nations of the early twentieth century, covers approximately 105 separate manufacturing industries and overall consists of nearly 1,500 observed input-output combinations.

Similar to the example discussed above, I again assume constant returns-to-scale. I estimate a separate frontier for 27 industry groups. These industry groups are referred to as two-digit industries; a denotation which indicates their level of aggregation as being one step above the three-digit level, the level of detail of my dataset. In the estimation of the frontiers I pool all the three-digit observations belonging to the same two-digit industry, implicitly assuming that these observations share a common production function.

**Results**

Table 1 reports the average annual growth rate of aggregate manufacturing productivity for the US between 1909 and 1929 and Great Britain between 1907 and 1930. Labour-productivity growth is broken down into the contribution of capital accumulation, technological change and efficiency change, following equation (1). The last row of table 1 lists the difference between the average British and American rates of growth, essentially a decomposition of the gap in Anglo-American labour-productivity growth into the aforementioned components.
Table 1: Decomposition of labour-productivity, total manufacturing, US and GB

<table>
<thead>
<tr>
<th></th>
<th>annual average growth rate, in ln%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>total</td>
</tr>
<tr>
<td>United States (1909-29)</td>
<td>3.1</td>
</tr>
<tr>
<td>Great Britain (1907-30)</td>
<td>1.9</td>
</tr>
<tr>
<td>Difference (US-GB)</td>
<td>1.2</td>
</tr>
</tbody>
</table>


Both American and British performance was relatively strong during this period. Nonetheless, labour productivity growth in the US was considerably faster, and overall the productivity gap increased by approximately 1.2 per cent per year. As table 1 illustrates, the drivers behind the widening of the productivity gap were relatively slow technological change and general efficiency decline in British manufacturing industries. However, the process of capital deepening proceeded at a considerably higher rate in Britain, in turn decelerating the divergence process. The sizeable accumulation component represents a general movement of a number of modern British industries towards American production techniques, which thus partially bridged the technology gap that had arisen during the nineteenth century.

Figure 4 illustrates the convergence of British and American capital-intensity levels; it presents the distribution of manufacturing employment over available production techniques (proxied by machine intensity). During the first half of the twentieth century, capital-intensity levels were converging and by 1930 Britain had already surpassed the 1909 American level. In 1907, British manufacturing employed, on average, 0.48 horse power per 1,000 hours of work. This ratio more than doubled to 1.14 by 1930. In 1909, the American capital-intensity level was 0.98, which increased to 1.81 by 1929. The upper-right panel of figure 5 illustrates that, not only were the average levels merging, the interwar British distribution of employment over capital-intensity levels (i.e. production techniques) mirrored that of the US in 1909. The comparatively high rate of capital deepening in British manufacturing implies that initial conditions did not stand in the way of capital-intensive production.

The final component in table 1, efficiency change, represents the residual of the observed rise in labour productivity and the potential labour-productivity growth – the latter resulting from both capital accumulation and technology change. This efficiency change can be interpreted as the result of learning-by-doing and indicates the extent to which a country has exhausted the potential of a particular technology. In addition to these ‘pure’ efficiency gains or losses, the residual efficiency term for aggregate manufacturing also includes the effects of structural change. Table 1 reports a small efficiency gain for the US between 1909 and 1929, which can be attributed to a favourable shift in the employment structure of American manufacturing. Generally, pure efficiency, or the relative vertical distance of American industries to the world-frontiers, remained unchanged. Similarly, British manufacturing experienced a similar shift in the employment structure, boosting aggregate labour-productivity growth. Nonetheless, the total efficiency component in table 1 for Britain suggests a substantial decline in pure efficiency at the industry level. During this period British industries were thus unable to realize their full potential that came about through the process of rapid capital deepening and increases in technological change. Consequently, even though British manufacturing converged on the US in terms of capital-intensity levels, the Anglo-American productivity gap failed to narrow and even widened considerably during the interwar period.
**Conclusion**

In contrast to the literature I do not view the lack of catch-up growth as a failure on the part of British entrepreneurs. Previous applications of the DEA-approach led to findings resembling mine. For a sample of Asian countries Timmer and Los (2005) find comparable gaps between potential and realized labour-productivity growth. Their interpretation of the Asian growth experience is based on Basu and Weil’s analytical framework and rests on a two-tiered approach to catch-up. Follower countries go through two sequential phases of development in order to close the gap to the frontier, as depicted in figure 5.

The initial phase of catch-up, the adoption of new production techniques through the accumulation of capital, involves an extensive transformation of the production process. This causes efficiency levels to deteriorate in the short run. Only after the economy has successfully adjusted to the new state and has ‘learned’ to operate the new technology at its full potential, can the labour-productivity gap to the frontier be narrowed. The time lag between creating potential and the movement towards the frontier depends both on the scope of capital deepening and the flexibility of the economy and its institutional arrangements.

For the case of Britain this implies that the implementation problems that engineers and industrialists encountered in the 1920s and 1930s were not signs of failed industrialization. Instead, they were features of modernization inextricably linked to the initial phase of catch-up growth. However, as illustrated by Crafts and Mills (1996), labour-productivity growth between 1951 and 1973 was considerably faster in the UK than in the US, resulting in the gradual decline of the Anglo-American productivity gap. The postwar productivity convergence supports the premise of a two-tiered process of catch-up growth that, for Great Britain, had its origins in the interwar era.
References


The role of international trade in Britain’s relative economic decline: the link between productivity and trade examined

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Trade and openness have been mentioned as causes of Britain’s relative economic decline. The postwar period was characterized by a relative high level of protection in Britain, tariffs remained at the 1930’s level through the mid-1960s. An important argument in the literature which blames the UK’s trade policies for insufficient growth, is that Britain became isolated from foreign competition which hampered productivity growth. The British market was stuck in Commonwealth and colonial trade, whereas other European countries benefited from being integrated into a fast-growing continental bloc in Western Europe. Broadberry and Leunig also claim that the main reason for the relatively low productivity growth rates in the UK in the 1960s, as compared to for example West-Germany or France, was its isolation from foreign competition. Although the UK applied to join the European Economic Community (EEC) in 1960, she was not willing to give up her preferential trade agreements with the Commonwealth countries, and the application was vetoed by France in 1963.

In 1960 Britain established the European Free Trade Association (EFTA). The members of EFTA had relatively small manufacturing sectors and hence, the British manufacturing sector was still rather insulated from international competitive pressure. Whereas European nations had a comparatively similar economic structure, which implies that firms in each country competed with each other in a potentially vigorous manner, the UK and the Commonwealth had a different economic structure, being complementary to each other. Trade between the UK and the Commonwealth was more likely to reduce intra-industry competitive pressure, and therefore, trade with the Commonwealth was not a potential substitute for trade with the EEC. Problems with limited competition have also been mentioned in the well-known view by Broadberry and Crafts on British relative economic decline. Britain applied again for membership of the EEC in 1967, and was finally admitted in 1973. As Supple (1994) describes “when Britain joined the European Economic Community … that step acknowledged, as few others could have done, the relative weakness rather than the international strength of the polity and the economy” (p. 447).

The relationship between trade and growth has been the subject of great controversy in economic literature in past decades since there is disagreement about the nature of the relationship and the direction of causality. A large literature does suggest that differences in growth performance and productivity may be related to variation in international trade. There are multiple channels through which trade and openness can have an effect on growth or productivity. The most important are the market size effect, the possibilities of more

20 Milward and Brennan (1996).
21 Crafts (2012).
22 Broadberry and Leunig (2013).
23 Ludlow (1997); Wells (1966), p13 calls this the “commonwealth problem”.
24 The founding members were Austria, Denmark, Norway, Portugal, Sweden, Switzerland and the United Kingdom.
25 Broadberry and Leunig 2013
scope for learning by doing, knowledge spillovers, and technology transfers, and enhanced competition.\textsuperscript{29}

The main purpose of this paper is to evaluate whether we find for Britain for the postwar Golden Age era a relationship between levels of openness and labour-productivity growth. I define labour productivity (LP) as value added (VA) per man hour in manufacturing sector i, produced at time t.

\[ LP_{it} = \frac{VA_{it}}{H_{it}} \]  

(1)

Where \( H_{it} \) is the total hours worked in industry i in year t. I have constructed two measures of openness.\textsuperscript{30} The first is the share of export in domestic production (XY), calculated as export (X) in manufacturing industry (i) at time t, as a share of domestic production, which is measured by gross output (GO).

\[ XY_{it} = \frac{X_{it}}{GO_{it}} \]  

(2)

The second measure is import as a share of home sales (MS). Home sales are proxied by adding imports (M) to domestic production, measured by GO, and subtracting exports.

\[ MS_{it} = \frac{M_{it}}{GO_{it} - X_{it} + M_{it}} \]  

(3)

Catch up and convergence theories predict faster growth for those industries further from the technology frontier, which was the US in the postwar era.\textsuperscript{31} The measure of the distance to the frontier (DTF) captures the potential of technology transfer. The labour-productivity gap between the UK and the US is becoming smaller during this period. However, the process and speed of catching up is not the same for all industries. Since technology spillovers will be mainly the result of intermediate inputs imports from the US, the distance to the frontier is important. The DTF measure is defined as the productivity, in terms of value added per hour worked in manufacturing industry i, at time t, in the leader country (the US) over the productivity per hour worked in the follower country (the UK).

\[ DTF_{it} = \frac{LP_{it}^{US}}{LP_{it}^{UK}} \]  

(4)

I regress the measures of openness and the measure of the distance to the frontier on labour productivity growth. The following equation is estimated using the fixed effect (within groups) estimator\textsuperscript{32}:

\[ \Delta LP_{it} = \alpha_{it} + \beta_2 DTF_{it} + \beta_3 MS_{it} + \beta_4 XY_{it} + \beta_5 Trend + u_{it} \]  

(5)

Where \( \Delta LP_{it} \) is the growth rate of labour productivity, as measured by value added per hour worked, in industry i in year t. \( DTF_{it} \) measures the gap between industry i in year t in the UK and industry i in year t in the technology frontier of the world, the US. \( MS_{it} \) is import over domestic sales, and \( XY_{it} \) is export over domestic production. I include a trend to control for the effect of changes over time, such as growing human capital. To control for unobserved heterogeneity that is correlated with the explanatory variable I allow the error term to include an industry specific fixed effects. To avoid problems of endogeneity I use lags. As a check I also perform an instrumental variable regression, where the instruments will be lagged values of the explanatory variables.

I calculated labour productivity levels for 23 industries in manufacturing based on value added and employment data from the ‘Historical Record of the Census of Production 1907-1970’, which are converted to constant prices using a wholesale price index. I

\textsuperscript{29} Romer (1987); Grossman and Helpman (1991); Keller (2002); Melitz (2003).

\textsuperscript{30} Following Cameron, Proudman and Redding (1999).

\textsuperscript{31} Nelson and Wright (1999).

\textsuperscript{32} As suggested by the appropriate econometric tests which due to space limitations cannot be presented here, but are available upon request.
interpolated gaps in the data using an index of production from the ‘Annual Abstract of Statistics’ and employment data from the ‘British Labour Statistics: Historical Abstract 1886-1968’. Employment is corrected for hours worked using data from O’Mahony. I use data on export and import from the ‘Report on overseas trade’ to construct the two measures of openness. In some cases data was lacking for certain years, I have interpolated or guesstimated those gaps where possible based on additional data, or based on the relation between gross output and trade. The 23 industries in the sample cover over 90 per cent of gross output in 1951.

Table 1: Summary information (%)

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<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Leather (manufactured)</td>
<td>46.14</td>
<td>55.40</td>
<td>48.40</td>
<td>37.87</td>
<td>61.58</td>
<td>49.60</td>
<td>65.95</td>
<td>48.26</td>
<td>35.94</td>
<td>68.63</td>
</tr>
<tr>
<td>Paper</td>
<td>21.74</td>
<td>27.64</td>
<td>25.92</td>
<td>21.89</td>
<td>32.67</td>
<td>9.05</td>
<td>6.64</td>
<td>6.71</td>
<td>5.35</td>
<td>9.13</td>
</tr>
<tr>
<td>Wood (basic material)</td>
<td>35.78</td>
<td>25.56</td>
<td>39.07</td>
<td>25.56</td>
<td>56.09</td>
<td>0.10</td>
<td>0.40</td>
<td>0.33</td>
<td>0.15</td>
<td>0.42</td>
</tr>
<tr>
<td>Clothing</td>
<td>2.01</td>
<td>13.64</td>
<td>6.46</td>
<td>1.06</td>
<td>14.14</td>
<td>7.78</td>
<td>13.06</td>
<td>7.20</td>
<td>5.05</td>
<td>13.06</td>
</tr>
<tr>
<td>Iron and Steel</td>
<td>3.12</td>
<td>7.86</td>
<td>5.13</td>
<td>2.42</td>
<td>10.46</td>
<td>16.81</td>
<td>11.76</td>
<td>11.82</td>
<td>9.80</td>
<td>15.56</td>
</tr>
<tr>
<td>Electrical Machinery</td>
<td>1.50</td>
<td>10.18</td>
<td>4.58</td>
<td>1.54</td>
<td>10.18</td>
<td>24.33</td>
<td>16.09</td>
<td>17.43</td>
<td>13.12</td>
<td>23.59</td>
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<tr>
<td>Chemicals</td>
<td>9.39</td>
<td>14.84</td>
<td>10.73</td>
<td>7.94</td>
<td>14.84</td>
<td>20.33</td>
<td>20.15</td>
<td>18.33</td>
<td>16.49</td>
<td>23.27</td>
</tr>
<tr>
<td>Textiles (manufactured)</td>
<td>20.12</td>
<td>22.29</td>
<td>21.65</td>
<td>10.61</td>
<td>28.77</td>
<td>51.17</td>
<td>30.75</td>
<td>40.15</td>
<td>27.16</td>
<td>59.12</td>
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<tr>
<td>Textiles (basic materials)</td>
<td>20.79</td>
<td>10.47</td>
<td>17.15</td>
<td>10.47</td>
<td>23.47</td>
<td>2.17</td>
<td>5.77</td>
<td>5.35</td>
<td>2.16</td>
<td>7.12</td>
</tr>
</tbody>
</table>

Table 1 reports the beginning, average and minimum and maximum values of MS and XY in the sample period for selected industries. At the aggregate level there is relatively little change in the ratios over the course of the period. However, at a disaggregate level major movements occur. For some industries the ratios are relatively volatile. In the textile industry for example, M/S increases substantially in 1960, which which can be explained by the fact that when the UK joined the EFTA in 1959 she removed all restraints on imports of textiles. The result was a trade expansion that is regarded as the EFTA’s greatest source of trade creation. The Korean War is partly responsible for movements in the ratios at the beginning of the 1950s. The war led to a rapid increase in the demand for primary commodities due to rearmament of the Western world, which led to rocketing prices.

I reclassified the labour-productivity estimates of Paige and Bombach for the US/UK to match my 23 industry classifications and adjusted it for hours worked. I extrapolated until 1970 using, for the US, data on output and employment from the ‘Historical statistics of the United States, volume 4, Economic sectors’ and wholesale prices are taken from ‘Historical Statistics of the United States, volume 3, Economic structures and performance’. For the UK I relied on the data from the ‘Historical Record of the Census of Production 1907-1970’ which are interpolated to obtain annual estimates, and hours worked were taken from O’Mahony. Table two below shows the result of estimating equation 5. Column one shows the result of fixed effect estimation, and column two the result of the instrumental variable approach. Over the sample period the estimated coefficients for the openness measures in terms of export are positive at the 5 per cent significance level. The measure of import is not significant. Hence it appears that labour productivity is indeed associated with export.

33 O’Mahony (1999).
34 An extensive appendix with the details of interpolation is available upon request.
37 Paige and Bombach (1959).
38 O’Mahony (1999).
estimated coefficient on distance to the frontier is positive and statistically significant, which is consistent with the theory that predicts that the growth rate of labour-productivity should be higher in industries which are further from the technology frontier.

Table 2: Fixed effects estimation results, 1951-70

<table>
<thead>
<tr>
<th>Dependent variable labour-productivity growth rate</th>
<th>1</th>
<th>2\textsuperscript{a}</th>
</tr>
</thead>
<tbody>
<tr>
<td>M/S-L2</td>
<td>0.117</td>
<td>0.165</td>
</tr>
<tr>
<td></td>
<td>(0.095)</td>
<td>(0.132)</td>
</tr>
<tr>
<td>X/Y-L2</td>
<td>0.182**</td>
<td>0.417**</td>
</tr>
<tr>
<td></td>
<td>(0.087)</td>
<td>(0.178)</td>
</tr>
<tr>
<td>DTF-L2</td>
<td>3.5E-4***</td>
<td>0.001***</td>
</tr>
<tr>
<td></td>
<td>(9.8E-5)</td>
<td>(2.1E-4)</td>
</tr>
<tr>
<td>Trend</td>
<td>0.004**</td>
<td>0.006***</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>constant</td>
<td>-0.166***</td>
<td>-0.342***</td>
</tr>
<tr>
<td></td>
<td>(0.051)</td>
<td>(0.083)</td>
</tr>
<tr>
<td>F-test (p-value)</td>
<td>298.83</td>
<td>(&lt;0.001)</td>
</tr>
<tr>
<td>Wald chi2 (p-value)</td>
<td>269.38</td>
<td>(&lt;0.001)</td>
</tr>
<tr>
<td>N</td>
<td>437</td>
<td>437</td>
</tr>
<tr>
<td>Time-fixed effects included</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

\textsuperscript{a} Instruments: Trend, XY-L2, MS-L2, GAP-L2, year-dummies. Robust standard errors are in brackets. Estimates marked \textsuperscript{***/**/*} are significant at the 1/5/10 per cent level

As a robustness check, I evaluated how sensitive the estimation is to the inclusion of outliers. I ranked industries according to the average value of labour-productivity growth, and openness measures over the entire sample period. I excluded the three industries with the highest and lowest values in these dimensions from the estimation, and the main results remained robust.\textsuperscript{39} As a final robustness check I have used the growth rate of Multi Factor Productivity (MFP), which is available for the periods 1954-8, 1958-63, 1963-8, as the dependent variable.\textsuperscript{40} I use the beginning values of the openness measures and the DTF measure for each of the three periods to avoid endogeneity problems. The estimated coefficients of the openness measures enter positive and significant.\textsuperscript{41}

The main purpose of this paper is to evaluate whether openness and trade affected labour-productivity in the postwar Golden Age period in the UK. Although there is a debate in the literature on the importance of the role of trade and openness in Britain’s relative economic decline, not many studies quantify the effect. There is relatively little change in openness during the postwar period if we measure it by behavioural measures such as import over domestic sales, and export over output at the total 23 manufacturing industry level. However, there are substantial changes at the disaggregated industry level. I found a positive and statistically significant effect of distance to the frontier on labour-productivity growth rates. Thus, industries that are further behind the technology frontier, the US in this case,

\textsuperscript{39} Results are available upon request.

\textsuperscript{40} Available in Oulton and O’Mahony (1994) to match my classification I reclassified the data, industries are weighted according to their average gross output shares in the first and last year of the period under consideration.

\textsuperscript{41} Results are available upon request.
exhibit higher labour-productivity growth rates. I also found a positive statistically significant effect of the export measure of openness. Industries that export a higher proportion of their output have higher rates of labour-productivity growth than the less export oriented industries. This indicates that the theoretical linkages, such as the market size effect, and more possibilities of learning by doing and economies of scale and scope might indeed have played a role in Britain’s relative economic decline. Overall my findings suggest that there is a clear association between international trade and labour-productivity and MFP in the UK during the Golden Age of economic growth. Hence, the critique on Britain’s trade policy, which hampered trade, seems therefore relevant.

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Supporting the ‘white heat’: re-examining the expansion of Britain’s nuclear energy programme, 1965-70

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A recurring theme in the literature on Britain’s nuclear energy programme is the unquestioned and unchallenged government support for nuclear energy and the experts in the Atomic Energy Authority (AEA). Developing British nuclear technology was a political as well as an economic prestige project that had been part of Prime Ministerial priority since 1947. Governments discouraged public probing into the activities of the AEA who were able to work in an environment of secrecy with little obligations of public accountability. Thanks to their monopoly of knowledge on nuclear technology, these experts took policy initiatives on nuclear energy while government’s role was limited to ‘ratification, indifference, or bewilderment’. Governments supported nuclear energy ‘without a stint of hesitation’.

This paper, however, questions these simplistic views on government support for nuclear energy by examining the Wilson administration’s policy of nuclear expansion from 1965-70. This policy has often been seen as exemplifying blind and overoptimistic government support for nuclear energy. But with the help of the relevant official records, many of which have become recently accessible, the paper highlights the doubts and uncertainties of officials, as well as the larger economic and political context under which the nuclear programme was viewed.

The Wilson government’s decision to increase Britain’s civil nuclear capacity came from the Central Electricity Generating Board’s (CEGB) decision in May 1965 to select the AEA designed advanced gas cooled reactor (AGR) over the US designed boiling water reactor (BWR) for the Dungeness B power station. Dungeness B was the first power station of the Second Nuclear Power Programme, which involved a 5000-6000MW nuclear capacity to be achieved by 1975. This target capacity had been set in 1956 largely due to concerns over coal shortages and the insecurity of oil supplies heightened by the Suez crisis. The completion date however, was continuously pushed back from 1965 to 1966, then to 1968, which was finally set to 1975. The large availability of coal, cheap oil prices, and high costs of the Magnox, which was the reactor used in the first 10 years of the civil nuclear programme, had dented the urgency for nuclear energy.

Given the cost inefficiency and low development potential of the Magnox, the Second Nuclear Power Programme called for an alternative reactor to be used. The AGR and the BWR were the two principal candidates, with the AGR being selected due to its cost advantages. According to a joint CEGB-AEA assessment, the AGR’s capital cost was £78.4 per kw while the BWR’s was £74.3 per kw. However, the AGR’s electricity generation cost was 0.44d per kwH, while the BWR’s was 0.49d per kwH, which more than made up for the AGR’s higher capital costs.
What was to prove far more decisive in expanding the nuclear capacity, however, was the claim that the AGR was far more economic than coal stations, a feat that the Magnox was unable to deliver. In an additional assessment, the AGR was compared with Cottam, the latest and most advanced coal station. Although the AGR’s capital cost was more expensive, at £92 per kw compared to Cottam’s £43 per kw, its generation cost was surprisingly cheaper, at an estimated 0.457d per kwH compared to Cottam’s 0.53d per kwH. The operational savings, resulting from the AGR’s cheaper generation cost, would far outweigh the AGR’s higher capital cost and in the long term, it would make building AGRs far cheaper than building the same number of coal stations.

An expansion of the nuclear capacity, at the expense of coal stations, to 8000MW was therefore economically feasible. The increased programme entailed ordering one nuclear station every year from 1966 to 1975 and would be around 15% of the CEGB’s total generating capacity in 1975. Furthermore, the expansion of a British developed nuclear technology was a politically opportune move for a government that had proclaimed its intention to harness the ‘white heat of technology’. The optimism and belief in the potential of the AGR was such that Fred Lee, the Ministry of Power, asserted ‘we have hit the jackpot with this’.

Behind these official pronouncements, however, there were doubts and uncertainties. For example, it was difficult to understand why the BWR, a reactor that was already used commercially in the US, was more expensive than the AGR that only had a 30MW prototype in operation at Windscale. The CEGB had initially been reluctant to adopt the AGR due its unproven operational capacity. In 1963, its previous Chairman, Lord Hinton, had been informed that a 1200 MW BWR station could be built with a capital cost of £55 per kw and generation cost of 0.46d per unit, which was less than the costs in the assessment. The fact that the AGR was chosen against all expectations was surprising. Alec Cairncross went so far as to suggest that the assessment had been deliberately skewed against the BWR. But given the lack of technical expertise within government and the unwillingness to reopen an issue that was long debated, the Treasury decided to accept the conclusions.

Further questions remained, however, on the economic rationale of substituting conventional coal stations with the AGR. As noted by J.L. Carr from the Treasury, the supposed economy of the AGR over coal plants rested almost solely on the supposed operational savings of a reactor that had never been built or used commercially. Whether this was a strong enough justification to push for an expansion of such magnitude was debatable. The cost advantage of the AGR over oil powered plants was neither substantiated. Oil stations were cheaper to build than nuclear plants and its electricity generation cost was believed to be not more expensive than the AGR. If the 2d per gallon oil surcharge, levied in 1961 to protect coal, was lifted their operational costs would be far cheaper than the AGR.

Even if one accepted the economic rationale and calculations of the assessment, it was not clear whether expansion was feasible in the present situation. According to E.C. Lester, the important question was that of timing. Was there an immediate economic case to push for nuclear expansion? Or was immediate cost saving the order of the day? Could the government afford short term expenses for long-term economic benefits, which the nuclear

50 Central Electricity Generating Board. Report and accounts for the year ended 31 March 1966, p.3
51 House of Commons Hansard, 25 May 1965, column 237.
These questions touched on the dilemma between long-term industrial commitment and short-term fiscal retrenchment that preoccupied governments from 1963. From the Treasury’s perspective, whatever the merits of the nuclear programme were, it could not be viewed in isolation of the wider economic reality.

Given these uncertainties, the Treasury insisted that the wording on nuclear expansion in the 1965 White Paper on Fuel Policy should be as vague as possible so as to retain maximum flexibility. With the deterioration of the economic situation in 1966, the Treasury pressured the Ministry of Power and the CEGB to revise its electricity load forecasts downwards while suggesting that the ordering of a nuclear station that year should be deferred. The Treasury’s unease was substantiated by the increasing costs of the nuclear programme. In 1967, the construction costs of the first AGR station, Dungeness B, which was initially estimated to be around £72 million, increased to £97.075 million. By 1969 and early 1970, it ballooned to £120-30 million.

By the late 1960s, frustrations and uncertainties over the programme were being voiced outside of the Treasury. A particular source of frustration was the unpredictable cost figures of the nuclear project. This was first publicly voiced by the Select Committee on Science and Technology. Although the committee asserted that nuclear energy was the technology of the future, it expressed its concerns as to why the AEA and CEGB kept giving different cost estimates. Dick Crossman recorded his frustration during a Cabinet committee meeting in 1968, claiming that officials presented completely different figures and conclusions in the space of just three weeks. He also suggested that the decision to build a nuclear station at Seaton Carew, near the coalfields was a politically foolish decision, probably made with very little evidence. Harold Wilson cautioned his Cabinet ministers that the cost advantage in favour of nuclear stations should not be taken at face value and stressed that absolute certainty of the figures was needed in view of the past mistakes in costs estimates.

The doubts and uncertainties over the nuclear programme, however, were never officially expressed in a way that would undermine government commitment to nuclear energy. The programme continued with an order for a nuclear station at Hartlepool approved in 1968. It would be too reductionist to argue that the continuation of a programme, whose cost was spiralling out of bounds at a time of acute economic crisis following the 1967 devaluation was just another example of blind government faith in nuclear technology. Two reasons behind this continued commitment stand out: the programme’s industrial significance and the political circumstances arising out of the fuel policy debates with the National Coal Board (NCB) in the late 1960s.

The industrial implications of nuclear energy have not received enough attention in the current literature. The development of nuclear technology was not just a technological prestige project that turned out to be wasteful. Nuclear technology could not be confined to a ‘national activity’. It had to be developed ‘in light of the world market’.

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58 TNA, T319/1506, ‘Record of a meeting held at the Treasury on 30th September 1966 to discuss Electricity Investment Review’.
59 Select Committee on Science and Technology 1967-68, p.xxxviii and p.xxxiii.
64 House of Commons Hansard, 23 May 1968, column 1070.
days of its development, the nuclear programme was inextricably linked to government industrial policy, especially with the policy of encouraging exports. The poor export record of the Magnox reactors was one of the reasons behind the government’s decision to look for an alternative reactor.65 The setting up of the British Nuclear Export Executive (BNEX) in 1966 to facilitate the export efforts of the nuclear manufacturers and to promote the AGR illustrate how seriously the export of reactors were regarded.

Promoting overseas sales of the AGR entailed supporting British manufacturers to be more competitive in the world market. The debates concerning the reorganization of the nuclear manufacturers, whether to have one single company or have two firms competing against each other, revolved around this objective.66 To the chagrin of many, however, no overseas order was placed for the AGR. It was therefore up to the domestic market to provide a lifeline to the manufacturers. Given that the government was the only domestic client, this meant that the ordering of one nuclear station per year, as the original plan called for, had to be continued, an argument that was strongly put forward by the CEGB, the Ministry of Technology, and Ministry of Power. In spite of the slack demand in electricity and increasing costs of Dungeness B, any delay to the programme would deal a heavy blow to the manufacturing industries’ confidence and further exacerbate their export prospects.67 This argument was accepted by the Chancellor of the Exchequer, despite the reservations of some Treasury officials.68

The approval for Hartlepool also took place against the backdrop of increasing political tensions between the government and the coal industry, represented by the NCB. Given that the expansion of the civil nuclear capacity was at the expense of coal, it was hardly surprising that the NCB and its Chairman, Lord Robens criticized the nuclear programme. What was unusual, however, was the public nature of the criticism, with the NCB, which was a subordinate body under the Ministry of Power, explicitly stating its opposition to government nuclear policy in their annual report.69 One of Robens’ rallying cries was the setting up of an external body to re-examine the cost advantage of the AGR against coal stations, an idea that was rejected by government. An independent inquiry instigated by Robens would hardly be neutral and would merely help the coal lobby to attack government nuclear policy.70

More importantly, Robens’ criticism on the nuclear programme evolved into attacks on Labour’s fuel policy and Harold Wilson in particular. It was widely believed Robens had a personal score to settle with Harold Wilson, since the death of Hugh Gaitskell and the emergence of Wilson blocked his dreams of being Prime Minister.71 The attacks from Robens and the agitation of miner-sponsored MPs such as Joe Gromley had put enormous pressure on Wilson.72 Roy Mason, Minister of Power in 1968, even alleged that Robens was aligning to an anti-Wilson group of conspirators.73 In the face of this political pressure, government commitment to nuclear energy could not be withdrawn or reduced since it would have been an admission of defeat.

In conclusion, the Wilson government’s support of civil nuclear expansion, despite the official façade of unquestioned endorsement, was far more nuanced and complex than has

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65 Select Committee. The electricity supply industry. HC 236-II (1962-3), p.11.
67 TNA, T319/1279, ‘Ministry of Power Paper, the Need for Power Stations’, note of a meeting held in Mr. McKean’s room at Treasury on 2 April 1968, p.2.
been portrayed. The lack of technical expertise did not prevent officials and politicians from doubting or questioning the information that they were being provided. Wider industrial and political considerations, rather than an incredulous belief in the nuclear experts, were important in sustaining government commitment to the nuclear expansion programme, even when the problems of the programme were all too apparent to see. This conclusion suggests that the overall history of Britain’s nuclear energy should be analysed through a wider contextual setting, instead of simply focusing on institutional opacity or the power of experts.
From orphan to artisan: the apprenticing of orphaned boys in Leiden and Utrecht during the eighteenth and nineteenth centuries

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As human capital formation is seen as a major determinant for economic growth, understanding how craftsmen obtained their skills through on-the-job training is vital in explaining economic development (Galor and Moav 2004; Zanden 2009). Scholars disagree on the role played by craft guilds in apprenticeships. The standard account of apprenticeship considers it to be divided into two stages (Epstein 1998; Hamilton 1995). In the first stage the apprentice receives training from the master. To repay the master for his training investment the apprentice will work for the master for a specified period of time in the second stage of the apprenticeship, when his training is complete. However, an apprentice may leave after stage one. This chance of default will cause a master to underinvest in training, and he will use an apprentice as a source of cheap labour instead. According to Epstein, craft guilds were vital in reducing these chances for mutual opportunism by enforcing contracts between masters and apprentices. By enforcing contracts, guilds would ensure a master that the apprentice would serve out his second stage, and the apprentice was ensured to receive training in stage one.

Demonstrated high levels of early leave of apprentices throughout Europe are difficult to reconcile with the two-stage model (Ben-Amos 1991; De Munck 2007; Minns and Wallis 2012; Sonenscher 1989). Wallis proposed that high levels of early leave can better be explained by a model where working and training occurred in tandem (Wallis 2008). Because in this model training investments were recouped almost immediately, the need for contractual enforcement is removed. Lack of data on complete apprenticeship routes, and wages, has prevented testing of this model.74 There is a large need for more empirical research (Ogilvie 2008), before we can assess whether guilds were needed for apprenticeship to function, or if guilds instead created monopoly rents by restricting access to training (Ogilvie 2004).

Using unique data of apprenticed orphans in the Dutch cities of Leiden and Utrecht, this paper examines whether apprenticeship functioned despite or because of craft guilds.75 By linking orphanage and apprenticeship ledgers, it is for the first time possible to follow over 800 apprenticeship routes from beginning to end. The dataset gives age of orphan, weekly wages, name of master, term, and craft of each apprenticeship. The Leiden data covers both the period during and after the Dutch guilds were in existence, allowing ‘the comparison of regulatory regimes’ (Humphries 2011).76

Apprenticeship wages and mobility

Whereas regular apprentices paid for board by working for the master, apprenticed orphans did not board with their master but returned to the orphanage instead. In return for not having to provide board and keep the master paid a wage to the orphanage, which in turn was used for board by the regents. Because the structure of both arrangements is in essence alike, these

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74 An ‘apprenticeship route’ here indicates all apprenticeships of an individual apprentice.
75 Data from Regionaal Archief Leiden, Heilige Geest- of Arme Wees- en Kinderhuis, inv. 3855, inv. 3862, inv. 3390, inv. 3392; Het Utrechts Archief, Gereformeerde Burgerweeshuis, inv. 769-2, inv. 723-1.
76 The motives of the regents of orphanages were largely comparable to those of regular families (McCants, 1997, p. 63-4). Apprenticeship terms were not affected by time spent at the orphanage.
wages offer a rare insight into the value of apprenticeship labour over the course of an apprenticeship.

In the two-stage model the labour of the apprentice would have become valuable only in the second stage. However, this would not have been translated into higher wages paid to the orphanage, as the master would pocket these to reimburse himself for incurred training costs in stage one. Consequently, if this model holds, wages paid to the orphanage were always a reimbursement for board only, and orphans’ wages should have been flat over the duration of the apprenticeship. If working and training instead occurred in tandem, apprentices became more skilled with every year. As training costs were more or less constant through learning-by-doing (Wallis 2008), the value of apprentices’ labour would progressively exceed training costs. As a result, wages paid to the orphanage should have increased annually if working and training occurred in tandem.

Apprenticeship wages have been collected for the Leiden and Utrecht orphans for the eighteenth century (Leiden: 1754-82; Utrecht: 1779-93). It is unknown how long orphans had already been apprenticed before they entered the examined apprenticeship ledgers. Combining age and wages of Leiden orphans entering after 1751 indicates that the maximum first-year weekly wage was 12 stuivers or under (one stuiver is fl. 0.05), for orphans starting an apprenticeship before they turned 16. A first-year starting wage of 12 stuivers per week or lower has been used to discern orphans beginning their apprenticeship route. A comparable method for the Utrecht orphans gives a maximum starting wage of 9 stuivers.

Figure 1: Average weekly wage of apprentices, per different crafts visited

The average weekly wages of both groups are given in figure 1, grouped by the number of different crafts the orphan was apprenticed at. If an orphan was first apprenticed as a cooper, and thereafter as a tailor, he is grouped in ‘over one craft’. If his second master was also a cooper he would have visited one craft. The figure demonstrates that wages of apprentices increased annually, and that there was never a flat wage rate. The increase in wages both in Leiden and Utrecht temporarily stagnated when changing crafts, further suggesting that wages were based on skill level. For instance, when the Leiden orphan Huybert de Jong switched from thread winding to map making in 1764, his wage dropped from 20 to eight stuivers since his obtained skills were of little use to his new master.

77 Older orphans are not considered because these could have been apprenticed before entering the orphanage. Literature suggests that a starting age of around fifteen was common for apprentices (Meerkerk & Schmidt, 2008; Meerkerk, 2008).
Switching masters within the same craft at worst resulted in a stagnant wage for one year alone, but just as often implied a wage increase. The wage structure of the Leiden and Utrecht apprentices therefore strongly supports an apprenticeship model where working and training occurred in tandem.

If working and training indeed occurred simultaneously, masters and apprentices lost relatively little when changing masters or terminating an apprenticeship. As long as there was no investment to be recouped at the end, masters could at any point terminate the apprenticeship. Conversely, apprentices could leave if training was underprovided or if the master or craft did not suit them. When completion at a specific master was no issue, we would expect high apprentice mobility, without either party protesting. Table 1 gives apprenticeship characteristics of completed apprenticeship routes for both orphanages, grouped by craft.78

Table 1: Characteristics of completed apprenticeships

<table>
<thead>
<tr>
<th>A. Leiden</th>
<th>Total time in craft sector, years</th>
<th>Number of masters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Craft sector</td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Cabinetmakers and Related Woodworkers</td>
<td>22</td>
<td>7.18</td>
</tr>
<tr>
<td>Bricklayers, Carpenters and other Construction Workers</td>
<td>4</td>
<td>8.25</td>
</tr>
<tr>
<td>Glass Formers, Potters and Related Workers</td>
<td>5</td>
<td>7.80</td>
</tr>
<tr>
<td>Spinners, Weavers, Knitters, Dyers and Related</td>
<td>25</td>
<td>7.64</td>
</tr>
<tr>
<td>Tanners, Fellmongers and Pelt Dressers</td>
<td>8</td>
<td>6.13</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
<td>7.34</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>B. Utrecht</th>
<th>Total time in craft sector, years</th>
<th>Number of masters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Craft sector</td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>Cabinetmakers and Related Woodworkers</td>
<td>4</td>
<td>6.50</td>
</tr>
<tr>
<td>Bricklayers, Carpenters and other Construction Workers</td>
<td>11</td>
<td>6.27</td>
</tr>
<tr>
<td>Glass Formers, Potters and Related Workers</td>
<td>7</td>
<td>4.86</td>
</tr>
<tr>
<td>Tailors, Dressmakers, Sewers, Upholsterers And Related Workers</td>
<td>5</td>
<td>5.40</td>
</tr>
<tr>
<td>Sculptors, Painters, Photographers and Related Creative Artists</td>
<td>3</td>
<td>7.00</td>
</tr>
<tr>
<td>Total</td>
<td>30</td>
<td>5.90</td>
</tr>
</tbody>
</table>

First, the table shows that there were no formalized apprenticeship terms at all. In many craft sectors the term for completed apprenticeships varied substantially, demonstrated by the high standard deviations. Within woodworkers, completed apprenticeships for comparable crafts varied between 2 to 12 years in Leiden, and large variations occurred in Utrecht as well. Second, many orphans visited multiple masters within the same craft to learn skills, some even as many as six. Of all 143 Leiden orphans starting an apprenticeship during 1754-82, 66 per cent visited two masters at least, in Utrecht 50 per cent. This mobility is hard

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78 Crafts are grouped according to the HISCO scale (Leeuwen, Maas, & Miles, 2002). A completed apprenticeship route was indicated in the register.
to explain in a two-stage model, where only the last master would have been able to recoup his training investment.

That this relatively open system fared well for all involved is demonstrated by the absence of masters and regents complaining about early leave or termination. Only once between 1750 and 1795 did the Leiden regents complain about a master dismissing an orphan early.79 This is telling, because in the period 1754-82 alone the Leiden regents negotiated 500 new apprenticeship agreements with approximately 200 different masters, not including annually extended apprenticeships. 17 per cent of these agreed upon apprenticeship years were not completed because an orphan switched master earlier, or was removed from the orphanage due to misbehaviour. Yet there is no evidence of guilds, masters, or regents trying to enforce these apprenticeships. Only two masters added a clause because the orphan had physical disabilities.80 All other masters did not see the need for such clauses but still allowed high mobility, and early leave. That no party ever objected to the large number of orphans leaving or quitting early, together with high variations in apprenticeship terms and masters visited, again supports an apprenticeship system where working and training occurred in tandem, and enforcement was not required.

What did the guilds then do?

The role of craft guilds in the apprenticeship systems on closer scrutiny seems to have been restrictive. Surviving bylaws for Leiden and Utrecht guilds all state that masters were only allowed to train one apprentice at a time, for at least two years. If these laws were upheld this means that the orphanage was severely restrained in apprenticing their orphans. Indeed, within the guild-controlled crafts, hardly any Leiden master apprentices two orphans at the same time. None of the Utrecht masters at any point apprenticed more than one orphan at the same time, suggesting that guild bylaws indeed restricted access to crafts.

Figure 2 further suggests that Leiden guilds restricted access. By far the largest share of Leiden orphans were apprenticed at the textile industry, which was without guild control. Because Leiden orphans could not always be employed outside textiles, many had to start their apprenticeship here. As a result, the Leiden orphans ‘wasted’ on average 2.5 years, or 28 per cent, of their apprenticeship route within textiles before moving on to another craft. Textiles was clearly an exit option for apprenticeships, as around half of all successful apprenticeships started in textiles but ended in another craft. When the Leiden orphanage in 1763 recorded that textiles was no longer able to apprentice new orphans, the regents were simply unable to apprentice these orphans somewhere else, as all other apprenticeships were guild-controlled. Instead of apprenticing around 13 orphans annually, as had been the case earlier, the orphanage only placed six apprentices a year after 1763. In Utrecht guild bylaws were comparable, but here no such exit-option existed. The distribution of orphans over crafts therefore appears to have followed the size of the guilds, as larger guilds had more masters to take up apprentices. The guild of carpenters and construction workers was indeed one of the largest guilds in the city (Slokker 2009).

79 RAL, HGW, inv. 34, fol. 39v.
80 Master chair maker Sanders in 1754, and master tanner Smaze in 1767.
A. Leiden

When the guilds in the Netherlands were abolished the need to apprentice Leiden orphans at textiles disappeared. The distribution of apprenticeships now became much more diverse, as can be seen in figure 3. Instead of only one large sector now there were three, and these were closely followed by other crafts in the number of apprentices employed. Because orphans no longer needed to wait in textiles before another apprenticeship opened up, the average completed Leiden apprenticeship term of 9.15 years between 1754-82 declined to 6.6 years, which is exactly the average term during 1754-82 minus the average term ‘wasted’ at textiles. Moreover, now that all crafts were accessible, only 7.5 per cent of all mobility involved textiles, compared to 44 per cent before. As a result, moving masters now occurred between a much larger number of different sectors. For instance, the 20 orphans quitting their first apprenticeship at a Leiden cabinetmaker during 1829-51 ended up in 12 different craft sectors. Such diversification had been unthinkable during the eighteenth century.

B. Utrecht
Conclusion
The findings of this paper are twofold. First, annually increasing apprenticeship wages together with stagnant or declining wages at switching crafts suggested that skills increased annually and hence that training and working occurred simultaneously. This should have removed the need to enforce contracts. Consequently, the paper found fluid apprenticeship terms and high mobility for both groups of apprentices, without complaints being raised by masters and regents. Second, access to crafts was hampered through guild bylaws limiting the number of apprentices. Many Leiden apprentices were forced to start an apprenticeship in the textile industry, which was free of guild control. Access to Leiden apprenticeships only greatly increased after the guilds were abolished. At the same time, completed apprenticeship terms in Leiden significantly declined because apprenticeships in textiles were no longer required. Even though apprenticeship mobility had never been a problem for the apprenticeship system, it was only after abolishing the guilds that orphans could really choose a craft of their talent or liking. These results suggest that Dutch craft guilds were not needed for apprenticeship to function but instead acted as rent-seekers.

References


Shipped out? A fresh look at pauper apprenticeship during the industrial revolution

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The phrase ‘child labour’ in the context of the industrial revolution evokes images of ragged Victorian children being forced up chimneys, herded down mines and scurrying between machines in mills. Yet recent historiography has highlighted its prevalence in other sectors such as agriculture, domestic service and traditional occupations. My research shines the spotlight in a different direction, onto some commercial ports; Liverpool, Bristol and Southampton. There is scant research about child employment in ports during this era, and a perception that Poor Law officials in urban centres sent most children away to new industries. My research explores this myth and reveals two striking results about pauper apprenticeship. First, the majority of maritime parish children (64 per cent) were present in the nooks and crannies of the port economy, being placed locally in traditional occupations; continued dominance of such trades is significant. Second, of the children ‘shipped out’, 6 per cent were sent to sea, and 28 per cent to mills; for both groups, the survival of batch apprenticeship well into the New Poor Law period is startling.

Batch apprenticeship is the focus of this paper, its purpose to continue and develop arguments pioneered in Honeyman’s recent monograph. It heralds a major revision of conventional views. Were children adequately protected and regulations observed? When did the pauper apprenticeship system fade away? New evidence about settlement concerns is also offered, further proof of the blurred boundaries between the Old and New Poor Laws. I present evidence from 1,700 apprenticeship indentures and register entries for children up to age 14, collected from parish / Poor Law Union and charities across all three ports from 1750-1870, and draw on previously unexamined Poor Law correspondence passing between the Poor Law Unions of these maritime towns and the Poor Law Board. This material provides fresh insight into a familiar topic, a superb lens on the everyday operation of the Poor Law.

Honeyman and Humphries have asserted that pauper apprenticeship continued much later than other historians have contended; customary thinking locates decline in the 1820s. This data sample gives real weight to Honeyman’s argument, illustrating that far from dying out, batch apprenticeship under the New Poor Law thrived. Analysis of the Poor Law correspondence nuances Honeyman’s claims that officials acted with a degree of diligence, offering examples of the attitudes of those in charge. Whether placed locally or further afield, and whatever the occupation, pauper apprentices were vulnerable. Honeyman found considerable evidence that most parishes upheld their responsibilities towards apprentices as diligently as possible, challenging the conventional view of children being farmed out with scant regard for their welfare. Poor Law correspondence for all ports contains inspection reports commissioned prior to a placement, or post placement to check welfare before apprenticing further children. Initially these promised to support Honeyman’s diligence theory.

During the 1860s numerous inspection reports were prepared by Liverpool Select Vestry (the ‘Vestry’) for the Poor Law Board (the ‘Board’). They contain descriptions of work, accommodation arrangements, supervisor details, education provisions, and girls previously sent from the Liverpool Workhouse were interviewed. For example, Hargreaves’ factory in Burnley was visited twice (1860-1): “The children from the Schools now in the

82 TNA MH12 series.
employ of the applicant are comfortable and doing well ... the children are all in good health having been at work at the Factory for upwards of 11 months”.83 Such reports were commissioned as a result of a request for further children from the employers, and at the behest of the Board, before they would grant approval. Would the Vestry have been so diligent otherwise?

Similar reports appear in correspondence between the Board and Bristol Incorporation. No indentures to factories appear in the extant Bristol parish records, but placements under the New Poor Law did occur as they are documented in this correspondence. One of the first parishes to send batches to factories, it then actively pursued a policy of local placements, Guardian James Johnson pronouncing in 1826: “Nothing, in my opinion, could justify this practice, but the impossibility of providing for them elsewhere”.84 Despite this, correspondence shows that as late as 1859 Bristol Guardians were sending children off to mills, and not even under indentures! One report described 13 year old Catherine Murphy’s daily routine at a Worcestershire silk factory: “I do the silk work here – draw it out of the bobbin. We begin at 8 and work till 7 in the evening, and have two hours for meals”.85

This placement caused a stir in the local community; Shipston-on-Stour Union wrote to the Board objecting that the children were not being taken to the Church of England, as was their stated religion in the contract.86 The Board commissioned an inspection that reported favourably; it found the girls to be “clean, cheerful, and almost without exception, robust and healthy” and that although the girls were attending chapel rather than Church, none of them objected, so the Board did not pursue.87 Thus officials did respond to concerns raised and actively investigated. But more often the driver for such inspection reports was to sanction requests for multiple workers; these reports truly demonstrate how strong the drive for batch apprenticeship was.

Honeyman found that batch apprenticeship continued “well into the second half of the nineteenth century, employers continued to beat on parish doors in pursuit of cheap youthful labour”.88 The Vestry certainly opened its doors; between 1845-70, 244 children were sent to silk, worsted, flax mills and cotton mills, and also to related industries such as bobbin manufacturers. Children were predominantly sent in batches, aged 9-14; of 18 different employers in total, half received multiple batches. That the majority were placed in cotton mills is important, as it illustrates that children were not just being placed in depressed textile trades. The sea also provided an opportunity for batch placements; boys were specifically trained at industrial school, employers often taking small numbers and returning later for more. For example, in 1844, Azariah Munden of Newfoundland took three boys, then returned and took two more in 1847.89 In Southampton, although the surviving parish records do not record any children being sent to the mills, local charity the Royal Military Asylum did not miss the opportunity to batch groups off to the northern factory districts; 136 girls in total, 35 under the New Poor Law, all to Derbyshire mills.90

The correspondence illustrates how deeply entrenched this system of batch apprenticeship was, and despite regulations, dispensation was actively sought. The 1816 ‘Act for the better regulating the binding out of parish apprentices’ specified placements within 40 miles of the parish; distances over this required magisterial consent; the New Poor Law lowered it to 30 miles.91 “The restriction as to distance will be attended with great inconvenience, the major part of our apprentices being bound out in manufacturing districts,
none of which are less than 30 miles from Liverpool” wrote the Vestry in 1845 to the Board.\textsuperscript{92}

In January 1860 the Vestry wished to send 20-30 children to Fison & Co woollen manufacturers of Burley, Yorkshire. The Vestry expressly referred to the 30 mile limit being exceeded, but requested “to solicit your sanction to the binding”.\textsuperscript{93} The average age of the children was 12, and the Board requested details of each individual child, in accordance with regulations. Surprisingly, they were told that the potential employer was “naturally unwilling to incur further trouble or expense in the matter, so long as they receive no definite answer as to whether or not their application will be acceded to”.\textsuperscript{94}

The Board, however, cited General Apprenticeship Order 31 December 1844, Article 14, requiring all names to be communicated to them before approval could be given.\textsuperscript{95} They also asked why the children could not be placed locally; whether the proposed apprentices would receive any schooling, and what physical and moral arrangements were in place for the children’s care.\textsuperscript{96} The Vestry’s response really indicates they had little intention of complying with the regulations; they stated “no equally eligible opening for the children in this neighbourhood, is at all likely to present itself ... although there is no difficulty in obtaining situations in Liverpool and the adjoining districts for the Girls under their care, it is a very rare thing for any of the children to be placed in really good situations”. What is particularly interesting is their proactive approach: “The interference of idle or profligate relatives or acquaintances is frequently the cause of children being dismissed from their situations and thus ample proof that those girls succeed the best who are placed in service at a distance from Liverpool”.\textsuperscript{97} This accords with the New Poor Law principle of tackling the contagion of indigence and pauperism. Some two months later, the Board finally approved the arrangement, yet the placement was not only against the regulations, it denied all requests, suggesting that the Board’s overriding authority was hollow.

The case was not unique; in fact, the Vestry requested numerous sanctions for batch placements during 1860. Reports were duly gathered, with favourable outcomes, and once again this lead to dispensation. What is especially revealing is that when the Board was sent the final list of those indentured, it wrote to Vestry raising concern that it “would appear that a considerably larger number of children have been apprenticed to the manufacturers referred to, than was originally proposed”. Originally the Vestry advised that six boys would be sent to Hargreaves in Burnley, yet seven boys and seven girls were sent, aged 11-14; and in the case of Hopwood in Burnley, instead of six boys and six girls, a staggering 27 girls and 24 boys.\textsuperscript{98} It was not only larger numbers of children that were apprenticed; the ages of the children were also “less than appears desirable” given some were just 11, having previously been advised they would be a minimum of 13 years old.\textsuperscript{99} Even after such an apparent breach there was no sanction, suggesting that the local Poor Law authority on the ground had all the power.

This pattern regularly repeats itself throughout the 1860s; the Board being led the same merry dance every time; blanket requests were made; the Board asked for names, full details, and commissioned reports into current conditions; they then sanctioned, but were only supplied the names and actual numbers after the agreement. Ultimately the Vestry was in charge of its own matters and did as they saw fit. One can only speculate why this was allowed time and time again. Perhaps the Board were willing to dispense with regulations due to specific pressures Liverpool faced in the 1860s, given the city suffered a number of

\textsuperscript{92} TNA MH12/5967 Liverpool 220 Folios 223-224 27 June 1845.
\textsuperscript{93} TNA MH12/5973 Liverpool 220 Folio 79-80 31 Jan. 1860.
\textsuperscript{94} Ibid., Folio 87 4 Feb. 1860.
\textsuperscript{95} Ibid., Folio 91-92 18 Feb. 1860.
\textsuperscript{96} Ibid., Folio 79-80 31 Jan. 1860.
\textsuperscript{97} Ibid., Folio 117-9 22 Feb. 1860.
\textsuperscript{98} TNA MH12/5974 Liverpool 220 Folios 3-8 31 Dec. 1860.
\textsuperscript{99} Ibid., Folio 10 23 Jan. 1861.
cholera epidemics. Resources and relief were probably stretched to the absolute limit. But if that was the case, why did similar cases occur in Bristol?

As discussed earlier, Bristol Incorporation sent children to the mills without even the protection of an indenture. In March 1859, the Incorporation wrote to the Board regarding a draft contract for hire of 12 girls to a Worcestershire silk mill. All the girls were orphans, to be contracted for five years hire service; the reason cited for not apprenticing was the probable objection by local magistrates to the apprenticeship contracts on the grounds of settlement. In October 1859, the same process was repeated; 20-30 boys were proposed for hire to a worsted spinner in Luddenden Foot. The Bristol Guardians obviously felt they had precedent to enter into hire contracts; at least in this second instance there was some provision for payment, starting at a penny a week rising to sixpence by the end of the five year term. It is interesting to note that even at this late date, magistrates were still viewed as an obstacle; it was, after all, Manchester magistrates in 1784 that sowed the seeds of regulation by prohibiting more than 10 hours work a day by a pauper apprentice in their locality. Over 70 years later, employers and Poor Law officials were still trying to get round them. There is no formal response by the Board in the documents, but a handwritten note on the back of the letter records “the Board recommend the Guardians to modify the form of contract so as to make it as nearly as may be conformant with the conditions of apprenticeship indentures”. Once again, the Board did not enforce regulations.

The correspondence illustrates the Board in reality had no power to force Guardians to adhere to regulations. Whilst in isolation actions such as ordering inspection reports seems caring and diligent, read in the context of the whole chain of correspondence, and particularly since occurring in more than one place, the reports appear a formulaic formality designed to get children off their books. Far from dying out, batch apprenticeship thrived under the New Poor Law.

Sending children into other parishes was considered advantageous, as settlement was conferred upon completion of the term of apprenticeship. Theoretically an apprentice could also claim poor relief from the new parish after 40 days of work. The 1832 Royal Commission noted some parishes were deliberately attracting Masters outside the parish in order to transfer the settlement burden. Although the Commission proposed abolition of the completion of apprenticeship as a head of settlement, this was not enacted in the Poor Law Amendment Act 1834, so consternation continued. From a practical point of view, it was very unlikely children sent some distance could make it back to their home parish to claim relief. Rose has argued that settlement laws were more of a deterrent than a functioning part of the Poor Law by this time. But Bristol and Liverpool’s Poor Law correspondence reveal strong objections to batch apprenticeships based on settlement concerns, principally the prospect at the end of the term if no employment was secured, but also during the indenture if the apprenticeship was not completed. There are abundant examples of Yorkshire and Lancashire Unions protesting; for example, in 1860, Yorkshire’s Burley Guardians stated “the neighbourhood of Burley is agricultural, excepting the mills of Messrs Fison & Co, and when the proposed apprentices have served their time, they will then have gained a settlement in Burley which brings a heavy burden upon the land”. There were not always objections; for example, in 1861, Lancashire’s Burnley Union just requested names, ages, and medical

100 TNA MH12/3865 Bristol 139 27 Oct. 1859.
101 Ibid., 11 Nov. 1859.
105 TNA MH12/5973 Liverpool 220 Folio 130 6 March 1860.
certificates before consenting.\textsuperscript{106} But overall, objections were the norm, confirming that unease about settlement persisted late into the century. Certainly settlement concerns were at the heart of the objections to the Bristol cases of 1859; protests about conditions were simply a smokescreen. On both occasions Bristol Incorporation sent the children under a service contract as a deliberate device to negate the need for magisterial consent.

This paper has demonstrated that port parishes utilized opportunities for batch apprenticeship late into the nineteenth century, challenging the view that it diminished prior to the New Poor Law. The Poor Law correspondence provides new insight, illustrating the continued tension between central authority and local autonomy.

\textsuperscript{106} TNA MH12/5974 Liverpool 220 Folios 139-142 8 May 1861.
Youth voluntary organizations in London and Liverpool, 1958-85

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Historiography on the voluntary sector has enjoyed a recent resurgence, thanks to work such as Hilton et al. The Politics of Expertise which has examined the professionalization of Non-Governmental Organizations in Britain in the twentieth century. However much work remains to be done to understand the mixed economy of welfare, especially as it has pertained to youth since 1945. Work such as Melanie Tebbutts’ Being Boys looks at interwar youth clubs, Marcus Collins has examined youth clubs as sites for romance in the postwar period and Sarah Mills has looked at the scouting movement, but a fuller understanding of the roles of youth clubs and their associations is yet to emerge.

This paper looks at youth clubs, using archival research to uncover two in-depth case studies. It seeks to examine the uneven and localized development of voluntary youth club associations in London and Liverpool, looking at the Liverpool Boys’ Association (LBA), the Liverpool Union of Girls’ and Mixed Clubs (LUGC&MC, later LUYC), the Merseyside Youth Association (MYA), the London Federation of Boys’ Clubs (London Fed) and the London Union of Mixed Clubs and Girls’ Clubs (London Union). By looking at name changes, mergers, fluctuating affiliation numbers and internal reorganizations I will examine how local associations for youth clubs negotiated competing priorities and agendas for youth work. The paper concludes that at local level, central government priorities often held surprisingly little sway. Instead financial pressures, local pressures and associational identity influenced the development of these associations in different directions.

In 1960 the Albemarle Report on the Youth Service was published and promised a new lease of life for youth associations where government support, training and staffing would increase. While some of this was realized in the early 1960s, many of the same issues continued to be identified with voluntary youth work by official reports in the 1980s. In 1965 the National Association of Youth Clubs (NAYC) published The Unattached by Mary Morse. This documented the result of an experiment in working with young people outside of the traditional youth club setting and inspired similar projects including one in Liverpool. In 1970 a new central government report looked at creating a Youth Service which was more integrated with community development services. While it prompted much debate its effect seems to have been limited in Liverpool and London. Finally, in 1982 the Thompson Report renewed previous criticism of staffing, training and management within the
Youth Service and sought greater involvement of young people in the organizations which were run for their benefit.114

Within local youth associations these reports proved to be talking points, and sometimes influenced the direction of development, but their overall impact appears to have been limited. For example, in Liverpool, while reams of paperwork were generated in response to *Youth and Community Work in the 70s*, the local recommendations were not implemented until after local government reorganization five years later and after subsequent reports pushing for changes.115 However, significant alterations were occurring within the Liverpool and London associations throughout this time which reveal more about the influences on them than an exploration of the national agenda can provide.

In both London and Liverpool the Unions of Girls’ and Mixed Clubs changed their name between 1960 and 1961.116 In both cases their current names reflected their role as ‘other’ to their local boys’ association. Both adopted ‘Union of Youth Clubs’. This reflected the national association also adopting ‘Youth Clubs’ in its title in 1961. In Liverpool the LBA objected to this change quite strongly as they felt the move excluded boys’ clubs while appearing to be a catch-all name.117 The name changes in London and Liverpool show that the LUYC and the London Union saw themselves as the main umbrella bodies for youth clubs in their areas. The changes simplified and clarified, in the opinion of the Unions, who they were, as well as who they were for.118

From this point Liverpool and London youth associations diverged. In the case of Liverpool there had long been pressure from the local authority and Liverpool Personal Service Society for the LBA and LUYC to form a single organization, though talks on the matter waited until 1964.119 The merger aimed to bring together staff in shared headquarters, achieve efficiency and ‘administrative rationalization’ while promising that member clubs would see improvements in services provided to them, importantly, without being asked to change their activities or identities.120 This was a particular concern of the NABC who threatened to expel the LBA if the merger went through.121 They felt that the merger threatened the national movement and was only happening because of local authority pressure. They saw the LBA as picking local ties over the roots of, what they described as, the boys movement and wanted stronger inter-NABC ties rather than local links. Although the LBA still saw boys work as unique, they wished to undertake this work from within a strong local partnership rather than separately.122 The merger went ahead in 1969 with the strong support of all local clubs.123

In London, the London Fed and London Union remained separate during this time. A look at their affiliation figures helps to demonstrate how their approaches differed from the

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114 *Experience and Participation*, 1982.
115 Community Youth Service Development Papers, M367 MYA/M/7/2, also Response to Youth and Community Service in the 70s, LRO, M367 MYA/M/6/1/7 and MYA Annual Reports, LRO, M367 MYA/M/4/5-22.
117 LBA/LUYC Correspondence 1959, LRO, M367 MYA/M/1/3 and LUYC Executive Committee Minutes 8 June 1961, LRO, M367 MYA/G/1/1/5.
119 Early merger documents dated 1964, LRO, M367 MYA/M/1/5, LUYC Annual Report 1967-8 notes that merger discussions were chaired by the Liverpool Council of Social Service and supported strongly by the LEA, LRO, M367 MYA/G/3/48.
121 Correspondence between the NABC and LBA August 1968, LRO, M367 MYA/M/1/9.
122 Ibid.
one taken in Liverpool. While the figures are incomplete it is possible to see that between 1958 and 1985 the number of boys’ clubs affiliated to the London Fed remained relatively consistent, staying between 150 and 200 clubs during most of the period. The London Union, however, experienced significant expansion between 1966 and 1974, and maintained levels of over 500 member organizations per annum from 1974 onwards.

Figure 1: Number of organizations affiliated to youth voluntary associations based on the Annual Reports of the London Fed and London Union

The London Fed’s Annual Reports reveal that their commitment to boys’ work and to the belief in the need for all male clubs and activities endured. For example, a cartoon in their 1980 Report is captioned ‘what boys need is a good clubbing’. They specialized in stereotypically male activities such as boxing and outdoor activities, including the Duke of Edinburgh’s Awards Scheme. Through an evolving activities programme and with generous benefactors, the London Fed was able to continue providing the more specific services which they felt boys needed.

The London Union took a different approach. They restructured internally to focus on area field teams and project work, under a small management council headed by a Chief Executive. This allowed them to maintain higher levels of contact with member clubs and provide more streamlined services. The new-look London Union also reached out beyond the traditional youth club membership to include more single-interest hobby and sports groups for young people, clubs for the disabled and Physically Handicapped and Able Bodied (PHAB) groups. The London Union broadened its scope and transformed itself into an organization which could more effectively service a large number of affiliated organizations within defined areas and roles, aiming in 1960 to be ‘more professional than we have ever been’.

124 Annual Reports, LMA, LMA/4283/A/2/5-8, LMA/4232/D/01/001/10-12, LMA/4232/D/01/002/01-03, LMA/4232/D/01/003, LMA/4232/D/01/004/01-10, LMA/4232/D/01/005/1-4.
126 LFBC Annual Reports 1958-1985, LMA, LMA 4283/A/2/1-8. The Duke of Edinburgh was their Patron.
127 The Annual Reports reveal that the Federation enjoyed wealthy and influential patronage not only from their official patron, The Duke of Edinburgh, but also from their six knighted Vice-Presidents, the Variety Club of Great Britain and individuals such as Bernard Sunley who sponsored a new activity centre, LMA, LMA/4283/A/2/8.
128 The London Union had a part-time executive chair and internal restructure in 1971 and a full time Chief Executive and further restructure in 1981-2 according to Annual Reports, LMA 4232/D/01/004/01-10.
129 Ibid.
In Liverpool figures for the numbers of member clubs are patchy and due to differences in the way they were collected over time it is only possible to draw the broadest of conclusions from them. What the figures below do show, however, is that Davies’ contention about a post-Albemarle 1960s heyday for the youth service is not supported by affiliation figures at the local level in Liverpool, nor indeed in London. In both cases the number of affiliated clubs showed resilience throughout this time, until 1979 in the case of Liverpool and beyond this point in London. Affiliation numbers do not point to an overall decline in the youth service after the 1960s. The figures are more in line with trends identified by Hilton et al., marking the 1980s onwards as a period of decline in youth organizations.

Figure 2: Number of organizations affiliated to youth voluntary associations in Liverpool based on data given in Annual Reports of LBA, LUYC and MYA

While developments in membership in the 1970s indicate resilience, looking at the internal structure of these associations can provide evidence about how such trajectories were built and maintained. Voluntary youth associations such as the LBA, LUYC, MYA, London Fed and London Union had full time paid staff by 1958, but voluntary committees such as Executive, Finance and General Purposes committees were still responsible for deciding policy, directing development, bringing in and allocating resources. In addition to the committees that managed the day-to-day affairs of the association, sub-committees were often formed at different points to manage work that was taking on increasing significance. For example, after the Albemarle Report development committees examined policy and set priorities accordingly.

As previously indicated, in London internal reorganization in the 1970s and 1980s sought to make the London Union leaner while broadening its appeal. The London Union, in contrast to the London Fed at this time, opted for smaller, more efficient machinery providing a range of services to a wider client group. The London Fed, in contrast, was happy to remain relatively small, to expand on a club by club basis and to use their traditional networks to

133 Annual Reports, LRO, M367 MYA/B/6/1-6/12, M367 MYA G/3/4-49, M367 MYA/M/4/5-22, M367 MYA/M/4/3-4, M367 MYA/M/4/1-2.
134 LUYC, Albemarle Development Papers, LRO, M367 MYA/G/6/8-8a, London Fed launched a 20 Clubs Project to build 20 new clubs post Albemarle, followed by a commitment to refurbish a further 30, LMA, LMA/4283/A/2/6.
ensure that adequate resources were available. In Liverpool the General Secretaries of the LBA, LUYC and MYA were responsible for the day-to-day running of the associations. In 1979, the last General Secretary retired and the MYA decided to appoint a Chief Executive to manage the MYA. While voluntary organizations such as the MYA and London Fed often sought to make the best use of resources, efficiency and professionalization took on much greater significance in the London Union, earlier, from 1971 onwards, fitting current perceptions of the professionalization agenda laid out by Harold Perkin, and similarly with specific regard to voluntary organizations by Hilton et al.

When looking at name changes, mergers, affiliation figures, and internal organization, there were distinct differences of approach and results in Liverpool and London. In Liverpool the LBA and LUYC merged to create a single strong local organization, providing a consistent Liverpool wide service. They prioritized local ties, especially with the local authority. While the merger was one attempt to streamline and professionalize, further attempts came later in the 1970s with the appointment of the Chief Executive. In London, the London Fed remained relatively small, catering particularly for boys’ needs and happy to continue to do so as a well-resourced, more specialized organization. In contrast, the London Union looked towards attracting and servicing greater numbers of organizations using a professional and streamlined service from the early 1970s.

What is missing in all above cases is a decision to put national policy agendas for youth work particularly high on the priorities list. While national agendas and policy documents often sparked a sub-committee, reports or experimental work, only in the case of Albemarle was a common perception of national momentum taken as a blueprint for what was to come. Yet, affiliation figures indicate that the promise of Albemarle was not entirely fulfilled in the early 1960s. It is not fair to say that central government interventions were ignored, but they were sometimes placed on a back-burner while local issues were shaken out, as was the case in Liverpool following Youth and Community Service in the 70s and the local government reorganization which followed shortly after. The decisions of the local associations indicate that it was their specific requirements, or perception of local needs that was more present and pressing.

Further research is required from historians before we can fully understand the full range of factors in developing a local mixed economy of youth welfare. What is clear from the fortunes of the associations examined here, however, is that youth voluntary associations at local level had a complex engagement with national policy makers, national organizations, local issues and pressures, and their own identities. This produced many possible paths for them to take at different times. Often national policy or economic issues were pushed into the background as their local ramifications were considered, or possibly weathered. Looking at these different paths offers deeper understandings of the broad, national accounts of professionalization and the rise and fall of the youth service between 1958 and 1985.

References


Laissez-faire, the Irish Famine and British financial crisis
c.1846-50

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Introduction
The dominance of ‘laissez-faire’ ideas over British policy during the Irish Famine is a persistent theme of narratives describing the government’s response to the crisis. In particular, the Whig government of Lord John Russell, which came to power in 1846, has been criticized for its ‘ideological’ zeal for laissez-faire ideas. The prevalent interpretation, advocated by scholars, including Cormac Ó Gráda and Peter Gray, is that the Whigs, influenced by these ideas, abandoned Robert Peel’s interventionist relief policies in order to leave market forces unrestrained. They argue that this explains the sudden drop in funding for relief in Ireland, which caused the number of fatalities to surge after 1846.

However, such analysis does not go beyond a correlation of ‘laissez-faire’ ideas in British public discourse with Irish relief policy. But as Feinstein and Thomas remind economic historians, ‘correlation is not causation’. Using evidence collected from 42 archives and 50 newspapers, this project analyses the political papers of policymakers and contemporary financial information, in order to understand what directly caused the government to cut back relief efforts after 1846.

The summary of findings presented here concludes that financial problems were far more important than the literature has hitherto assumed. Firstly, this paper argues that laissez-faire ideas had only a limited impact on this decision. Secondly, it explains how Peel and Charles Wood, the Whig Chancellor of the Exchequer, implemented economic policies which trapped Britain in an macroeconomic policy trilemma during this period. And thirdly, this paper explains how financial crisis in Britain in 1847 – and Peel and Wood’s reluctance to sacrifice their goals of maintaining fixed exchange rates and the free movement of trade and capital – directly caused the British government to end its relief efforts in Ireland.

I.
The existing literature argues that three groups influenced policy in a laissez-faire direction: the press, academic economists, and senior civil servants. However, on closer inspection, their influence appears to have been overstated.

Firstly, the press did not unanimously support laissez-faire. British newspapers of record, such as the Times, mostly opposed laissez-faire approaches to relief policy, arguing that the government should ‘administer all the natural and commercial relief in our power’ in combating the famine, by ‘giving the poor a charitable benefaction in corn or money’.

Ó Gráda has emphasized the impact of the free-trade views of The Economist on British policy. It did oppose intervention in Irish markets during the famine, arguing that ‘charity is the national error of Englishmen’ and declaring itself ‘against all interference with the supply of food for the people’. However, the Whig government explicitly rejected the Economist’s editor’s advice every time he offered it. When James Wilson sent advice about relief policy to his closest friend in the government, the Lord-Lieutenant of Ireland, he was sharply rebutted:

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141 The Times, 22 November 1845.
142 The Economist, 29 November 1845; 21 March 1846.
“... you in fact say do nothing ... you lay down abstract principles and desire that men should be left to act upon them ... but we cannot leave them entirely to their own devices at a moment when they are unusually incapacitated”.

Approaches to the Chancellor of the Exchequer were similarly unsuccessful. ‘Pray tear up Mr. Wilson’s note’, Trevelyan advised Wood when he forwarded it to him. The Economist was regarded by contemporaries as a radical newspaper, an unappealing source of advice for a government mainly drawn from the more moderate and reformist elements of the Whig party.

Nor is there much evidence that academic economists directly influenced government policy towards laissez-faire. For instance, Nassau Senior, often suggested to be an influential figure, was rarely in contact with the government during the famine period: no correspondence survives between him and Wood, and very little between him and Peel, Clarendon and Bessborough. Similarly, although civil servants such as Charles Trevelyan served as what Enda Delany has called ‘the chief operations officer’ of famine relief, but in depth study of his papers suggests that there is little evidence he had much influence over the government’s overall fiscal or monetary policies.

II.
To understand why relief policy changed during this period, it is necessary to study the government’s economic priorities and policies. The provision of relief in Ireland was an economic matter as finance needed to be found to fund it. The correspondence of senior policymakers shows that it was the Chancellor of the Exchequer, Wood, with Peel’s advice, who was in charge of economic policy during this period, and ultimately controlled the financing of Irish relief. This was because Russell as Prime Minister lacked the necessary economic understanding and his government, a minority administration, relied on Peel’s grouping of MPs in Parliament to stay in power.

Peel’s and Wood’s economic policy objectives were remarkably similar. They agreed on the need to stabilize and reduce food prices. Both had worked together to implement the major economic policy changes of the early-1840s. For instance, they cooperated in getting the Bank Charter Act of 1844 and Corn Law repeal through Parliament. Their relationship was so close that by the financial crises of 1847, Wood consulted Peel on virtually every major economic policy decision he made.

But unknowingly, their policies blundered into what is now called the macroeconomic policy trilemma by prioritizing fixed exchange rates and free capital flows above an independent monetary and fiscal policy, a pre-requisite for an interventionist famine relief policy (see figure 1). The 1844 Bank Charter Act and Irish Banking Act of 1845 produced a fixed exchange rate under the gold standard with a fixed money supply in the form of banknotes. This was intended by Peel and Wood to stabilize and reduce prices. They credited low tariff policies (including repeal of the Corn Laws) with a similar effect, but the free movement of capital increased, as money had to follow freely-traded goods.

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However, this meant that during the British financial crisis of 1847, the British government was prevented from following an independent monetary and fiscal policy, which was necessary to finance relief efforts, as evidenced by the Bank of England’s failure to lower interest rates and the financial panic caused when the government tried to raise finance to pay for relief from the markets.

III.

In fact, the British government was forced, in 1847, to give up Peel’s more generous relief policies because of this financial crisis, which threatened the government’s macroeconomic policy agenda. Haines has described how historians have dismissed budget and financial problems as an influence on the Russell government’s famine policy on the basis that the expenditure was a small proportion of Britain’s GDP or military spending. Ó Gráda and other economists have ruled out the possibility of a financial crisis during the famine without investigating macroeconomic events fully.

However, these interpretations ignore an obvious point: under the gold standard, discretionary deficit financing can quickly lead to panic and crisis in financial markets. For instance, servicing Britain’s national debt took up 56.25% of government expenditure in the 1845-46 financial year. This was with interest rates at around 2-3%. If anything destabilized the money markets and made government bond yields rose, the long-term effect would be to drive the government into bankruptcy due to a debt-servicing spiral. The psychological impacts of fiscal deficits under the gold standard are therefore important: debt-service spirals escalate as investors panic and lose confidence in British securities, leading to gold outflows.

Initially, rather than cut Irish relief, the Russell government wanted to set it on a firmer legislative footing, and made plans to issue two loans of £8m and £6m in 1847 to finance the next stage of relief efforts. On 1 March 1847, a bill authorizing the first loan was read in Parliament. The announcement of the legislation immediately triggered a panic in the London financial markets. Government bond yields spiked 20 basis points (see figure 2) and there was a run on sterling banknotes at the Bank of England, draining liquidity out of the money markets and threatening the Bank of England’s ability to honour the gold standard. Over £5m in gold leaked from the Bank of England in just a month, as investors rushed to redeem their bank notes. As Wilson noted in The Economist, this was due to the fear in the London money markets that the Irish loan would make their bank notes unconvertible. By the start of April the size of the loan was roughly equal to the gold reserves of the Bank of England, and it was feared that the government would spend all the £8m on foreign corn in

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145 HCPP 1851 (62) *Public Income and Expenditure*. 
bullion within a matter of months, leaving the Bank of England no gold in reserve to redeem banknotes in gold.

**Figure 2: Yield of 3% consols from 26/12/1846 to 25/12/1847**

In order to restore confidence, the government was forced into a sudden change in its plans for Irish relief. Originally, the loan bill stated that only half of the expense was to be recouped from Irish property via the Poor Law. But on 16 April 1847 the government announced it was going to place the entire loan on the security of Irish Poor Law rate payers, and that it would issue loans to local Unions at a much slower pace. The resulting Irish Poor Law Extension Act of June 1847 placed all the responsibility for repayment of the £8m on Irish taxpayers, or in words of Richard Bellew, an Irish Catholic Lord of the Treasury, ‘making the property of Ireland responsible for the poverty of Ireland’, to remove the costs of Irish relief from the Treasury’s balance sheet and calm London’s financial markets.\(^{147}\)

From contemporary financial data, it seems that the announcement and alteration of the Irish loan were responsible for the crisis starting and then abating. Figure 3 shows that the announcement of the Irish loan, followed a week later by the first reading of the Bill, corresponds with a worsening of the bullion crisis, depicted by a low bullion-to-deposits ratio, and the third reading corresponds with a complete reversal of this trend to the exact week of its announcement in the papers. Corn prices remained stable during this period, indicating that the import of corn at higher prices was not the immediate cause of the crisis.

Other contemporary financial commentators and newspapers also agree that the Irish Loan contributed to the bullion drain. Most notably, John Horsley Palmer, a former Bank of England governor, wrote to the *Times* pointing out that the recovery from the April Bullion crisis coincided exactly with the final reading of the bill.\(^{148}\) The drain caused considerable future reticence in financing Irish relief, in fear it would damage the financial health of the entire British Empire. Alexander Baring, father of Francis Baring, a former Whig Chancellor of the Exchequer, and a close relative and friend respectively of Wood and Peel, in the immediate aftermath of the crisis blamed the ‘Irish Famine’ for damaging Britain’s public finances and shaking confidence in the Bank of England.\(^{149}\) Edward Twisleton, a civil servant assisting with the relief efforts, said he had ‘to prevent the Irish Unions from making demands upon the national funds at a time when such demands, if carried to any great extent might be seriously injurious to the Empire’.\(^{150}\)

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\(^{147}\) *Hansard*, 25 January 1847, vol.89 c.498.

\(^{148}\) *Times*, 29 April 1847; *Spectator*, 1 May 1847.


\(^{150}\) Twisleton to Trevelyan, 3 February 1848, Russell Papers, PRO30/22/7A f.271-3.
Figure 3: *London wheat Price (s/bushel) and reserve:total deposit ratio 3/10/1846 to 25/9/1847*\(^{151}\)

The vertical lines show 1/3/1847 to 16/4/1847 which are the first and third readings of the Poor Relief (Ireland) Bill 1847. The first data indicating recovery is on 17/4/1847.

Figure 4: *Bank of England minimum lending rate, January-November 1847*\(^{152}\)

Wood realized the announcement of the loan in Parliament was causing problems in the financial markets. He wrote to Russell on 11th April 1847 saying that the financial situation now made the second loan of £6m impossible to raise.

It is evident that bad money times are coming upon us and a second loan to be spent upon Irish paupers will not be so easily raised ... we shall not meet with unanimous support in borrowing another 5 or 6 millions even with an Irish income tax.\(^{153}\)

The full extent of the financial crisis was brought to Wood’s attention a few days later when he received a letter from Baring explaining that the sudden outflow of bullion was caused by panic over the loan which would therefore be more expensive.\(^{154}\) Some confidence returned but investors remained shaken and consol yields did not return to their pre-crisis levels. The British economy also deteriorated as the railway bubble burst, causing tax revenues to fall even further. On 1 September 1847, Wood wrote to Russell warning of dire financial circumstances:

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\(^{151}\) *Freeman’s Journal*; doubled checked in Bank of England archives.

\(^{152}\) HCPP (1847-48) *First and Second Reports of the Secret Committee on Commercial Distress*.

\(^{153}\) Wood to Russell, 11 April 1847, Russell Papers, PRO30/22/6C f.65-70.

\(^{154}\) Wood to Russell, 14 April 1847, Russell Papers PRO30/22/6C f.80-6.
My present impression therefore is that far from devising further and other modes of spending money in Ireland, I shall be glad of every shilling which can be saved in our present expenditure there ...  

Unable to borrow from the markets and failing to get Parliament to raise income tax three times in 1848, the government made the decision to reduce expenditure on Irish relief programmes and end its financial support for them by April 1848. The belief was that the financial panic of April 1847 meant that relief needed to be terminated as soon as possible to maintain a balanced budget and the gold standard. The second financial crisis in October 1847 entrenched this policy. Falling corn prices caused a severe banking crisis and the Bank of England itself almost became insolvent. This crisis threatened its ability to honour the Bank Charter Act and maintain the gold standard. The crisis only abated when the government raised interest rates to 8% (compared with 3.5% in January 1847) and announced that it planned to balance its budget. Unable to borrow more as consuls yields spiked, and needing to cut expenditure, the government, in effect, sacrificed Irish relief in order to maintain the gold standard and the Bank Charter Act.

Figure 5: Expenditure in Ireland 1845-50 by government (£)

This set of events – and policies – had two main effects. Firstly, in order to balance the budget and appease the London financial markets, central government expenditure on relief almost entirely ceased after April 1848 (see figure 5). According to contemporary sources, this was a major factor that caused famine-related excess mortality to peak in the winter of 1848-49 and remaining high until about 1850. Secondly, the fiscal impact of a balanced budget and of raising interest rates to 8% in a highly-leveraged country proved economically ruinous; the money supply in Ireland in 1847 fell by over 40%, indicative of shrinking economic activity. In short, it is clear that the cost of maintaining the macroeconomic policies of the early 1840s in Ireland during the famine was Irish lives.

Conclusion

From extensive archival research, it is clear that practical concerns resulting from the fiscal crisis caused relief policies to change in 1847, not the influence of abstract laissez-faire ideas. The financial crisis and policy changes of 1847 were the result of a classic ‘trilemma’ situation. The government lost control of monetary and fiscal policy when it prioritized arbitrary external targets (gold standard, fixed money supply, free trade) and the consequent gold outflows, reinforced by panic over the loan, ultimately made reliance on a policy of inaction a necessity. Peel’s and Wood’s economic policies bear responsibility for avoidable deaths during the famine, not laissez-faire ideas.

155 Wood to Russell, 1 Sept 1847, Russell Papers, PRO30/22/6F f.5-14.
156 Wood to Russell, 25 August 1847, Russell Papers, PRO30/22/6E f.211-214.
157 Extensive research in the Treasury Papers at The National Archives, Kew.
Gone with the wind? Migrants’ self-selection in the early stages of economic growth: Spain, 1880-1930

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Most of the academic attention on historical migration has been devoted to the forces driving this process and its subsequent consequences both in sending and receiving regions. Recent research, however, has started to closely examine the characteristics of migrants and address the potential self-selection within sending societies. This research usually finds that international migrants were typically positively self-selected (Hatton 2010). On average, those who did move abroad were healthier, carried more human capital and were possibly more enterprising than those who stayed behind. Although much less investigated, similar patterns are found when analysing internal migratory patterns (Long 2005; Humphries and Leunig 2009). The lack of historical research on less developed countries prevents reaching sounder conclusions. The purpose of this paper is to contribute to the existing literature by looking at the human capital of internal migrants in late nineteenth and early twentieth-century Spain.

Methodology and sources
This paper draws on a large sample of individuals taken from the Padrón municipal de habitantes which provides individual-level information of the inhabitants of Madrid. These records comprise 93,455, 86,579 and 69,248 observations in 1880, 1905 and 1930, respectively. According to these records, only around one third of those living in Madrid were actually born in that city, thus making this source of information an invaluable tool to study migration patterns. Importantly for this paper, the Padrón includes information on the birthplace and the ability to read and write for each observation, thus allowing for computing the literacy levels of those individuals living in Madrid classified by their province of origin.

These average literacy rates and its evolution over time is illustrated in map 1. As the growing literacy rates testify, the period under study coincides with the transition from restricted to universal literacy. It should be nonetheless noted that, compared to other European countries, Spain suffered low levels of educational attainment (Tortella 1994). The transition to universal literacy was subsequently delayed and, although literacy rates were increasing everywhere during this period, regional differences persisted well into the twentieth century (Núñez 1992). The reasons behind these dissimilar paths have been analysed elsewhere (Núñez 1992, 2003; Beltrán 2013). The regional levels, however, do not exactly conform to the pattern found in Núñez (1992) looking at population censuses. Here, individuals from Southern Spain and Catalonia consistently over performed compared to individuals from other provinces, although it appears that the difference diminished over time. The underperformance of those individuals originated in the neighbouring provinces of Madrid is also noteworthy.
Migrants are obviously not likely to be a representative sample of the original population, so it is interesting to compare the literacy levels of those migrating to Madrid with that of those staying in their provinces of origin by using information from the population censuses. The relative difference between those groups provides a first approximation to the issue under study:

\[
LIT_{\text{GAP}} = \frac{\left( MAD_{\text{LIT}} - PROV_{\text{LIT}} \right)}{PROV_{\text{LIT}}}
\]  

(1)

As shown in map 2, the average literacy rates of people living in Madrid, classified by birthplace \( MAD_{\text{LIT}} \), is generally much higher than those who were living in their province of origin \( PROV_{\text{LIT}} \), thus suggesting an important positive selection bias. However, not only the literacy gap significantly decreased over time, but it also presents wide geographical variations. With the exception of three of the Galician provinces, the literacy gap is clearly smaller, for North-western Spain. A more exhaustive analysis of these differences allows shedding more light on the characteristics of these migrants.
Theoretically, if there was no migrant selection, migrants’ literacy levels would equal those who remain in the sending region. On the contrary, if migration is positively selected, not only the difference between migrants and those who stayed behind is expected to be positive, but also, by migrating, the average literacy levels of the province of origin are pushed downwards because those individuals are no longer reflected in the official statistics, a difference which will be larger as out-migration increases. Similarly, the hosting area suffers an opposite effect, since the arrival of positively selected migrants would push average literacy levels up. Therefore, if positive selection is in place, higher net out-migration flows are expected to be positively correlated with larger differences between the average literacy of migrants and that of those who remain behind. This prediction can actually be tested empirically by comparing the average literacy of the population living in Madrid, classified by their province of origin, with that reflected in the population censuses of each province and then by econometrically assessing whether the difference between both rates is explained by the intensity of migration flows following this specification:

\[ LIT_{GAPit} = \beta_0 + \beta_1 MIG_{it} + \sum Z_{it} + \alpha_t + \epsilon_{it} \]  

(2)

\( LIT_{GAPit} \) refers to the relative difference between the average literacy rates, by province of origin, of people living in Madrid obtained from the *Padrón Municipal* in 1880, 1905 and...
1930 and that of the population actually living in those provinces as reflected in the
population censuses of those years. Net migration flows \((MIG_{it})\), measured using the inter-
census balance method, are taken from Mikelarena (1993). Migration rates and the literacy
gap are expected to be positively related. In addition, while \(\alpha_t\) captures the influence of time,
\(\sum Z_{it}\) refers to a set of confounding factors.

Firstly, migrants did not exclusively move to Madrid. If the type of migrant going
elsewhere was different, the previous estimation is likely to be biased. On the one hand, the
provincial rates of migration abroad, taken from Sánchez Alonso (1995), are therefore
included in the model. On the other hand, apart from Madrid, there were other important
destinations available. Barcelona was the other main destination within Spain (Silvestre
2005). However, while migrants to Madrid came from almost every corner of Spain, migrants
to Barcelona mostly originated in its neighbouring Catalonian provinces and other Eastern
regions (Silvestre 2001, 257). In order to control for this issue, the relative importance of the
population in the sending province going to Barcelona is taken into account in the analysis.

Alternatively, migrants could move but do not leave their province of origin if enough
opportunities were available. In this sense, the pull of the capital or other important cities of
the province could attract rural dwellers and retain potential out-migrants. Similarly, a strong
urban pull would also attract migrants from other areas. The urbanization rate, measured as
the fraction of the provincial population living in cities bigger than 5,000 inhabitants, is
therefore included in the specification. The economic structure of each region is further
proxied by the level of industrialization and the importance of agriculture by using the gross
value-added by non-agricultural activities and the fraction of the male labour force working in
the agricultural sector respectively. Likewise, temporary internal migration was a common
feature of this period (Silvestre 2007). These movements mainly affected unskilled workers in
the agricultural and the service sector, so the literacy gap might have an effect in the literacy
gap. In order to account for that, temporary out-migration rates at the provincial level are
therefore considered.

Lastly, the costs of moving, involving financial but also information and
psychological costs, typically proxied by distance between origin and destination, have been
shown as inhibiting migration (Silvestre 2005). Information about distant destinations was
costly and sometimes unreliable. Not only literate individuals possessed an advantage in this
situation, but they also enjoyed potentially higher expected returns. Given that our
information comes from migrants who moved to Madrid, the distance between the Spanish
capital and each province is measured and considered in the analysis.

Results

Table 1 reports the results of estimating equation (1). The sign of the relationship between
migration rates and the difference in literacy rates is positive as expected. Its coefficient,
however, is not statistically significant. It should be noted, however, that, as the different
confounding factors are added to the model, the negative size of the coefficient increases and
the value of obtaining this value by chance decreases. In column (6), when all the control
variables are introduced, its p-value is only 0.133. Apart from the migration variable itself,
other evidence also points to the positive selection of internal migrants. The difference
between literacy rates significantly increases as we move further from Madrid, thus
suggesting that only more skilled individuals, who were more likely to be better informed
about potential opportunities and whose expected returns in the destination were higher, were
able to overcome the high costs of moving. The results also confirm that overseas migrants
differed from internal migrants due to the higher costs and risks involved in this type of
migration (Sánchez-Alonso 1995, 2000; Silvestre 2005). The positive sign of this variable means that, in those areas where migration abroad was higher, the difference between the literacy of those who went to Madrid and those who did not move was larger. By carrying superior levels of human capital, international migrants significantly depressed average literacy levels at home when they left.

Table 1: Determinants of migration selectivity

<table>
<thead>
<tr>
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<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
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<td>Net migration</td>
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<td>(1.24)</td>
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<td>(1.33)</td>
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<td>5.46***</td>
<td>2.42*</td>
<td>2.66**</td>
<td>2.06</td>
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<tr>
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<td>(1.08)</td>
<td>(1.32)</td>
<td>(1.26)</td>
<td>(1.32)</td>
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<tr>
<td>Temporary migration</td>
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<td>-7.24**</td>
<td>-3.97</td>
<td>-4.66</td>
<td>-4.02</td>
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<tr>
<td></td>
<td>(3.37)</td>
<td>(3.21)</td>
<td>(2.99)</td>
<td>(2.93)</td>
<td>(3.01)</td>
<td></td>
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<tr>
<td>Urbanization</td>
<td>1.19***</td>
<td>2.39***</td>
<td>2.45***</td>
<td>2.13***</td>
<td>1.75***</td>
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<td></td>
<td>(0.43)</td>
<td>(0.40)</td>
<td>(0.38)</td>
<td>(0.39)</td>
<td>(0.42)</td>
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<tr>
<td>Industrialization</td>
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<td>3.59***</td>
<td>2.82***</td>
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<tr>
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<td>(0.51)</td>
<td>(0.55)</td>
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<tr>
<td>Agricultural labour force</td>
<td>10.61***</td>
<td>9.79***</td>
<td>9.58***</td>
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<tr>
<td></td>
<td>(2.34)</td>
<td>(2.37)</td>
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<tr>
<td>Distance to Madrid</td>
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<tr>
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<td>(1.79)</td>
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<tr>
<td>d_Valladolid basin</td>
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<tr>
<td></td>
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<td>Adj. R²</td>
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<td>0.56</td>
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<td>F</td>
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<td>24.58</td>
<td>27.00</td>
<td>30.17</td>
<td>25.39</td>
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</table>

Robust standard errors between brackets; *, **, or *** denotes significance at 10, 5 or 1 per cent level. For simplicity, the intercept is not reported.

Temporary migration flows seems to have caused the opposite effect as international migration. By leaving in search of employment, unskilled or low-skilled workers pushed up average levels of human capital in the sending region and consequently reduced the literacy
gap with those who had migrated to Madrid. Although unexpected, the presence of urban
agglomerations yields a similar effect, thus suggesting that, although growing cities also
generated a demand for high-skilled jobs, they predominantly created low-skilled
occupations. By absorbing a relatively larger pool of unskilled workers from neighbouring
areas, expanding cities actually depressed average literacy rates in that region. While
industrialization seems to add nothing to this pattern, the importance of agriculture tends to
widen the literacy gap with Madrid. A large agricultural sector thus seems to have prevented
the reallocation of a significant number of unskilled workers.

Regarding the potential influence of other destinations, it seems that, although its area
of influence was more limited, the type of population who went to Barcelona was very similar
to that migrating to Madrid. This supports the idea that Barcelona and Madrid were somewhat
substituting destinations. However, the same is not the case for other migratory basins. The
literacy gap with their countrymen living in Madrid is greatly diminished in those provinces
which supplied labour force to Bilbao. By going there, these migrants fostered average
literacy rates in their provinces of origin, so these provinces were thus releasing a large
proportion of unskilled migrants.

Lastly, it should be stressed that the literacy gap between those living in Madrid and
those in their province of origin greatly decreased over time as the time dummies illustrate.
This huge reduction in the literacy gap over time reflected in the dummies can be interpreted
as the reduction of the poverty constraint brought about by increasing incomes and the
improvements in transportation, thus facilitating that less endowed, and thus likely less
literate people, joined the migratory wave (Sanchez Alonso 2000).

Taken together, the effect of distance and different migratory basins confirms the
existence of two types of internal migrations: short-distance migration, which is dominated by
unskilled workers, and medium- and long-distance migration, which is more prone to positive
selection in terms of literacy. However, although some evidence of positive selection arises
from the previous exercise, compositional effects may be driving the results. Most studies have
shown that migrants were predominantly young and male, so finding higher average literacy
rates among migrants may be reflecting the larger importance of those groups among migrants
relative to those who did not move. The next section addresses this issue and attempts to test
whether migrants were actually positively selected even after taking into account their
personal characteristics.

**Between- or within-group self-selection?**

Apart from birthplace and the ability to read and write, the *Padrón municipal de habitantes* of
Madrid provides more information on personal characteristics, thus enabling us to examine
the sources of migrant selectivity further. In order to do so, we estimate a logit model
assessing the probability of being literate, \( LIT_{it} \), according to the following specification:

\[
LIT_{it} = \beta_0 + \beta_1 \text{PROV}_{it} + \sum X_{it} + \alpha_t + \omega_t
\]

(3)

where \( \text{PROV}_{it} \) refers to the province or origin and \( \sum X_{it} \) to a set of individual-level
characteristics, such as age-group, sex and marital status. The model also controls for whether
or not the individual comes from capital cities and for the years since arriving in Madrid.
Lastly, socioeconomic status is also included in the model by grouping the sample into four
different social classes following the HISCLASS classification.

Table 2 reports the results from estimating a logit model for each period (1880, 1905
and 1930). While columns (1), (4) and (7) express the likelihood of being literate only in
terms of the province of origin, columns (2), (5) and (8) add to the equation all the individual
characteristics explained above, except social class which is included in columns (3), (6) and
(9). The sign of the coefficients on the individual characteristics is as expected. The estimated
coefficients of the provincial dummies account for the distinctive influence of having
different regional origins on the likelihood of being literate. The coefficients in columns (3), (6) and (9) thus reflect the residual that cannot be explained by individual-level characteristics and are therefore free from the compositional effects of age, sex, social class, etc.

Table 2: Determinants of literacy at the individual level in Madrid

<table>
<thead>
<tr>
<th>Province dummies</th>
<th>1880</th>
<th>1905</th>
<th>1930</th>
</tr>
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<tbody>
<tr>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Aged 20-30</td>
<td>0.14***</td>
<td>0.15***</td>
<td>0.20***</td>
</tr>
<tr>
<td>(0.03)</td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Aged 30-40</td>
<td>0.03</td>
<td>-0.10**</td>
<td>0.16***</td>
</tr>
<tr>
<td>(0.04)</td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.07)</td>
</tr>
<tr>
<td>Aged 40-50</td>
<td>0.15***</td>
<td>0.31***</td>
<td>-0.10**</td>
</tr>
<tr>
<td>(0.04)</td>
<td>(0.06)</td>
<td>(0.05)</td>
<td>(0.08)</td>
</tr>
<tr>
<td>Aged 50-60</td>
<td>0.41***</td>
<td>0.60***</td>
<td>0.34***</td>
</tr>
<tr>
<td>(0.04)</td>
<td>(0.07)</td>
<td>(0.05)</td>
<td>(0.08)</td>
</tr>
<tr>
<td>Aged &gt; 60</td>
<td>0.63***</td>
<td>0.88***</td>
<td>0.73***</td>
</tr>
<tr>
<td>(0.05)</td>
<td>(0.09)</td>
<td>(0.05)</td>
<td>(0.10)</td>
</tr>
<tr>
<td>Urban</td>
<td>1.08***</td>
<td>0.64***</td>
<td>0.99***</td>
</tr>
<tr>
<td>(0.03)</td>
<td>(0.05)</td>
<td>(0.04)</td>
<td>(0.06)</td>
</tr>
<tr>
<td>Female</td>
<td>2.17***</td>
<td>2.39***</td>
<td>1.96***</td>
</tr>
<tr>
<td>(0.03)</td>
<td>(0.04)</td>
<td>(0.03)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Married</td>
<td>0.08***</td>
<td>0.28***</td>
<td>0.04</td>
</tr>
<tr>
<td>(0.03)</td>
<td>(0.04)</td>
<td>(0.03)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>Years in Madrid</td>
<td>0.01***</td>
<td>0.01***</td>
<td>0.00***</td>
</tr>
<tr>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
<td>(0.00)</td>
</tr>
<tr>
<td>HisClass II</td>
<td>0.59***</td>
<td>-</td>
<td>0.58***</td>
</tr>
<tr>
<td>(0.03)</td>
<td>(0.05)</td>
<td>(0.06)</td>
<td></td>
</tr>
<tr>
<td>HisClass III</td>
<td>2.36***</td>
<td>-</td>
<td>0.73***</td>
</tr>
<tr>
<td>(0.07)</td>
<td>(0.05)</td>
<td>(0.12)</td>
<td></td>
</tr>
<tr>
<td>HisClass IV</td>
<td>3.96***</td>
<td>-</td>
<td>3.00***</td>
</tr>
<tr>
<td>(0.25)</td>
<td>(0.18)</td>
<td>(0.42)</td>
<td></td>
</tr>
</tbody>
</table>

Note: the dependent variable is a dichotomous variable with a value of 1 if the individual is able to read and write and 0 if not. Standard errors between brackets. *, **, or *** denotes significance at 10, 5 or 1 per cent level.

The relevant question now is what explained these regional differences on the likelihood of being literate of the people living in Madrid and whether that explanation changes when those individual-level characteristics are taken into account. This regional residual effect of the regional dummies can be explained either by particular province-specific features favouring literacy or by a different degree of migrants’ selectivity. The literature has
long stressed how internal features have shaped the capacity of each Spanish region to sustain human capital formation (Núñez 1992; Beltrán 2013). However, given that we are looking at the literacy rates of a potentially selected group of the population (those already living in Madrid), the provincial effects may also be shaped by different degrees of self-selection between the sending regions. These two explanations are thus subsequently tested by using the following model:

\[ PROV_{RESID_{MADt}} = \beta_0 + \beta_1 PROV_{LITt} + \sum X_{it} + u_{it} \]  

where \( PROV_{RESID_{MADt}} \) is the contribution of each province to the likelihood of being literate and, following the empirical exercise carried out in Section 3, \( \Sigma X_{it} \) refers to the different factors in the province of origin that may have influenced the decision to migrate. Three different specifications are estimated using the different provincial residuals obtained in the previous estimation as dependent variables. Therefore, while column (1) employs the raw provincial residuals obtained from columns (1), (4) and (7) in table 2, column (2) refers to the provincial residuals obtained after controlling for all individual characteristics except socio-economic status (columns (2), (5) and (8) in table 2). Lastly, column (3) employs the residuals net of any individual characteristic, including social class (columns (3), (6) and (9) in table 2). By comparing the coefficients between the different models, this distinction allows shedding more light into the intricacies of the migratory decision among different social groups or within them.

Table 3 reports the standardized beta coefficients resulting from estimating equation (3) using Pooled OLS, thus allowing to compare the size of the coefficients of the different variables. While mostly confirming the exercise presented in the previous section, these results also introduce interesting qualifications.

### Table 3: Between- and within-group selection. Migrants in Madrid, 1880-1905

<table>
<thead>
<tr>
<th>Dependent variable: Provincial effect on the likelihood of being literate</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literacy</td>
<td>0.56***</td>
<td>0.62***</td>
<td>0.77***</td>
</tr>
<tr>
<td>Net migration</td>
<td>0.07</td>
<td>0.13*</td>
<td>0.13</td>
</tr>
<tr>
<td>Migration abroad</td>
<td>0.05</td>
<td>-0.01</td>
<td>-0.03</td>
</tr>
<tr>
<td>Temporary migration</td>
<td>0.02</td>
<td>0.03</td>
<td>0.07</td>
</tr>
<tr>
<td>Urbanization</td>
<td>0.37***</td>
<td>0.25***</td>
<td>0.26***</td>
</tr>
<tr>
<td>Industrialization</td>
<td>0.10**</td>
<td>0.14***</td>
<td>0.09*</td>
</tr>
<tr>
<td>Agricultural labour force</td>
<td>-0.11</td>
<td>-0.13*</td>
<td>0.01</td>
</tr>
<tr>
<td>Distance to Madrid</td>
<td>0.39***</td>
<td>0.39***</td>
<td>0.18*</td>
</tr>
<tr>
<td>Migration to Barcelona</td>
<td>0.14***</td>
<td>0.12***</td>
<td>0.05</td>
</tr>
<tr>
<td>d_Bilbao basin</td>
<td>-0.13**</td>
<td>-0.08</td>
<td>0.03</td>
</tr>
<tr>
<td>d_Valencia basin</td>
<td>0.01</td>
<td>0.04</td>
<td>0.04</td>
</tr>
<tr>
<td>d_Sevilla basin</td>
<td>0.07</td>
<td>0.12***</td>
<td>0.04</td>
</tr>
<tr>
<td>d_Zaragoza basin</td>
<td>0.02</td>
<td>0.02</td>
<td>-0.01</td>
</tr>
<tr>
<td>d_Valladolid basin</td>
<td>-0.06</td>
<td>-0.08**</td>
<td>-0.03</td>
</tr>
<tr>
<td>N</td>
<td>147</td>
<td>147</td>
<td>145</td>
</tr>
<tr>
<td>Adjusted R2</td>
<td>0.75</td>
<td>0.77</td>
<td>0.68</td>
</tr>
<tr>
<td>F</td>
<td>74.66</td>
<td>62.99</td>
<td>36.74</td>
</tr>
</tbody>
</table>

Standardized beta coefficients; *, **, or *** denotes significance at 10, 5 or 1 per cent level. For simplicity, the intercept is not reported.
Unsurprisingly, the average literacy levels of the province of origin strongly influence the migrants’ likelihood of being literate. As expected, once the confounding effects of other potential destinations are controlled for, higher out-migration flows also appear to be positively correlated with higher literacy levels in Madrid. However, this effect is weaker and not statistically significant in column (1),\textsuperscript{158} what points to group-compositional effects, such as age and gender, perhaps counterbalancing each other. The effect is clearer when the individual-level characteristics are controlled for. In addition, distance to Madrid was a powerful self-selection mechanism, taking place mostly between socio-economic groups but also positively selecting individuals within groups.\textsuperscript{159} The cost of migration clearly discouraged long-distance migration among the less literate population. On the other hand, although regions where migration abroad and temporary migration was higher do not seem to have significantly affected the literacy levels of those going to Madrid, the opposite gradation in the coefficients obtained in each column evidences that some sort of self-selection between- and within- groups was taking place. In addition, the effect of coming from provinces where the pull of other cities was important had some effects on the type of migrants going to Madrid. There is, for instance, some positive selection arising from different socio-economic groups going to Madrid instead of Barcelona. Bilbao, on the contrary, attracted certain more literate age or gender groups who did therefore not end up in Madrid. Lastly, given that the literacy levels of the sending provinces is held constant, the regression also robustly shows that migrants going to Madrid from more urbanized and industrialized areas were positively selected both between- and within- groups. On the contrary, more agricultural regions appear to have retained part of their more literate socio-economic groups.

Conclusions
The empirical analysis carried out here, focusing on migrants going to Madrid, confirms the presence of positive selection in the decision to migrate, especially if distance to destination is taken into account. This exercise, nonetheless, also shows that internal migratory patterns were highly complex and migrants’ selectivity depended on the context both in the sending and the receiving regions.

\textsuperscript{158} Its p-value in column (3) is 0.131.
\textsuperscript{159} The size of the coefficient in columns (1) and (2) do not change, thus meaning that, even when age, gender and so on, are taken into consideration, the effect remains. This is not the case when socio-economic status is controlled for in column (3): the coefficient is halved, thus reflecting that part of the effect was caused by certain social classes being more restrained by distance. However, since part of the effect is still there, this means that distance to Madrid was also influencing the decisions of less literate individuals within each group.
J.H. Clapham revisited: an occupational study of the transference of the worsted industry from Norfolk to the West Riding

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Supervisor: Dr Leigh Shaw-Taylor

Introduction

At the beginning of the eighteenth century Norwich was a chief centre in England for the production of worsted cloth.160 By the 1770s, both the input and the output of the West Riding of Yorkshire (YWR) manufacture roughly matched those of Norwich.161 The timing of the Norwich decline, both absolute and relative to YWR, has been and remains the subject of debate.162 In 1910, J.H. Clapham made the case that the industry in Norfolk did not transfer significantly to the West Riding until the 1820s and 1830s, the move driven largely by the mechanization of production.163 Since then, Edwards and Corfield have provided evidence from Yarmouth port books and from the number of looms in the city to support Clapham’s view.164 Other historians have disagreed. Lloyd Prichard, for instance, has used data from poor returns to suggest that the decline of Norwich began 60 years earlier.165 From his study of textile bankruptcies, Hoppitt suggested that decline may have set in after the 1740s.166 The systematic study of occupational sources, reported in part in this study, challenges Clapham’s view also.

This paper’s use of temporal datasets allows the timing of the onset of the decline to be determined with more precision than has been possible hitherto. The full study uses occupational data, 1710-1820, abstracted from a range of sources, for example, wills and inventories, freemen’s lists, poll books, baptism records and Quarter Session records.167 In this paper, there is insufficient space to review all of these datasets in detail. Consequently, the analysis reported here is confined to the 1813-20 Norwich baptism registers and to the poll books, 1710-1830. The results from the poll book analysis mirror those from the other eighteenth-century sources. As such, they are used here by way of example. All of the datasets are problematic, not least because they cover adult male occupations only. Worsted spinning in the eighteenth century was essentially a female activity and is not directly included in this work.

Baptism registers, 1813-20

The study begins with a quantitative occupational comparison of the Norwich and YWR worsted industries in the second decade of the nineteenth century. It utilizes the baptism registers, 1813-20, which, of all the primary sources studied, are considered to provide the

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160 The other main centre was located in Devon, see W. G. Hoskins, Industry, trade and people in Exeter 1688-1800 (2nd edn. Exeter, 1968). For a detailed discussion on the national worsted industry see J. James, History of the worsted manufacture of England (London, 1857).
167 Paper in preparation for publication.
most reliable representation of adult male population. They are the primary source by which others are compared and measured. The Parochial Registers Act of 1812 necessitated the Church of England by law to record baptisms in a standardized pro forma. With the exception of illegitimate children, for whom the father’s trade was often not known, these registers, at least in theory, captured the occupation of the father of every baptized child. Kitson and others have abstracted and aggregated the records from 10,376 baptism registers in England and from 988 in Wales, 1813-20. To optimize the quality of the information, they included only those parish registers for which occupations were recorded in at least 95 per cent of instances. Their resultant dataset provides a snapshot of occupations at the time and is considered to be a ‘census’ of adult male employment. It is this dataset that has been used in this work. It contains 192,532 abstractions of fathers employed in the textile industry. The geographical distribution of the place of residence of these men is shown in map 1. Male textile employment was present in 3,600 discrete places. Over 70 per cent of these places were in the counties of Lancashire, YWR and Cheshire combined. The focus of the industry in the North West of England by this time is evident. One quarter of all textile workers lived in YWR, whereas only 2 per cent lived in Norfolk and less than 0.5 per cent lived in Suffolk.

Of the Norfolk textile abstractions, 90 per cent were weavers, the other 10 per cent comprised various trades, including woolcombers, in particular, and smaller numbers of dyers and hot pressers. Three quarters of the Norfolk weavers lived in Norwich. For most of these men, the cloth they wove was not specified. However, although linen and worsteds were manufactured in Norfolk, the former was largely a rural trade and for the purposes of this analysis, all Norwich weavers are considered to have worked with worsteds. In 1813, it is therefore calculated that 15 per cent of all Norwich fathers were worsted weavers. Clearly, the textile industry was important to the city at this time, but this number is relative and takes no account of the size of the population. It is possible to estimate the actual number of men provided some assumptions are made. First, and in order to determine the number of families resident in Norwich in 1813, that the population increased linearly between the years 1811-21. The 1811 and 1821 censuses indicate that the number of families in Norwich were 9,674 and 12,478 respectively. By extrapolation, there were 10,235 families in 1813. The second assumption is that the local 1801 census of the hamlet of Thorpe and the town of Thorpe next Norwich, which indicated 12 per cent of households were headed by a female, is an accurate reflection of female heads in all Norwich parishes in 1813. Third, all adult men were heads of family. Thus, it is estimated that 9,007 adult men lived in Norwich in 1813, of which 1,351 were worsted weavers.

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168 52, Geo. III c.146.
171 The map is constructed using place and boundary data according to R. J. P. Kain and R. R. Oliver, The historic parishes of England and Wales: an electronic map of boundaries before 1850 with a gazetteer and metadata (Colchester, UKA Data Archive, 2001: SN 4348).
172 A place is defined at the parish and sub-parish levels, see Kain and Oliver (Colchester).
173 Woolcombers prepared the wool for spinning. Hot pressers were cloth finishers.
174 Norfolk Record Office, 1801 census of Thorpe St. Andrew and Thorpe hamlet, PD 228/105.
To put these Norwich data into perspective, the analysis of the baptism registers of Halifax and Bradford, the two parishes at the centre of the West Riding worsted industry, indicate that 33 per cent of fathers in the former and 30 per cent in the latter were employed as weavers in 1813. To translate those numbers into actual estimates, the assumptions made for Norwich are applied to Halifax and Bradford, with the exception that the 10 per cent of households in 1780, Manningham, a township in Bradford parish, that were reported to be headed by a female, holds true across both parishes in 1813. From this, in Halifax parish

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175 For a description of the location of the wool and worsted industries in YWR, see P. Hudson, ‘Capital and credit in the West Riding wool textile industry c. 1750-1850’ in P. Hudson (ed.), Regions and industries (Cambridge, 1989), pp. 69-99.

176 W. Cudworth, Manningham, Heaton and Allerton: townships of Bradford treated historically and
there were 14,408 families headed by a male in 1813 and in Bradford parish there were 7,232. Accordingly, it is estimated that in 1813 Halifax there were 4,754 worsted weavers and in Bradford there were 2,170. Based upon these estimates, the two parishes were home to perhaps to five times as many adult male weavers as was Norwich.

The relative size of the Norwich and YWR industries is further illustrated by the analysis of the number of fathers who were described as woolcombers (figure 1).

Figure 1: *The number of woolcomers by county, baptism registers of England & Wales, 1813-20 (n = 6,437)*

In YWR, there were 3,217 abstractions for woolcombers and in Norfolk and Suffolk only 154 and 168 respectively. By 1813, worsted spinning had been mechanized in YWR but not in East Anglia. This is reflected by the entries for adult male spinners. In Halifax and Bradford there are approximately 500 abstractions for fathers who spun worsted, wool or an unspecified yarn. In Norfolk, there is one abstraction only for a spinner.\(^{177}\)

In summary, these data suggest that there remained a locally important worsted manufacturing industry in Norwich in 1813, but by then it was several-fold smaller than the industry in the West Riding.

**Poll Books**

Prior to 1730, the right to vote in parliamentary elections in Norwich was restricted to freemen. Post-1730, and before the Reform Act of 1832, the electorate was extended to include freeholders.\(^{178}\) Voting remained a privilege skewed towards master craftsmen, the relative elite of male society. In late eighteenth century, just over 2,000 men cast their votes, around one quarter of adult males resident in the city.\(^{179}\) The eighteenth century elections were\(^{178}\) topographically (Bradford, 1896), pp. 76-78.

\(^{177}\) In addition, there are 261 abstractions for cotton spinners in Halifax and Bradford and three for Norfolk.

\(^{178}\) W. White, *History, gazetteer and directory of Norfolk and the city and county of the city of Norwich* (Sheffield, 1836).

\(^{179}\) Calculated from the electorate described in the 1786 poll book, B. Suffield, *A copy of the poll book for a Member of Parliament for the city of Norwich* (Norwich, 1786), and the 1801 Census Enumeration abstract (P.P. 1802), http://www.histpop.org The population of Norwich, 1761-1810 was stagnant, see E.A.
not undertaken by secret ballot and, in compliance with the Act of 1696, returning officers were required to make available copies of the poll.¹⁸⁰ Not all of the resultant poll books stipulated occupation but those for Norwich for the years 1714, 1761, 1768, 1786, 1806, and 1830 did so. These books are available in printed form and have been used in this study.¹⁸¹ Their analysis, showing the change over time in the percentage of the Norwich electorate who were worsted weavers, is shown in figure 2. The baptism data, 1813, is included in the figure for comparison.

The percentage of voters who were worsted weavers declined steadily after 1714, albeit with a period of relative stagnation, 1768-86. Between the years 1761 and 1806, the percentage fell by around one half. Despite the noted incompleteness of the poll book data, there is reasonable agreement, at least in the nineteenth century, between the electorate and the baptism registers. Another concern with these poll book data is that they are temporally sporadic and as such provide only irregular snap shots in time. However, a dataset with higher temporal frequency is available for the parish of St. Giles, 1710-1830.¹⁸² These data are problematic in that St. Giles was only one of 34 Norwich parishes and was home to just 2.9 per cent of the city population.¹⁸³ The percentage of Norwich weavers who lived in the parish was low also, albeit constant, 1710-86, at around 4 per cent.¹⁸⁴ Nonetheless, despite these issues, the change in the number of worsted weavers in the parish electorate mirrors that in the city as a whole (figure 3).

**Figure 2: The change in the % of the total Norwich voters who were worsted weavers, 1714-1830**

(Expressed as a % of the total)

![Graph showing the percentage of voters who were worsted weavers in Norwich, 1714-1830.](image)

During the second half of the eighteenth century, the population of Norwich was stagnant. Over the period, 1761-1806, the percentage of worsted weavers in the Norwich electorate of 1806 decreased by approximately 50 per cent. Given that the baptism registers show that there were 1,351 male worsted weavers in Norwich in 1813, it is likely that there were of the order of 2,700 in the 1760s.

In summary, the baptism registers, 1813-20, indicate there were at least five-fold more worsted weavers in YWR than there were in Norwich. Woolcombing was ten-fold greater in YWR than it was in Norfolk and Suffolk by this time. The relative insignificance of the Norwich industry is evident. The poll book data suggest that the Norwich industry declined over the eighteenth century, from as early as the second decade, albeit with a revival between the American War of Independence and the French Wars. The industry in 1761 employed twice as many men as it did in 1806. The data presented here support the earlier work of Loyd Pritchard and Hoppitt. The first worsted manufacturing process to be mechanized was spinning, but commercial quantities of spun yarn were not available until the 1790s at the earliest, and then only from YWR mills. By this time, the decline of the Norwich industry had been long well under way. Despite Clapham’s belief, therefore, mechanization was not the cause of the onset, although given that Norwich was very slow to mechanize, it was likely a nail in the industry’s coffin. Other causal factors of decline, for instance wage differentials, industry location, raw material supply, the development or otherwise of a local mercantile class, may have played a role and all are under investigation currently.

Sources: Eade, *Some account*, and as Figure 2

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Becoming owners or not: the reasons for a regional divergence seen from below: Catalonia, 1750-1850

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Supervisor: Professor Maria-Rosa Congost

To research the specific evolution of the mountainous district of Besalú, north-west of the Girona Province, and to pinpoint at its particularities in front of what historians have been calling Girona Region (and within it specially the Baix Empordà – La Bisbal –), and the reasons behind its historical evolution is the purpose of this paper. It will be argued that the forms of land access were central to understand it. The following map of the province shows the silhouette of Besalú, Girona Region being the rest of the pale grey area.

Figure 1: Girona Region and the Besalú District

Besalú, in comparison to the Girona Region, is much more mountainous, including all villages of the so-called High Garrotxa and the Salines Massif. Flatland agriculture is limited to specific places, such as river valleys, and eastern villages opened to the maritime plains. Thus, leaving aside the Gavarres Massif we can conclude that it has a much more irregular orography than Girona Region, to which we must add colder winters, more rain (as fits to the southern slope of the Pyrenees), less arable land, and all that this implies for agrarian and livestock development. In general, if these conditions did not hinder the planting of olive trees, it limited the chances to produce good wines, thus at the time the planting of vines was much less attractive than in the Girona Region. On another note, forested extensions propitiated livestock breeding, forestry, and charcoal making. In addition, fluvial courses permitted hydraulic uses for industry and manufacture. And, in specific places, (often controlled by rich farmers), the combination of good – sometimes volcanic – soils, and the availability of irrigation permitted large harvests in specific plants.

The divergence: a structural characteristic
In order to explain why those regions evolved differently, it will first be studied if and how it was so. Congost and Ros have recently shown that humble groups (definition in which they include workers and smallholders) in the Girona Region experienced a positive evolution in the period 1750-1850, whilst their numbers increased due to demographic growth in a society...
with a sole heir system. In order to do so, they highlight as indicator change in the payment of median dowries, both nominal and real, by those families at the time of a daughter’s marriage. The following table allows for the comparison of nominal and real dowries in the Besalú District with their article.

Table 1: median worker & smallholder dowries in nominal and real value in Besalú and Girona (in Barcelona lliures)

<table>
<thead>
<tr>
<th></th>
<th>c.1750 N</th>
<th>c.1771 N</th>
<th>c.1806 N</th>
<th>c.1841 N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Besalú (n)</td>
<td>50'00</td>
<td>12</td>
<td>60'50</td>
<td>28</td>
</tr>
<tr>
<td>Girona Region (n)</td>
<td>0</td>
<td>55'00</td>
<td>406</td>
<td>125'00</td>
</tr>
<tr>
<td>Besalú (r)</td>
<td>?</td>
<td>12</td>
<td>60'50</td>
<td>28</td>
</tr>
<tr>
<td>Girona Region (r)</td>
<td>0</td>
<td>55'00</td>
<td>406</td>
<td>69'54</td>
</tr>
</tbody>
</table>

Besalú’s dowries experienced less growth. For some reason, humble Besalú dwellers did not consider that their status deserved the same transfer in marriage contracts as others. If observations of post-mortem inventories are added, as studied by Esteve for the Bisbal, and by ourselves for Besalú and Figueres, they show a quite similar evolution for the entire province’s labourers: improvement from 1750 to 1800 and fall to a somewhat lower level than 1750 by 1840-50, as already pointed out by Esteve. As well, when after 1800 society introduced the status differentiation between labourers and smallholders (instead of simply ‘workers’), they show that the latter enjoyed better material conditions. On the other hand, middling and upper classes (not dealt with here) show a continuing positive evolution in inventories, perhaps indicating an increasing social polarization in nineteenth-century rural Girona. Nonetheless, the paper’s aim is not explaining why mid-nineteenth century dowries raised without clear translation in material wealth, but rather considers that dowries are just another effect of the different paths through which families in Besalú and the Girona Region gained access to land. In Congost and Ros’s article, they refer to humble groups without exactly specifying if, why, and how much land they owned. Nonetheless, the following graphics made from a classification designed in order to collect an extraordinary tax, by placing Besalú against a comparable-size area, are helpful.

Figure 2: Social composition of Besalú in 1795 (no data for Salines Massif)  N=3013 families

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188 E. Esteve, Homes, terres, cases... (unpublished Phd thesis) http://hdl.handle.net/10803/7861 (2011).
189 This is supported by M. Carrión, El nivel de vida ... (2002).
190 Girona Municipal Archive (AMG), Books of Armament.
In Besalú’s society ‘labourers’ weight 37 per cent against 27 in La Bisbal, whilst ‘smallholders’ weight 16 per cent in front of 33. Then, the humble ones referred by Congost and Ros are approximately 55 per cent smallholders and 45 per cent labourers. But the same definition in the Besalú area implies 70 per cent of labourers and 30 per cent of smallholders. This can be corroborated through the payment of taxes on real estate that same year, with a graphic including those who pay personal taxes but no cadastre.

As seen, in the first case 40 per cent of the population has no land in property or emphyteusis (see below), against 20 per cent for the second. This data is, in principle, capable of explaining the difference in the dowry scores between Girona Region and the Besalú District, in the absence (seen through inventories) of differences between the living standards of labourers in both places, something that also happens amongst smallholders. Thus, we can attempt dowry estimates in 1840 supposing that the social structure had remained stable: if 55 per cent of smallholders in La Bisbal brought a nominal median dowry of 150 lliures, that expected for 30 per cent of smallholders would be 81’82 (observed: 107’5), and, on the other

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191 Source: AMG, ibid.
hand, 70 per cent of labourers implying a median of 107.5 would mean an estimate of 167.22 lliures if they were only 45 per cent (observed: 150). In fact, the median if we distinguish between the dowries of those falling under the status of labourers and smallholders is of 77 and 150 lliures respectively (that is, dowries paid by humble people with land double in nominal terms those paid by humble people with almost no agrarian estate). Obviously this data fits imperfectly given that, on one side, social composition changed in 40 years, and, in the other, that we cannot expect dowry measures to adjust exactly and with no bias to the social reality, it being a status aspiration.

In 1860, another (even if much more problematic) census again helps us follow up with the reasons leading to the described situation. In it a single individual fell upon more than a label, impeding us to know how the population was exactly divided. We have substituted 1795’s grouping ‘artisans’ for the ‘qualified workers’ epigraph.¹⁹²

Table 3: Men’s occupations in Olot -including Besalú- and La Bisbal, 1860, as % of the total number of males above 16 y.o.

It can be seen how the number of people defining themselves as owners of land was much smaller in Besalú, instead growing the labels tenant and being in poverty. This seemingly worst situation translates itself in demographics, since the dynamism of the early eighteenth century had dwindled in Besalú, and by 1860 the region did not grow as much due to higher mortality.

Table 4: Besalú’s demographic evolution (sample of 16 parishes, 5-year cuts)¹⁹³

Table 5: comparison of the province’s demographic regime in 1861¹⁹⁴

¹⁹² Data: Centre d’Estudis Demogràfics.
¹⁹³ Source: ADG, parish books.
¹⁹⁴ Source : P.Martínez-Quintanilla, La província de Gerona … (1865).
Textile industry

A particularity of Besalú is its industry. Remarkably after 1770, industries that before we could have defined as in a phase of Kaufystem moved into an organization more akin to a Verlagssystem, and at the same time cotton was introduced. The social consequence of this change is, as in many other parts of Europe, a certain devaluation of artisan trades and a weakening of guild frameworks. The case study by Puig on the move from wool to cotton, centred in the town of Tortellà, already introduced this idea. When observing the tendency followed by marriages through Dispensations from Banns, it appears that the weight of artisans amongst bridegrooms (high by 1755) tended to diminish (from 38 to 21 per cent) whilst the one of workers increased (from 22 to 43 per cent), something that did not happen in La Bisbal.

Table 6: percentages of bridegrooms in different trades

The other effect of industry can be said to be more positive: an expansion of the demand for labour providing the district’s men more possibilities to obtain salaries, as well as to most women to work from home for manufacturers. It can be estimated that any woman in a radius of approximately 21 km around a manufacture could provide an additional annual income of about 20 lliures to the family unit. Thus, manufacturing partially compensated the difficulties to own land, but, and as in the studies of Schlumbohm, farmer and tenant families had more surplus labour, so they were more often involved in manufacturing putting-out, that is, to make use of opportunities coming from proto-industry, than humble peasants. Therefore, textiles did not compensate for greater inequalities amongst Besalú’s humble; instead it increased incomes in correlation to the family’s previous socioeconomic situation. And we know that the nineteenth century was not so positive for industry in Besalú and Olot. Most companies progressively lost competitiveness in front of other textile centres in Catalonia. The reasons for this are debated, but in spite of them, we must bear in mind that a

196 M. Puig, Abans que hi arribés el coto ... Annals del PEHOC N. 15 V.1 (2005).
198 A. Serramontmany, Spinners, who were they? ..., article pending publication.
certain degree of deindustrialization affected the district and provoked both some emigration of people and capitals, and the transfer of investments to the primary sector.

**Land market and agrarian specializations**

In order to explore this differentiated distribution of rights on land, the study of markets trading in those is a key aspect. In order to do so the Mortgage Registry was chosen. Three cuts were done, for 1771, 1806 and 1841, allowing us to compare Besalú and La Bisbal. A double criterion has been used, on one side the selection of documents made by those living in the district, and on the other, documents referring to land plots inside its limits, since it is expected that this double examination sheds some more light. Using the population criterion adds documents to Besalú and reduces them in La Bisbal. Through this, it can be said that the inhabitants of the first district tended to buy outside it, whilst the second one tended to add buyers from the outside. From now on, a focus on the territorial criterion will be used.

The first document that comes to mind to us contemporaries is the sale contract. The sale contract is complicated for labourers since they are asked an initial capital that is hard to have, and if one is to obtain a formal credit he is normally asked for a guarantee, an asset, that is, the signing of a mortgage, which is of course a contradiction since the initial purpose was to obtain an asset. But in spite of this, some did so in both areas although this contract was more often signed by people not belonging to the so-called humble. Of course, if anyone could have obtained some land avoiding these hardships, he could then have mortgaged it and accumulate even more, which brings us to the forthcoming contract, **emphyteusis**.

![Table 7: sale contracts, territorial criterion](chart)

It has been warned that the acquiring of property rights in the past could use other mechanisms that are no longer common practice. In this case, **emphyteusis** becomes an important contract in understanding the increase of smallholders in the Girona Region, where it was made perpetual and descendible. It implies almost-property for the lessee, in exchange for annual payments and the cession of some rights to the owner, but with almost no initial capital. If in 1771 Besalú registered a very high number of those, they do not appear in the following graphic for they refer to people acquiring plots outside its limits, especially in Girona Region itself, and secondly in the Valley of Bas, where that year many plots were being leased. Thus, **emphyteusis** was unusual in Besalú, although it might have been different.

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200 Historical Archives of Girona and Olot. On this source, see R. Congost (coord.) *Dels Capbreus ...* (2008).
in the first half of the eighteenth century. In Besalú we often find short-term rentals which did not offer the possibility of mortgaging neither incentive for land improvement.

Table 8: emphyteutic contracts, territorial criterion

It is not, in spite of these results, the case that Besalú people were mostly waged workers. Forested mountains and marginal lands around farms allowed for the cultivation of artigues, slash-and-burn plots following a given process: first, cleaning and using some trees to produce charcoal, using the rest of the biomass as fertilizer. Second, five years of cultivation (usually rotation of wheat, maize and buckwheat). Here, the lessor still wanted part of the grain, but was mostly interested in the straw (which added biomass to his exploitations), therefore not asking much of the first, but between one-half and all of the second. Third, land was used for grazing and it reverted to the beginning. Thus, many forests that are now abandoned were subject to economic activities. This model fomented animal husbandry much more than in the Girona Region, as can be seen in the 1865 Livestock Census if transformed into a per capita figure. In fact, Besalú common rights (in erosion along our study period) also included both assigning slash-and-burn plots and the sale of grazing rights. But private owners prioritized trusted people when leasing artigues, which meant their own tenants before labourers and smallholders, even if they were asked to allow other artiga lessees storage space in their farms. At the same time, Besalú farm tenancy contracts differed from the usual quarter or two-thirds sharecropping, for they added significant annual cash payments, and animal rising agreements involving landlord and tenant, both allowing landlords to benefit from the district’s herding potential. In the nineteenth century this slash-and-burn model was further developed with the creation of commercial enterprises that invested in it, although quite certainly the humble ones suffered from the erosion of common rights on land. Yet the largest problem this system poses to the historian is its informal nature: since most short-term contracts did not involve public notaries, it is much more difficult to study areas such as Besalú.

Conclusion

Between 1750 and 1850 the combination of geographic factors and the primary and secondary sectors’ development model drove Besalú District, and the rest of the province’s north-west, to a diverging historical development meaning more unequally distributed property rights (and less incentives for agrarian development), and to less demographic dynamism during the nineteenth century. Rights on land seem to stand at the centre of the picture. In the long term, the now inexistent Besalú District’s population loss has been inevitable, and Olot has long ceased to be the province’s largest city.

How do we approach the Zollverein?
Local institutions and the early customs union

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The Zollverein has traditionally been studied in the context of German unification and national development. However, the study of the union in relation to its constituent members provides both instructive and necessary insight into its economic impact, and the ability of sovereign states to benefit from common tariff agreements. This paper looks at the German south, focusing on the states of Bavaria and Württemberg. It suggests that customary economic institutions and frameworks significantly determined interaction with the Zollverein, and that conclusions of its overall impact must take into account such frameworks in each member state.

When the Prussian instigated Zollverein (customs union) came into being on 1 January 1834, it brought down the numerous tariff barriers hindering trade between the German states, whilst erecting a moderate tariff on the imports of non-member states. Whilst it did not include all German states, most notably Austria and those on the North and Baltic Sea coasts, by 1836 the majority had joined. The union greatly reduced the cost of trade between the German territories, ending the centuries-long confusion of thousands of tariffs and tolls, greatly freeing up the movement of goods.

The positive economic impact of the Zollverein and its role in Germany’s political unification was championed by contemporaries, and enjoyed a renewed vogue in the late 1950s and 1960s. The bringing together of the various German states under a common tariff system was traditionally seen as the genesis of German industrialization, and the first step in breaking down political particularism. In Treitschke’s famous words, with the exclusion of Austria and adherence of the petty German states to a Prussian-led union, ‘the thunder of Königgrätz could be heard from afar’. The expanded interior market was also routinely credited with stimulating ‘… a striking increase in the demands for coal and for the products of basic industry’ not to mention ‘large-scale improvements of communications… [and] a rapid and unmistakable rise in the general standard of living’.

However, studying the Zollverein as a stand-alone phenomenon, rather than for its role in the course of German history, W.O. Henderson expressed doubts; whilst the period 1815-71 saw the genesis of the German industrial revolution, gradual unification through the Zollverein, improvements in communication, finance, and technology could not be disentangled in determining the primary cause of development.

Since the pioneering work of Rolf Dumke, conclusions about both the political importance and economic impact of the Zollverein have been successively scaled back. The decisive influence of the Zollverein on political unification has been challenged by both Dumke and Voth, among others, and replaced by concessions of a more moderate influence, generated through trade and administrative connections. In economic terms, total output from the Zollverein area in relation to contemporary economies was demonstrably small, and

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total gains to the individual states often negligible in absolute terms, although in many
instances the relative impact could be significant. Work on rail as a leading sector has
demonstrated its superior impact to the tariff union on commodity prices.

If we accept current conclusions that the Zollverein did not have a decisive impact on
the political development of the German nation, and that its absolute impact on the German
economic area was minimal, then any gainful assessment of the union ultimately rests on
examining its relative impact on the individual member states.

The two southern kingdoms of Württemberg and Bavaria were both producers of
primary goods, populated by an independent peasantry. The Württemberg peasantry
historically practised a system of inheritance known as Realteilung, or the equal division of
land among heirs, whilst in Bavaria the manorial system prevailed. At the turn of the
nineteenth century, legislation was passed in Bavaria allowing the division of holdings, in
order to stimulate population growth. At the beginning of the nineteenth century,
Württemberg was characterized by a higher degree of artisanal and craft production than
Bavaria. With the arrival of multiple rail connections in the 1850s, both states began to
experience significant economic growth, confirming estimates about the impact of rail on
German economic development. Prior to this upturn, it is instructive to look at the impact
entrance to the Zollverein had on the economic experience of each state.

The southern German states have historically been credited with the best relative gains
from Zollverein membership. As producers of primary goods, they theoretically stood to
benefit from a tariff system that allowed them to exchange agricultural products for the
manufactures of the German north. Henderson supported such conclusions, whilst Dumke
calculated that the elimination of internal barriers brought a revenue gain of 4.9 million Thaler
for the south, or about 1.06% of regional revenue. Although a small absolute gain, the
number nonetheless compared favourably to estimated gains from the tariff system of the
early E.E.C. The figures require context, however, which has been largely missing from
analysis of the Zollverein and its impact. It is questionable whether the apparent comparative
advantage of the southern states was felt by individual producers. In both states, institutional
frameworks of property and production constrained the profitability of peasant holdings and
economic activity generally.

Württemberg’s highly prohibitive guild structure led to the impoverishment of rural
artisans during the latter half of the eighteenth century, whilst the Realteilung system of
landholding became increasingly unsustainable, especially in areas which were unable to
support cash crops, such as grapes, and whose soil could only generate average yields for
agricultural staples. Path-dependent norms heavily dictated the economic decisions and
overall productivity of contemporary agents. Despite concessions against the guilds by royal
legislation of 1828, manufactories did not develop quickly, and where they did, typically in
the textile sector, early entrepreneurs found it difficult to recruit, with existing artisans
resisting employment on mechanical looms. The land splitting system was also seen by
contemporaries as a restraint on commercial development, who complained that ‘as long as he
(the small farmer) kept ownership of his own means of production, capital accumulation and
the capitalist system was impossible.’

Upon entry to the Zollverein, this lack of industrial progress was not adequately
compensated by Württemberg’s position as a producer of primary goods. Because of the

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208 See Voth, ibid., pp.115-117; Florian Ploeckl ‘The Internal Impact of a Customs Union; Baden and the
209 See Wolfgang Keller, Carol H. Shue ‘Institutions, Technology, and Trade’ NBER Working Paper Series,
210 Dumke ‘Tariffs’ pp.80-1 gives a maximum of one-fifth of 1 per cent.
211 Ibid. p.78.
212 Gerhard Seybold Württembergs Industrie und Außenhandel vom Ende der Napoleonische Kriege bis zum
213 Ibid. p.30.
system of landholding, surplus from farm production was highly limited. In the mid-1850s, only 20 per cent of the population held more than three hectares of land; 63 per cent had less than two hectares, well below the minimum amount required to keep a family fully employed in agriculture.\textsuperscript{214} Although increased efficiencies had taken place since the mid-eighteenth century, they were necessary to maintain subsistence levels; productivity gains were rarely commuted into extra income. Rather than being the main beneficiaries of \textit{Zollverein} membership, during the 1830s and 1840s communities producing agricultural staples were consistently those engaging in extensive emigration. For the majority who were unable to generate significant surpluses, entry into the customs union mattered little to their economic condition. Communities able to produce wine fared a little better, but it is worth noting that wine production in Württemberg was not as extensive as in north Baden or the Palatinate, and that wine as a primary product was not widespread enough to compensate for the increasingly dire situation of staple agriculture.\textsuperscript{215}

The greatest proportional increase in primary goods exported from Württemberg after \textit{Zollverein} membership was in fact seen in timber and building materials, neither of which were the produce of the small independent proprietor, but of larger land holders, and of royal domains. Whilst Württemberg may have had an apparent advantage in the tariff-free union as a producer of primary goods, its property-holding system ensured that benefits from market access were not distributed among the majority of producers.

The economy of the core Bavarian (excluding the Palatinate) territory was historically more biased toward staple cereal production than in neighbouring Württemberg. It stood to gain significantly as a provider of agricultural goods to the north, especially considering the passing of laws in 1803/4 which opened up landownership to the population. But whilst the decision to allow land splitting certainly helped to increase population, property and production decisions were still determined by cultural norms that bring into doubt any significant redistributive benefit from Bavaria’s entry into the \textit{Zollverein}.

As W.R. Lee has suggested, ‘the re-division of land … which might have provided an important basis for future developments and a more productive utilization of arable … only served in the long term to reinforce the subsistence element within the economy. It led increasingly to the emergence of a broad group of medium-sized holdings, which could never hope to be more than adequately self-sufficient’.\textsuperscript{216} As late as the 1840s, two-thirds of farms in Bavaria were under 5 hectares.\textsuperscript{217} This subsistence element to agricultural production is shown in figures 1 and 2. Whilst figure 1 shows the output of cereal staples stagnating relative to population growth, figure 2 shows the extent to which potato cultivation paralleled population increases.


\textsuperscript{215} Württemberg received 18,478 pails of wine from Baden and the Palatinate in 1839, exporting just 1,918 in return. J.D. G Memminger \textit{Württembergisches Jahrbücher} Stuttgart und Tübingen, 1839. p.135.


Until the mid-nineteenth century, Bavarian agriculturalists did not respond to tariff-free market access with increased production in primary goods. The agricultural sector was, in fact, marked by a high degree of conservatism. A resistance to livestock impeded the availability of fertilizer, and the raising of cash crops such as flax hemp was insignificant.\(^{218}\) J.H. Clapham was led to remark that ‘in Bavaria, which was mainly tilled by peasants, nothing important happened (in the agricultural sphere) before 1850’.\(^{219}\) Despite an apparent advantage bestowed upon states like Bavaria and Württemberg by the removal of tariff barriers with the north, in reality customary frameworks of property and production heavily reduced the benefits and effect of Zollverein membership to ordinary producers in each state.

Such variegated frameworks persisted in every member state of the union, which in turn heavily influenced their own realities of production and trade. The customs union has been voluminously studied in terms of its aggregate effects, yet as Rolf Dumke suggested, ‘overall country data may just serve to obscure the important economic differences among regions’.\(^{220}\) Until the economic data is qualified against the variegated institutional structures of the Zollverein members, its history, and the assessment of its impact, is far from complete.

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\(^{218}\) Lee Bavaria p.178.  
\(^{219}\) Cited ibid. p.182.  
The examples given here have attempted to demonstrate that the comparative history of member states, which incorporates localized institutional frameworks, can challenge our assumptions about the impact of the *Zollverein*. Further work will continue to re-orient our understanding, and inform our knowledge about the ability of sovereign states to profit from common tariff agreements. It must be precipitated, however, by an increased focus on the frameworks that shaped production in the individual nineteenth century German territories, a subject which has also been subordinated to the Austro-Prussian narrative, and the context of unification.
Modern secondary education and economic performance: 
the introduction of the Gewerbeschule and Realschule in 
nineteenth-century Bavaria

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Introduction
Numerous studies concerning the role of human capital in historical development have shown 
that basic schooling is an important contributor to economic development and catch-up (e.g. 
Becker et al. 2011; Easterlin 1981). The role of secondary education is less clear and 
empirical results are more ambiguous (e.g. Psacharopoulos and Patrinos 2004; Goldin 1998).

The introduction of ‘modern secondary education’ in form of the Gewerbeschule in 
1829 and the Realschule in 1877 in Bavaria provides a unique opportunity to study the impact 
of secondary education on the economy in a historical context: as a state relying mostly on the 
agrarian sector, Bavaria was relatively backward in economic terms – especially when 
compared to Prussia – and available secondary schooling (i.e. Gymnasium) lacked practical 
orientation (Buchinger 1983, p. 106ff.). Hence, the introduction of the Gewerbeschule and 
Realschule as new school types focusing on scientific content and its practical application 
offers the opportunity to assess the impact of innovations in education on the economy.

To analyse the economic effect of modern secondary schooling, I employ county data 
on business formations, numbers of self-employed, employees in trade and industry, and 
granted patents. As the introduction of modern secondary education in a county is likely 
correlated with the county’s current and future level of economic development, I employ 
propensity score matching following Rosenbaum and Rubin (1983) and Crump et al. (2009).

I can show that modern secondary education indeed had a positive impact on 
economic performance. Counties that introduced a Gewerbeschule/Realschule are 
significantly associated with a higher share of the population employed in industry and trade, 
more businesses per capita as well as a higher degree of innovativeness captured by patents 
grants, several years later.

Historical background
The most important form of German secondary schooling throughout the nineteenth century 
was the Gymnasium (Ringer 1967, p. 128). The curriculum of the Gymnasium focused on the 
classics and liberal arts providing higher general, religious, and moral education and 
preparing students for university studies (MB 1874, p. 327). At the beginning of the 
nineteenth century, an ever increasing number of critics claimed that the Gymnasium could 
not prepare its pupils for the changes taking place in the scientific, technical, industrial, and 
commercial environment of that time (Albisetti 1989, p. 182). The mercantile middle class 
and several polytechnic advocacy groups demanded the introduction of so-called modern 
schools: the curricula should focus on modern languages, mathematics, and natural sciences 
(Buchinger 1983, p. 93ff.).

In 1829, the Bavarian King Ludwig I himself reacted to these demands by 
commanding the opening of a Gewerbeschule in all big cities of Bavaria by 1835 (Döllinger 
1838, p. 1691). Gewerbeschulen were designed as three-year schools providing general 
education as well as preparing for commercial and industrial professions (RB 1864, p. 546).

In 1877, all 40 Gewerbeschulen were officially transformed into six-year Realschulen. 
Realschulen were supposed to provide higher civic education on the basis of modern 
languages, mathematics, sciences, and history (MB 1877, p. 127ff.). By 1896 there existed 55 
Realschulen in Bavaria.
According to Kleinfeller (1883, p. 97ff.), the majority of modern secondary graduates started working in businesses and industrial occupations directly. Education and practical knowledge of these graduates were highly acknowledged by the business environment: merchants, manufacturers, master craftsmen, and other businessmen frequently asked rectors of Realschulen to recommend graduates of their institutions to them. These graduates were also better able to climb the career ladder due to their valuable knowledge obtained at the Realschule.

Over the years, modern secondary education established itself as a popular alternative to traditional secondary education, illustrated by the constant increase of students exceeding that of the Gymnasium.

Rudolf Diesel – inventor of the Diesel engine – is a prominent example of a modern secondary school career: growing up in Paris, he convinced his parents to send him to Augsburg to attend the local Gewerbeschule where his uncle was a teacher. Still at the Gewerbeschule (1870-3) he decided to become an engineer. Therefore, he continued to the technical university in Munich to study industrial engineering (Diesel 1983, p. 57ff.; Luther 1987, p. 143ff.).

Econometric Specification and Database

Did the introduction of modern secondary schooling boost economic performance? To answer this question I separately estimate the following models in case of the Gewerbeschule and Realschule:

\[ y = \alpha + \beta \cdot \text{ModSec} + \mathbf{X} \cdot \mathbf{u} \]  

(1)

where \( y \) is a per-capita measure of economic performance and \( \mathbf{X} \) is a set of control variables including geography, administrative independence, religious shares, other schools, and advocacy groups. \( \text{ModSec} \) is a dummy variable indicating whether there was a Gewerbeschule in 1835 or Realschule in 1896 in the respective county. Hence, \( \beta \) is the coefficient of interest capturing the economic effect of modern secondary education.

The main source of data is taken from censuses conducted by the royal Bavarian statistical office (‘Königlich-Bayerisches Statistisches Bureau’) between 1850 and 1907 and its predecessor institutions. These censuses were either published in ‘Beiträge zur Statistik des Königreiche Bayern’ or in ‘Zeitschrift des Königlich Bayerischen Statistischen Bureau’. Further, I use the Baten/Streb patents database (Streb et al. 2006).

The observational unit is a county implying that cities and their respective counties are combined to one observational unit, i.e. county. This applies to all variables. Variables capturing economic performance are measured several years after the school opening to account for the fact that innovations in schooling might need some time to materialize in the economy.

Propensity Score Matching

Gewerbeschulen and Realschulen were opened in most instances in big, prosperous, and economically developed counties. Therefore, the introduction of modern secondary education was presumably driven by endogenous factors (such as population size and economic prosperity). Any OLS estimation not accounting for this endogeneity will lead to biased and inconsistent estimates. To alleviate this bias, I adopt propensity score matching (Rosenbaum and Rubin 1983). This approach uses observational characteristics to estimate the probability of treatment, here school opening, in terms of the propensity score. Propensity scores are calculated based on an extensive range of observable county characteristics prior to treatment and counties are matched according to their scores. By accounting for these county characteristics it is possible to circumvent the endogeneity associated with a school opening and hence estimate a consistent effect on economic outcomes – under the assumption that these observables solely determine the endogeneity.
Figures 1 to 4 show histograms of the frequency distribution of propensity scores for treated and control groups. According to figures 1 and 2, there exists a considerable lack of overlap between control and treatment group in the Gewerbeschule sample: besides few exceptions, the sample is divided into counties with low propensity scores and no Gewerbeschule and counties with high scores and a Gewerbeschule. Thus, the calculated propensity scores confirm the apprehension that the introduction of a Gewerbeschule was driven by endogenous factors. In the case of the Realschule, figures 3 and 4 indicate some – albeit very low – degree of overlap. This implies that the opening of a Realschule did not entirely depend on observable economic characteristics, which may be endogenous to the outcome considered.

Hence, conducting traditional propensity score matching using matching methods does not seem feasible in this case. I follow Crump et al. (2009) who suggest restricting samples with clear lack of overlap of propensity scores between treated and control groups from 0.1 to 0.9. However, in the case of the Gewerbeschule I deviate from this approach since the number of observations would shrink to a mere 14. Therefore, I restrict the sample to counties with corresponding propensity scores between 0.01 and 0.9.

Results
The economic impact of modern secondary education in a county is presented by tables 1 and 2 in case of the Gewerbeschule and Realschule, respectively. Panel A includes no controls; panels B and C successively add more control variables. Columns 1, 3, 5, 7, and 9 report estimates obtained by the whole sample of counties, columns 2, 4, 6, 8 and 10 report estimates obtained by restricted samples based on propensity scores. Counties in the restricted sample consequently differ substantially only in terms of having opened a Gewerbeschule and/or Realschule or not.

According to results obtained by the whole sample depicted in panel A of table 1, the presence of a Gewerbeschule is significantly associated with a higher share of the population
self-employed in trade in 1871 (column 1) and employed in industry in 1882 (column 7) as well as with a higher number of business formations 1869-75 (column 9). These findings are confirmed by OLS regressions using restricted samples based on propensity scores. The impact of the Gewerbeschule on the population share working in industry remains significant even when controlling for a wide range of other factors.

Table 1: Economic effect of the Gewerbeschule (introduction by 1835)

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Share of Self-Employed in Total Population (in %)(1871) in Trade</th>
<th>Share of Population employed in %) (1882) in Industry</th>
<th>Business Registrations per 1,000 Inhabitants (1869-75)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Gewerbeschule</td>
<td>0.478***</td>
<td>0.148</td>
<td>1.20**</td>
</tr>
<tr>
<td></td>
<td>[0.119]</td>
<td>[0.115]</td>
<td>[0.554]</td>
</tr>
<tr>
<td>Panel A: no controls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gewerbeschule</td>
<td>0.371</td>
<td>-0.053</td>
<td>1.94</td>
</tr>
<tr>
<td></td>
<td>[0.263]</td>
<td>[0.191]</td>
<td>[1.17]</td>
</tr>
<tr>
<td>Panel B: small set of controls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gewerbeschule</td>
<td>0.533</td>
<td>-0.032</td>
<td>2.61</td>
</tr>
<tr>
<td></td>
<td>[0.373]</td>
<td>[0.183]</td>
<td>[1.79]</td>
</tr>
<tr>
<td>Panel C: large set of controls</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gewerbeschule</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>121</td>
<td>34</td>
<td>121</td>
</tr>
</tbody>
</table>

Notes: Table reports OLS estimates. Unit of observation is a county. Robust standard errors are in parentheses. Significantly different from 0 at *** 1%, **5%, and *10% level. Sample includes all observations in columns 1, 3, 5, 7 and 9. Sample in columns 2, 4, 6, 8 and 10 includes counties with propensity scores 0.01<pscore<0.9. Panel A includes no controls. Panel B includes geography (Bavarian Palatinate), administrational independence (1871) and population structure (i.e. population shares of Catholics, Protestants, Jews and military) (1871 or 1880) as controls. Panel C includes geography, administrative independence (1871), population structure (1871 or 1880), Gymnasium (1862) and advocacy groups (1872) as controls.

Estimates of panel A in table 2 obtained by the whole sample are positive and significant in almost all cases. For example, counties which opened a Realschule by 1896 are associated on average with 1.8 more businesses in trade per 1,000 inhabitants (column 1), a 1.43 and 4.96 percentage point higher share of the population employed in trade and industry (columns 3 and 5), respectively, and 0.008 more patents per 1,000 inhabitants (column 9) than counties without a Realschule. Significance and magnitude are hardly affected if other factors are controlled for in panels B and C. Using propensity score matching confirms these findings: The presence of a Realschule positively influenced the population shares employed in trade and industry as well as the degree of innovativeness, as captured by patent grants. Results are even more significant than those obtained by the whole sample.
Table 2: Economic effect of the Realschule (introduction by 1896)

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Number of Businesses per 1,000 Inhabitants (1907) in Trade</th>
<th>Share of Population employed (in %) in Industry</th>
<th>New Patents per 1,000 Inhabitants (1902-13)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>Realschule</td>
<td>1.812*</td>
<td>0.662</td>
<td>-2.278</td>
</tr>
<tr>
<td></td>
<td>[0.987]</td>
<td>[1.766]</td>
<td>[2.213]</td>
</tr>
<tr>
<td>Realschule</td>
<td>-0.616</td>
<td>-1.34</td>
<td>-1.652</td>
</tr>
<tr>
<td></td>
<td>[1.176]</td>
<td>[2.186]</td>
<td>[2.778]</td>
</tr>
<tr>
<td>Realschule</td>
<td>-0.49</td>
<td>0.718</td>
<td>-1.684</td>
</tr>
<tr>
<td></td>
<td>[1.222]</td>
<td>[2.889]</td>
<td>[2.691]</td>
</tr>
<tr>
<td>Observations</td>
<td>146</td>
<td>53</td>
<td>146</td>
</tr>
</tbody>
</table>

Notes: Table reports OLS estimates. Unit of observation is a county. Robust standard errors are in parentheses: significantly different from 0 at *** 1%, ** 5% and * 10% level. Sample includes all observations in columns 1, 3, 5, 7 and 9. Sample in columns 2, 4, 6, 8 and 10 includes counties with propensity scores 0.1<pscore<0.9. Panel A includes no controls. Panel B includes geography (Bavarian Palatinate), administrative independence (1896), population (i.e. population shares of Catholics, Protestants, Jews and military) (1905) as controls. Panel C includes geography, administrative independence (1905), population structure (1905), share of self-employed in trade and industry (1871), Gymnasium (1906) and advocacy groups (1872) as controls.

Thus, comparing counties with and without modern secondary education shows that this new school type positively influenced the degree of innovativeness as well as the share of people employed in industry and trade.

Conclusion

This case study of nineteenth-century Bavaria highlights the importance of practice-oriented schools for economic development: the empirical analysis reveals that there exists a link between the presence of a modern secondary school and economic performance of a county. Counties opening such a school forged ahead in economic terms. Since nineteenth-century Bavaria was still mainly an agrarian state, secondary education promoting industrial, commercial, and scientific knowledge might have not only influenced economic performance directly but may have also provided the basis needed to catch up to technologically advanced Prussia.

Besides effects on the economy, modern secondary education might as well have affected social mobility. As the Gymnasium understood itself as an institution for the elite, the introduction of the Gewerbeschule and Realschule might have encouraged other social classes to also participate in secondary schooling.

Related to the issue of social mobility is whether modern secondary education increased private returns of schooling. As Kleinfeller (1883, p. 97ff.) argues, graduates were highly valued by the local business environment. In addition, education obtained at the Realschule/Gewerbeschule enabled former students to reach advanced occupational positions more easily.

Therefore, the impact of modern secondary education on social mobility as well as on private returns provides an interesting field for future research.

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Educational production functions as of 1886: how primary schooling shaped economic development in end-of-nineteenth-century Prussia

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Supervisor: Professor Ludger Woessmann

Towards the end of the nineteenth century, Prussia went through the second phase of the industrial revolution. At the same time, Prussia expanded primary education ensuring comprehensive school attendance. Little is known, however, about how educational inputs affected ultimate outcomes like earnings – about the educational production process, the input-outcome relationship, and the efficiency of resource use. A large modern literature studies the effects of educational inputs on outcomes in school and later in life (e.g., Hanushek 2010). But while there is some historical evidence on how school attendance and literacy relate to returns in the labour market (e.g. Mitch 1984; Long 2006), hardly anything is known about how specific school inputs were or were not crucial for the outcomes of the educational production process in a historical perspective.

This paper estimates educational production functions in a historical context. Using rich county-level data for Prussia, it is the aim to estimate how different school inputs in 1886 relate to subsequent increases in income. As most frequently used in the literature on contemporary educational production functions, expenditures per student, the student-teacher-ratio, non-personnel expenditures per student, and two different measures for teacher quality are examined as focal input variables. Following the modern literature as, inter alia, Card and Krueger (1992a, 1992b), Heckman, Layne-Farrar and Todd (1996) and Chetty et al. (2011), subsequent earnings are used as an outcome measure of the educational production function.

So far, the modern literature does not provide consensual evidence on which school resources have a significant impact on subsequent earnings (Todd and Wolpin 2003). The overall consensus in the empirical literature on contemporary schooling is that additional educational spending does not automatically improve the quality of schooling and schooling outcomes, but that it is teacher quality that matters for students’ performance (Hanushek 2003).

But do these findings also hold for a time when compulsory schooling eventually encompassed all students, when it was common that teachers in the countryside had to handle 140 to 170 students at a time (Tews 1914), when the lack of school buildings and teachers was severe due to the population increase and internal migration and therefore considered as one of the main challenges by the Prussian Ministry of Health, Education, and Religion?

For the analysis county-level data from the Prussian Statistical Office are used. For the educational inputs the first education census on primary schools from 1886 is exploited, containing extremely rich county-level information on students’, teachers’, and schools’ characteristics (Königlich Statistisches Bureau in Berlin, 1889).

Two different outcome measures are used. The Prussian Statistical Office collected data on day-labourer wages for 1892 and 1901 (Königlich Statistisches Bureau in Berlin, 1904), allowing for a value-added (VA) specification where the lagged income variable is included in the estimation equation. According to the (Königlich Statistisches Bureau in Berlin, 1904), this income was the only income available for the major part of the Prussian population. It comprises the earnings for jobs not requiring any specific education, i.e. unskilled labour. Another proxy for measuring the income of a county is to use data on the income tax per capita which is available for 1878 and 1901, again making a VA specification possible. Income tax was only paid if income exceeded a certain threshold, thereby making it a good proxy for the population at the higher end of the income distribution (Hill 1892).
These two different outcome measures allow us to look at heterogeneity effects as the inputs of schooling might have a different effect on those people at the higher end of the income distribution, i.e. those paying income taxes, as compared to those at the lower end of the income distribution, i.e. those receiving day-labourer wages.

For the control variables, data from the literacy census of 1871 (Königlich Statistisches Bureau in Berlin, 1875) and data from both the occupation census of 1882 (Königlich Statistisches Bureau in Berlin, 1884/5) and the population census of 1885 (Königlich Statistisches Bureau in Berlin, 1887) are used.

Map 1: Expenditures per student in 1886

Map 2: Student-teacher-ratio in 1886

As the level of expenditures across the Prussian counties varied tremendously (compare map 1) being driven by the rise of mass schooling on the local level (Lindert 2004), the focus regarding the educational inputs will be on overall expenditures per student and
different measures for the quantity and quality of schooling, namely the student-teacher-ratio (compare map 2), the teacher wages per teacher, whether the county has a state-run teacher seminar, and non-personnel expenditures per student. Non-personnel expenditures include expenditures for constructing, expanding, and repairing buildings and for all other scholastic maintenance costs. The indicator variable for teacher seminars measures whether a state-run seminar is maintained in the county. The Prussian state supported the establishment of teacher seminars during the nineteenth century in order to guarantee a uniform teacher education and to improve teacher’s quality. Teacher wages per teacher and the indicator variable for whether a teacher seminar existed or not, therefore, serve as proxies for teacher quality.

Table 1: Descriptive statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Income tax per capita 1900</td>
<td>312.09</td>
<td>249.634</td>
<td>60.000</td>
<td>2,542.799</td>
</tr>
<tr>
<td>Income tax per capita 1878</td>
<td>198.32</td>
<td>70.370</td>
<td>20.552</td>
<td>562.623</td>
</tr>
<tr>
<td>Day-labourer wages 1892</td>
<td>1.473</td>
<td>0.324</td>
<td>0.850</td>
<td>2.500</td>
</tr>
<tr>
<td>Day-labourer wages 1901</td>
<td>1.705</td>
<td>0.358</td>
<td>1.000</td>
<td>2.800</td>
</tr>
<tr>
<td>Expenditures per student</td>
<td>20.559</td>
<td>6.974</td>
<td>11.472</td>
<td>75.451</td>
</tr>
<tr>
<td>Student-teacher-ratio</td>
<td>75.414</td>
<td>12.177</td>
<td>48.072</td>
<td>121.179</td>
</tr>
<tr>
<td>Wages per teacher</td>
<td>944.179</td>
<td>169.29</td>
<td>663.98</td>
<td>1,737.647</td>
</tr>
<tr>
<td>Teacher seminar dummy</td>
<td>0.231</td>
<td>0.422</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Non-personnel expenditures per stud.</td>
<td>7.622</td>
<td>4.080</td>
<td>3.079</td>
<td>48.309</td>
</tr>
<tr>
<td>Population density</td>
<td>3.928</td>
<td>16.434</td>
<td>0.219</td>
<td>207.590</td>
</tr>
<tr>
<td>Dependency ratio 1885</td>
<td>0.346</td>
<td>0.028</td>
<td>0.251</td>
<td>0.430</td>
</tr>
<tr>
<td>Share females 1885</td>
<td>0.510</td>
<td>0.014</td>
<td>0.464</td>
<td>0.552</td>
</tr>
<tr>
<td>Share migrants 1885</td>
<td>0.235</td>
<td>0.114</td>
<td>0.054</td>
<td>0.675</td>
</tr>
<tr>
<td>Share agricultural workers 1882</td>
<td>0.198</td>
<td>0.076</td>
<td>0.002</td>
<td>0.333</td>
</tr>
<tr>
<td>Share Protestants 1885</td>
<td>0.639</td>
<td>0.375</td>
<td>0.003</td>
<td>0.998</td>
</tr>
<tr>
<td>Share Jews 1885</td>
<td>0.010</td>
<td>0.011</td>
<td>0.000</td>
<td>0.098</td>
</tr>
<tr>
<td>Value for shelter and heating</td>
<td>244.469</td>
<td>126.384</td>
<td>85.000</td>
<td>921.000</td>
</tr>
<tr>
<td>Literacy rate 1871</td>
<td>0.861</td>
<td>0.127</td>
<td>0.361</td>
<td>0.985</td>
</tr>
<tr>
<td>Share urban students</td>
<td>0.264</td>
<td>0.224</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>School supply</td>
<td>6.660</td>
<td>2.697</td>
<td>0.328</td>
<td>14.933</td>
</tr>
<tr>
<td>Poland</td>
<td>0.263</td>
<td>0.441</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: IPEHD, own calculations

As can be seen in the summary statistics in table 1, there is a huge variation in income tax per capita both in 1900 and 1878. The standard deviation increased 3.5 times between the two years of observation. The variation in day-labourer wages both in 1892 and 1901 is much less pronounced and only increases slightly between those two years.

Huge variation across counties is found in all focal variables, i.e. in expenditures per student, the student-teacher-ratio, teacher wages and non-personnel expenditures per student. Teacher seminars exist in 106 Prussian counties. When looking at the distribution of expenditures per student and the student-teacher-ratio in maps 1 and 2, it can be seen that the student-teacher-ratio is generally lower where spending for education is higher.

First, the correlation between school inputs and outcomes are estimated in an Ordinary Least Squares Regression (OLS):

221 Teacher wages comprise monetary pay only. Fringe benefits as the free supply of shelter and heating are not included.

222 This positive relationship is also found when testing this with an OLS regression. The regression results are not shown here, but available upon request.
\[ Y_{t+2} = \alpha + \beta \text{exp}_{t+1} + X'_{t+1} + Y_{t+1} + \varepsilon_{t+1} \]  

(1)

where \( Y_{t+2} \) indicates income tax per capita in 1900 and day-labourer wages in 1901 respectively. \( \beta \) is the coefficient of interest. First, overall expenditures per student (exp) will be looked upon. In a second step, the student-teacher-ratio, non-personnel expenditures per student, teacher wages and the indicator variable for a state-run teacher seminar are used as inputs simultaneously in order to examine which association withstands while holding the other input variables constant. \( X' \) is a vector of control variables including the population density, the dependency ratio, the share of females, migrants, Protestants and Jews in 1885, the share of agricultural workers in 1882 and the value for shelter and heating in 1886 as proxy for a living price index, the literacy rate in 1871 and the share of urban students and the number of schools per 1,000 students (school supply) in 1886 as well as a dummy for whether the county formerly belonged to Poland and district dummies. \( \varepsilon_{t+2} \) indicates the error term.

As OLS might be biased due to omitted variables and reversed causality, a VA approach is used in the second step. The VA specification allows controlling for the initial situation in each county by including the lagged outcome variable in the estimating equation. The key assumption for a VA specification is that the lagged outcome variable is a sufficient statistic for historical inputs and if not controlled for endowments also captures endowments as e.g. county-specific economic and general conditions (Todd and Wolpin 2003). As the development of basic education in Prussia had developed on the local level, controlling for the lagged outcome variable and thereby looking at the change in the outcome variable instead of the level, allows estimating the contribution of educational inputs on economic development more precisely.

The estimation equation for the VA specification looks as follows:

\[ Y_{t+2} = \alpha + \beta \text{exp}_{t+1} + X'_{t+1} + Y_{t+1} + \varepsilon_{t+2} \]  

(2)

where \( Y_{t+1} \) indicates the lagged outcome variable, i.e. either income tax per capita in 1878 or day-labourer wages in 1892, while the other parts of the estimation specification concur with the OLS specification.

Table 2a: OLS specification – school inputs and subsequent income

<table>
<thead>
<tr>
<th>Dependent:</th>
<th>Income tax per capita</th>
<th>Day-labourer wages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Expenditures per student</td>
<td>0.008*</td>
<td>0.003*</td>
</tr>
<tr>
<td></td>
<td>(0.004)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Student-teacher-ratio</td>
<td>-0.001</td>
<td>-0.000</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Teacher wages</td>
<td>0.723***</td>
<td>0.122</td>
</tr>
<tr>
<td></td>
<td>(0.245)</td>
<td>(0.078)</td>
</tr>
<tr>
<td>Teacher seminar</td>
<td>0.009</td>
<td>0.014</td>
</tr>
<tr>
<td></td>
<td>(0.030)</td>
<td>(0.011)</td>
</tr>
<tr>
<td>Non-personnel expenditures per student</td>
<td>0.003</td>
<td>0.002</td>
</tr>
<tr>
<td></td>
<td>(0.006)</td>
<td>(0.002)</td>
</tr>
<tr>
<td>Constant</td>
<td>4.285***</td>
<td>-0.365</td>
</tr>
<tr>
<td></td>
<td>(1.215)</td>
<td>(2.062)</td>
</tr>
<tr>
<td>Controls, incl. district dummies</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Observations</td>
<td>452</td>
<td>452</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.826</td>
<td>0.829</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Source: IPEHD, own calculations.
When looking at the OLS results in Table 2a, it is found that the coefficient for educational expenditures per student is positive and significant for both income tax per capita and day-labourer wages. When estimating the four different measures for school quality and quantity simultaneously, it is only teacher wages per teacher that interrelate positively and significantly with income tax per capita. The student-teacher-ratio, the indicator variable for teacher seminars, and the non-personnel expenditures per student show the expected sign, but the coefficients are not significant. The coefficients in the estimation considering day-labourer wages also show the expected sign. However, none of the four different input variables correlates significantly with day-labourer wages.

Table 2b: VA specification – school inputs and subsequent income

<table>
<thead>
<tr>
<th>Dependent:</th>
<th>Income tax per capita</th>
<th>Day-labourer wages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Expenditures per student</td>
<td>0.027***</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Student-teacher-ratio</td>
<td>0.002</td>
<td>-0.001</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>Teacher wages</td>
<td>0.613**</td>
<td>0.130**</td>
</tr>
<tr>
<td></td>
<td>(0.249)</td>
<td>(0.065)</td>
</tr>
<tr>
<td>Teacher seminar</td>
<td>0.021</td>
<td>0.010</td>
</tr>
<tr>
<td></td>
<td>(0.028)</td>
<td>(0.009)</td>
</tr>
<tr>
<td>non-personnel expenditures per</td>
<td>0.031***</td>
<td>-0.001</td>
</tr>
<tr>
<td>student</td>
<td>(0.009)</td>
<td>(0.001)</td>
</tr>
<tr>
<td>VA term</td>
<td>0.525***</td>
<td>0.544***</td>
</tr>
<tr>
<td></td>
<td>(0.076)</td>
<td>(0.080)</td>
</tr>
<tr>
<td></td>
<td>0.578***</td>
<td>0.580***</td>
</tr>
<tr>
<td></td>
<td>(0.044)</td>
<td>(0.043)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.510</td>
<td>-3.673**</td>
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<tr>
<td></td>
<td>(1.005)</td>
<td>(1.847)</td>
</tr>
<tr>
<td></td>
<td>0.409</td>
<td>-0.431</td>
</tr>
<tr>
<td></td>
<td>(0.268)</td>
<td>(0.508)</td>
</tr>
<tr>
<td>Controls, incl. district dummies</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Observations</td>
<td>426223</td>
<td>426</td>
</tr>
<tr>
<td></td>
<td>435</td>
<td>435</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.826</td>
<td>0.828</td>
</tr>
<tr>
<td></td>
<td>0.907</td>
<td>0.908</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Source: IPEHD, own calculations

When including the lagged outcome variable in the regression and thereby estimating a VA specification, the significant relationship between overall expenditures per student and day-labourer wages loses its significance while the coefficient for income tax per capita stays significant and even increases. Teacher wages continue correlating positively with income tax per capita while the magnitude of the coefficient decreases slightly. Besides, the coefficient of non-personnel expenditures per student on income tax per capita turns significant. In the VA specification on day-labourer wages, the coefficient on teacher wages turns significant as well while the other coefficients stay insignificant.

As the OLS estimates might be biased due to omitted variables and especially reverse causality, the results from the VA specification show that teacher quality, measured by teacher wages, already was the decisive factor for the economic success in the labour market both for the population at the high and the low end of the income distribution. This finding as well as the finding that the student-teacher-ratio does not correlate with either of the two outcome variables goes along with the literature on contemporary educational production functions. The non-existing association with the supply of teacher seminars can be explained.

223 The lower number of observations results from the fact that the 26 city counties in 1878 are not included in the data on tax income.
by the fact that state-run teacher seminars were evenly distributed across Prussia in order to guarantee teachers’ quality throughout the state and that teacher wages might already capture the teacher quality sufficiently.

Non-personnel expenditures only play a role for the higher end of the income distribution showing that the quantitative expansion of schools, e.g. the construction of new schools only mattered for the higher income groups in the ending nineteenth century.

Overall, findings from estimating a historical educational production function go along with the average findings in the contemporary literature.

References


Human capital development in the Middle East: is secularism a solution? Evidence from Turkey in the nineteenth and twentieth centuries

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Human capital and its relation with religion is an important topic especially in the Middle East. This paper tests the influence of separating religion and government on human capital in Turkey. The development of numeracy is calculated using evidence based on two Turkish censuses which were carried out in the twentieth century. Was secularism the solution to develop human capital in Turkey?

1. Introduction
The relationship between religion and human capital was discussed in earlier studies. Some researchers showed a positive relation between religion and education. For example, Becker and Woessmann (2009) showed that Protestantism led to better education levels in Prussia.

In the first half of the twentieth century, Turkey converted into a secular state. And Ataturk replaced religious education with a national education system. The main hypothesis of this research is that, separating religion from the government had a positive influence on the human capital in Turkey.

The ‘age heaping methodology’ which relies on the ability of people to declare their exact ages is applied in this paper. The data stem from censuses in the twentieth century in Turkey and cover the birth decades of the 1860s-1950s. The Turkish growth rate during and after the reforms’ period will be compared to other countries’ growth rates in the region.

2. Historical Background
Before the establishment of modern Turkey, the Ottoman Empire was ruled by Islamic law which controlled education. (Rankin and Aytac 2006). A year after Turkey was declared a republic state in 1923, the caliphate system was abolished (Cagapty 2006) and Turkey converted to a secular state. Ataturk introduced reforms in different fields; education was one of them. The Islamic education system was replaced with a western education style (Koc et al. 2007). Primary education became mandatory for all children, including girls (Rankin and Aytac 2006). And the curriculum was developed (Gözütök 2003).

The main question is: Was secularism beneficial of human capital development in Turkey? In order to answer this question, we will study the development of an indicator of human capital during the secularization period, and compare Turkey to other countries to prove that secularism had a significant effect on human capital development.

3. Data Description
Two main datasets are used in this study. One is an international comparative dataset on Turkey and its neighbouring countries. This set contains ABCC index values for each birth decade from 1860 until 1950 for 12 neighbouring countries and was provided by Crayen and Baten 2010. The second dataset is based on a combination of two different Turkish censuses. The first census was carried out in 1935. There is a microfilm copy available at the Mannheim Center for European Social Research (MZES). The second census was done in 1985 and it is available online from IPUMS International. The estimated Kurdish population share in Turkey is taken from a study of Multu (1996). And the values of GDP per capita for Turkey and the other twelve countries were taken from the Maddison Project Database by Bolt and van Zanden (2013).
4. Methodology

4.1 Age Heaping

There are many indicators used to measure the human capital in a country. For Turkey, however, there is no available evidence for school enrolment before the first cohort which benefited from the Ataturk school (Lindert 2004). For other Middle Eastern countries taken as comparison sample here, only some sketchy evidence is available. Therefore, the numeracy level of the people will be used in this research. Numeracy can be specified as the ability of people to calculate their ages accurately. This measure can be determined by using registers where people mentioned their ages. It has been noticed that people in the earlier times mostly reported their ages as numbers ending with zero or five. This tendency to report the ages ending with a particular digit is called age heaping. Earlier literature shows that there is a positive correlation between age heaping and illiteracy.

4.2 ABCC Index

According to A’Hearn, Baten and Crayen (2009), the best way to calculate the ratio between the heaped ages in a census and the other ones is by using the Whipple Index.

\[
Wh = \frac{\sum (age_{25} + age_{30} + \ldots + age_{70})}{\sum (age_{23} + age_{24} + age_{25} + \ldots + age_{72})} \times 100
\]  

The result of \(Wh = 500\) means that all of the people reported rounded ages. The other way around, when all people report their exact ages, the Whipple Index should be equal to 100. That means, 20 per cent of the people reported ages ending with a multiple of five, which is supposed to be the ideal case.

A’Hearn et al. (2009) suggested a new index to simplify the interpretation of age heaping. We call it the ABCC Index, which is a linear transformation of the Whipple Index. It estimates the ratio of the people who stated their exact ages to the whole population.

\[
ABCC = \left[1 - \frac{(Wh - 100)}{400}\right] \times 100 \text{ if } Wh \geq 100 \text{ else } ABCC = 100
\]

The ideal case of \(Wh =100\) leads to the result of \(ABCC = 100\), which means that all of the people reported their ages correctly. The worst case will be when everyone reports rounded ages and the resulted ABCC will be in this case equal to zero.

According to A’Hearn et al. (2009), in order to calculate the ABCC index, the ages are divided into groups according to their birth decades. The range of the ages is between 23 and 72 and it is divided into five age groups each includes ten years. The resulting age groups are classified into five birth decades and then the ABCC index can be estimated for each birth decade.

5. Analysis

5.1 Age Heaping and ABCC Index for Turkey

The available data about Turkey indicate a clear age heaping in 1935, and it decreases in 1985. Figure 1 shows the development of ABCC index by birth decade for each region. There is a significant difference between the regions. It becomes less for the younger generations that benefited from Ataturk’s reforms. But the ranking of the regions stays almost the same. The difference was also between the provinces. In 1935, most of the provinces in the west had a good ABCC level in comparison with the eastern provinces (see figure 2). The provinces’ ABCC values improve in 1985. But the eastern part still lags behind (see figure 3).

224 The name of this index comes from the initials of the authors’ names in addition to Greg Clack’s, who gave this suggestion in a comment on the paper.
5.2 Effect of Kurdish ethnicity and other factors

The eastern part of Turkey is inhabited mainly by the Kurds who are an ethnic group, mostly Muslims and they speak Kurdish (Multu 1996). It is not easy to estimate the exact number of Kurds in Turkey. Koc et al. (2008) mentioned that in 1965, 82 per cent of them lived in the eastern part of Turkey. Figure 4 shows the distribution of Kurds in Turkey according to the 1927 census. Multu (1996) estimated the number of Kurds in 1990. We used these estimates to calculate the effect of being a province with Kurdish majority on the numeracy level.

Table 1 shows the results of the OLS regressions. The dependent variable is the ABCC value. The reference category is a female from the Aegean region who was born in birth decade 1860. In the regression (1), the Kurds variable is included as a dummy equals one if the majority of the province are Kurds. The result indicates a significant negative effect. While being a male has a significant positive effect. The geographical regions show significant differences. After excluding the Kurds dummy in the regression (2), Eastern and Southern Anatolia regions show significant negative effect. In the regressions (5), the Kurds percentage share in 1990 is included resulting in a significant negative effect.

The critics mention that the government invested little to develop the Kurdish provinces (Mango 1999). In the same paper, Mango states that there was resistance against the land reforms from the Kurdish landowners. Other scholars criticize Ataturk’s policy of ignoring the non-Turkish ethnic groups. Aytürk (2011) mentions that Kurdish was banned in public. That might have resulted in less benefit from the educational reforms because only Turkish was allowed at schools.

The birth decades show significant positive effect over time. Another factor which might play a role is religion. The non-Muslim share per thousand (1935 census) is included and it shows a small but a significant positive effect on numeracy.

5.3 Ataturk Reforms and Numeracy

In order to test the effects of the Ataturk reforms, we compiled a sample of numeracy growth rates for the Ataturk period, for Turkey before the reforms, and for a set of 12 neighbouring countries starting in the 1860s and running until the mid-twentieth century (based on the compilations in Crayen and Baten 2010).

Then, we assigned a dummy variable to Turkey in the decades in which the Ataturk reforms should have exerted an influence. Of course, we need to control for initial levels of numeracy: a country with a low ABCC would have more ‘room’ for substantial increase. In contrast, a country which has already reached a high ABCC can achieve only small growth rates. Therefore, we included only those countries which had lower numeracy values than 95 per cent.

The results indicate that Ataturk’s reforms had in fact a significant and positive impact, if the initial level is controlled for (table 2). We use clustered standard errors to avoid potential consequences of serial correlation.

We also controlled for other potential variables. Given the fact that some of these variables have missing values for some of the countries, we entered these controls separately, and not in one comprehensive model (including all at one time, N would be reduced to 13).

(1) We include GDP per capita because the growth rate might depend on available financial resources.
(2) We control for early land inequality using estimates (Juif and Baten 2013).
(3) Democracy: if the participation rate is higher, voters will demand a higher growth rate of educational investment.
(4) Finally, a high level of fertility might reduce the propensity to increase, as the quality-quantity trade-off might lead to lower investments if children numbers are high.
These control variables never reach statistical significance, which might be caused by the small number of cases. However, the Kemalist reforms remain significant in all models test.

We tested whether the Ataturk reform dummy would still be significant and positive if applied to (a) predominantly Kurdish and (b) non-Kurdish provinces. We concluded that the effect of the Kemalist reforms remained positive and significant in the non-Kurdish provinces. But the significance disappeared in the Kurdish ones (table 3).

6. Conclusion

The empirical analysis of the available data about Turkey in the twentieth century showed that secularism helped improve human capital. The reforms of Ataturk led to a significant improvement in human capital. However, the effect was not the same for all regions. The eastern part of Turkey, where the Kurds are mostly located, never caught up fully to the west.

This research contributed to understanding the relationship between secularism and human capital especially for the Middle East, where in most of the countries, religion still controls the government. As an outlook more detailed studied on ethnic inequality before and after educational reforms are planned, as well as, extending the regional database to additional Middle Eastern countries.

References

Data sources
Maddison Project Database by Bolt and van Zanden (2013).
Mannheim Center for European Social Research (MZES).
### Table 1: OLS regression

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(Reference category: female, Aegean Region, birth decade 1860. *, **, *** denote significance at the 10, 5, 1 per cent level, respectively. Other controlling variables are included in the regression)
Table 2: Regressions: determinants of numeracy growth, 1860-1950 in Turkey and nine of its neighbouring countries

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Table 3: The effect of Ataturk reform in the provinces of Turkey

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Figure 1: *ABCC index development according to birth decades on the regional level*

Figure 2: *ABCC index by province 1935*

Figure 3: *ABCC index by province for birth decades 1900s-1950s*
Figure 4: Kurds distribution in Turkey 1927

Winning ugly? The impact of wage inequality on labour productivity

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Supervisor: Professor Christer Lundh

While the postwar period was characterized by extraordinary growth and prosperity, this analysis starts at a time when the ‘Golden Age’ was over. By comparing 1962-73 with the period 1973-82, the average growth rate per worker fell between 50-75 per cent in Europe (Eichengreen 2007: 252). Eichengreen (2007) explains this, inter alia, by showing that wages increased faster than productivity. In addition to a productivity slowdown, this period was characterized by falling employment rates in Europe, although rising employment in the US accompanied by increasing inequality (Nickell 1997). Some authors claim that the increase in unemployment in Europe goes back to the common institutional roots emerging in the post-oil crisis era (Allard and Lindert 2007) and call the rising unemployment in Europe the flip side of the rising inequality in the US. While researchers have mainly focused on explaining one or the other, this paper aims to uncover the impact of inter-industry wage inequality on labour productivity, including how far this effect works through the channel of employment. The macroeconomic panel analysis over the time period 1970-2007 includes 12 European countries, the US and Australia. Running a 2SLS approach, the research question is twofold. First, what is the impact of inter-industry inequality on productivity and through which mechanisms? Second, does this impact differ between different groups of countries?

Some country-specific studies estimate the effect of inter-industry inequality on productivity such as Borjas and Ramey (1994) for the US or Hibbs and Locking (2000) for Sweden. Panel studies are few (e.g. Rogers and Vernon (2002) and rarely control directly for inequality when trying to explain productivity growth. Allard and Lindert (2007), for instance, show how the welfare state and labour market institutions affect productivity in OECD countries in 1963-95 without explicitly referring to wage inequality. Enflo (2011) mentions the slightly positive impact of labour unions on productivity, without taking the next step and considering wage equality in particular. The paper at hand expands Allard and Lindert’s (2007) or Enflo’s (2011) approach by incorporating inequality and by uncovering differences between Europe, on the one hand, and Australia and the US on the other.

Labour productivity, as the dependent variable, is measured as value added (VA) per hour worked over the whole industrial sector:

\[
\text{Productivity} = \frac{\text{VA}_{it}}{\text{hour}_{it}},
\]

for each country i at time t. The value added of the industry sector is taken from the World Bank and then deflated by using the consumer price index of the OECD to convert current into constant dollars. For each country, the calculations are based on the same industries for the sake of comparison. The coefficient of variation of wages between industries serves as an indicator of wage inequality. Given the labour compensation per hour worked of the EUKLEMS database, the coefficient of variation is calculated as:

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225 Included countries are Australia, Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Sweden, the United Kingdom and the United States.
Inequality = \frac{\sigma_{it}}{\mu_{it}},
with \sigma as the standard deviation and \mu as the mean over all industries in country i at time t.\textsuperscript{226}

Figure 1: Development of productivity and inequality: Europe vs. the US and Australia

Note: Productivity as value added over hours worked; inequality is the coefficient of variation of wages between industries.

Figure 1 displays the average development of between-industry inequality and labour productivity in the same industries averaged for all European and non-European countries (i.e. the US and Australia) in the panel. In addition to the comparison of productivity and inequality levels, these graphs also make it possible to uncover different correlations between the two variables in Europe and the US/Australia. In all countries, the productivity level between 1970 and 2007 increased from around 1.5 to 5.5 per cent, while the between-industry inequality slowly decreased in Europe, especially during the 1970s, although not in the US and Australia. While the European development of inequality is oppositio nal to the one of the productivity level, both develop hand in hand in the US/Australia (as also mentioned by Borjas and Ramsey [1994]).\textsuperscript{227} Hence, one could predict a negative relationship for Europe and a positive one for the US and Australia.

To determine productivity, direct and indirect effects need to be distinguished. Shapiro and Stiglitz (1984), for instance, claim that external monitoring is costly and impractical, at least in some industries. Higher wage equality can raise productivity over time by cutting the costs of supervising workers. Equality also creates trust (Jordahl 2009), which further facilitates stable macro-policy (Allard and Lindert 2007). Indirect macroeconomic effects work mainly through an employment–productivity trade-off. Squeezing pay differentials between industries can enhance productive efficiency by distributing labour and capital from low- to high-productivity activities (Agell and Lommerud 1993). Less productive firms will be forced out of the market and aggregate productivity thus increases since the released resources (labour and capital) can be used more effectively in expanding industries (Hibbs and Locking 2000). This mechanism is formalized by Agell and Lommerud (1993) as structural change in endogenous growth theory. The remaining high-wage industries substitute labour for capital or technologies, which are productivity-increasing (Borjas and Ramey 1994). Since low-skilled jobs disappear, human capital accumulation is stimulated to escape unemployment.

\textsuperscript{226} There are 39 industries included (NACE Codes C, D10-41, E 40-41, F). As labour compensation is not included in EUKLEMS for the US, the data are combined with wage figures from the ILO for this particular country.

\textsuperscript{227} Of course, developments in single countries deviate more than displayed in these averages, but the overall impression of the different patterns inside and outside Europe is the same.
To estimate both kinds of effects (e.g. direct and indirect), two estimation steps are performed. Gordon (1997) sees the root of the employment trade-off in institutional factors that increase the cost of labour. By making labour expensive, firms move northwest on labour demand curves. As shown by Enflo (2011), these institutions can serve as instruments for employment. To prove this and the indirect impact of inequality, the employment function is estimated in the first step, which has the form:

$$\log(\text{EMPL}_{it}) = \alpha + \beta_1 \left( \frac{Y}{Y_{\text{PER}}}_{it} \right) + \beta_2 \text{UNEM}_{it} + \beta_3 \text{EPL}_{it} + \beta_4 \text{TAX}_{it} + \beta_5 \log(\text{INEQ})_{it} + u_{it}$$  \(1\)

The employment share in the industrial sector (EMPL) in country i at time t is regressed upon the productivity gap \(\left( \frac{Y}{Y_{\text{PER}}} \right)_{it}\), the three institutional variables of unemployment support (UNEM), employment protection laws (EPL) and tax wedges (TAX) and between-industry inequality (INEQ). The gap is calculated by filtering the value added series by using a Hodrick-Prescott filter and thereafter dividing the real value added by the potential one (Enflo 2011). The regression controls for country- and time-fixed effects. After determining the impact factors on employment, these can be used to instrument employment in the production function, which is estimated in the second step by using a 2SLS model.

Starting from a Cobb-Douglas production function, the productivity parameter Y in country i at time t is determined by physical capital K, human capital H and labour-augmented technology gL. Since technology growth g cannot be captured directly, research and development investment (R&D) serves as a proxy. The productivity gap \(\left( \frac{Y}{Y_{\text{PER}}} \right)_{it}\) captures macroeconomic shocks. Education, as an indicator of human capital, is estimated by the adults’ average years of education. Divided by the labour input, all variables are expressed in per capita values. The vector X includes institutional determinants as control variables, if not used to instrument employment. Of primary interest is \(\beta_i\), the parameter that measures the impact of inequality. \(u_{it}\) is the standard error term. The possible existence of autocorrelation is reduced by taking three-year averages, as is usually carried out in productivity research. The general specification for the estimation is given by:

$$\log(Y_{it}) = \alpha + \beta_1 \left( \frac{Y}{Y_{\text{PER}}} \right)_{it} + \beta_2 \log(k_{it}) + \beta_3 \log(h_{it}) + \beta_4 \log(\text{INEQ})_{it} + \beta_5 \log(\text{EMPL}_{it}) + \beta_6 \log(\text{R&D}_{it}) + \beta_7 X_{it} + u_{it}$$  \(2\)

Column (1) in table 1 shows the employment regression (1), whereas columns (2)-(5) show the regressions of the productivity equation (2). The employment estimation confirms that labour market institutions have a significant impact on employment level; unemployment support decreases employment by 2.4 per cent, the tax wedge decrease it by 0.8 per cent and EPL increases it by 5 per cent. So far, these results are in agreement with Enflo’s (2011) estimations. However, Enflo (2011) overlooks one factor that has a significant impact on employment level: an inequality increase of 1 per cent demonstrably raises employment by 0.04 per cent. This also means that higher equality diminishes employment possibilities probably due to the substitution of low-skilled jobs. Model (2) displays the productivity regression without instrumenting, including all variables as explanatory factors. In this specification, the employment–productivity trade-off is confirmed. A 1 per cent employment increase reduces productivity by 0.53 per cent. As suggested by the productivity function capital, R&D investment and human capital both increase productivity. The education level, which is used as a proxy for human capital, becomes significant if R&D is left out. As model (2) shows, none of the institutional factors has a significant direct impact on productivity. This also applies to inequality. Models (3), (4) and (5) display different specifications to estimate the productivity function in 2SLS. In (3), all three institutional variables are used to...

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228 Labour input and the three institutional variables are from the Lindert–Allard OECD dataset.
229 Education and the deflated fixed capital formation per capita are given by the World Bank; and R&D investment in % of GDP is taken from the OECD.
instrument employment, whereas the direct effect of inequality is estimated. In (4), the same is carried out including R&D and in (5), inequality is also used as an instrument. The direct effects of EPL, unemployment support and taxes on productivity growth were tested but they were not significant. By using the 2SLS approach, the negative impact of employment is confirmed, as is the positive one for the productivity gap and human and physical capital. Again, education is significant if R&D is left out. A direct effect of inequality could not be found.

Table 1: The general model

<table>
<thead>
<tr>
<th>DV:</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
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<tbody>
<tr>
<td>Gap</td>
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<td>0.38* (0.19)</td>
<td>0.227 (0.31)</td>
<td>0.374 (0.28)</td>
<td>0.374 (0.28)</td>
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<td>Log_capital</td>
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<td>0.794*** (0.07)</td>
<td>0.643*** (0.07)</td>
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<td>Log_education</td>
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<td>0.195 (0.24)</td>
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<tr>
<td>Log_empl</td>
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<td>-0.957*** (0.28)</td>
<td>-0.709*** (0.26)</td>
<td>-0.709*** (0.26)</td>
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</tr>
<tr>
<td>EPL</td>
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<td>0.003 (0.05)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>TAX</td>
<td>-0.009*** (0.01)</td>
<td>0.001 (0.01)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
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<td>0.012 (0.02)</td>
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<td></td>
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<tr>
<td>Log_INEQ</td>
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<td>0.045 (0.05)</td>
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Note: Time dummies and country fixed-effects included. *** p<0.01; **p<0.05; * p<0.1. Robust standard errors are given in parentheses. R² loses its ordinary statistical meaning in models (3)–(5). Model (3) and (4) use EPL, TAX and UNEM as instruments for employment. Model (5) additionally includes inequality as an instrument.

In the next step, the equations are estimated by using interaction variables to assess whether inequality behaves differently in different groups of countries. Based on the descriptive statistics, the US and Australia form one group, while the European countries form another group. Again, model (1) shows the employment function, (2) and (3) the not instrumented productivity function and (4), (5) and (6) the instrumented one. In Europe, for each 1 per cent inequality augmentation, employment increases significantly by 0.05 per cent, which is not so in the US and Australia. Even more differences become visible when the productivity function is estimated. Without instrumenting employment, the results look pretty much as in table 2. However, this time, unemployment support has a direct effect if R&D investment is excluded. Again, the other institutional variables have no direct effect on productivity, even via the employment mechanism. Furthermore, the impact of inequality is different: while inequality in Europe has no direct effect on productivity, it does in the US and
New Researchers - Session I / G

Australia. In addition, the signs are conflictive. While the sign is negative in the European case and in accordance with the employment channel, it has a significant positive impact in the US and Australia. There, higher inequality leads to higher productivity, a pattern that can be called ‘winning ugly’. After instrumenting employment with taxes and EPL in (4), the pattern remains. If R&D is included (see [5]), unemployment support loses its direct impact.

Table 2: Europe versus the US/Australia

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<td>(0.14)</td>
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<tr>
<td>Log_empl</td>
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<td>-0.483</td>
<td>-0.73*</td>
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<td>(0.03)</td>
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<td>(0.01)</td>
<td>(0.01)</td>
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<td>UNEM</td>
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<td>0.013</td>
<td>0.045**</td>
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<td>R²</td>
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<td>0.61</td>
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Note: Time dummies included. *** p<0.01; ** p<0.05; * p<0.1. Robust standard errors are given in parentheses. R² loses its ordinary statistical meaning in models (4) and (5). In both models EPL and TAX are used as external instruments for employment.

The aim of this article was to examine the impact of inter-industry inequality on labour productivity from a macro-level perspective to complement micro-level studies that investigate the impact of intra-industry inequality with reasoning about cohesiveness and motivation effects. In conclusion, the 2SLS regression results indicate a direct positive effect of inequality on productivity in the US and Australia, while wage inequality hampers productivity growth mainly through an intensification of the employment–productivity trade off in Europe. As much has been written about European labour market institutions, it is nearby to assume that these make the difference. Future research should thus aim to examine (i) how far profound institutional differences explain the US/Australia puzzle and (ii) how far intra-industry inequality counters the effect of the results of inter-industry inequality. However, one can summarize that inter-industry wage inequality is productivity-increasing in the US and Australia, but productivity-decreasing in Europe.
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Labour recruitment and practices in Japan’s Far North: the Tako-beya of colonial Karafuto fact or fiction?

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Supervisor: Professor Janet Hunter

Introduction
This paper examines the recruitment of migratory labourers in the forestry and construction industries of Karafuto, a colony which was located in the northern extremity of the Japanese empire. Acquired in 1905 following the Russo-Japanese war, Karafuto was a frontier region rich in marine products, timber, and coal amongst other natural resources and had the potential to be of considerable economic value to Japan. With its richness in natural resources and low density of population Karafuto remained a region of acute labour shortage with most of its industries dependent on migratory labour.

Some scholars have posited that when an extremely high demand for labour is combined with an extremely low supply, coercive methods of labour utilization are the likely result. Indeed, the emergence of a degree of coercion could be seen in Karafuto with contemporary social reformers describing conditions there as a ‘living hell’ or even as Japan’s ‘slavery system’. However in this paper it is found that worksites which were characterized by physical violence and coercion, known as tako-beya, whilst present and somewhat persistent were far from the norm. An analysis of 114 contemporary newspaper reports of incidents related to the abuse of migratory labourers draws attention to a link between the geographical proximity of recruiting grounds and the degree of coercion used against migratory labourers. It is found that those recruited within or closer to Karafuto were underrepresented in cases of abuse due to a desire on the part of both labour and management to maintain reputation and fulfil contracts so as to secure future transactions. Conversely those from further afield were much more likely to end up in tako-beya as information on, and links to Karafuto were limited and thus contracts were likely to be one-offs.

Approach, Sources and Research Questions
In order to get as close as possible to the activities, motivations, and mentalities of the multiple actors of the labour market central government reports, regional social policy researcher’s surveys, local and national newspapers articles, written testimonies and oral interviews have been utilized. Though these are not without their biases it is hoped that they can add a degree of understanding of the complexities of the migratory labour market in Japan’s far north and an appreciation of individual agency in this context helping us to address the following overarching questions; how common were worksites characterized by coercion and violence (tako-beya)? How did migratory labourers end up in tako-beya?

Figure 1 and the many memoirs of former colonial settlers attest to the importance of migratory labour in Karafuto’s economy. Karafuto ranked as only the eleventh most ‘popular’ destination for migratory labour in the Japanese empire, yet it far exceeded other major destinations in terms of migratory labourers expressed as a percentage of the resident population. This centrality of migratory labour means that one of the principal source materials for this study, a local newspaper called Karafuto Nichi Nichi Shinbun, is littered

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232 Kokusaku Kenkyūkai (1925) Kangoku-beya Haishi yori Dorei Kaisō e made: Kyōsei Keisyaku Rōdō Seido, p.4.
233 For example see Sekiguchi, Köji. (1981) Karafuto Ryūmin Keijū.
with articles on the issue and as such provides plenty of fuel for research into the workings of the migratory labour phenomenon in the prewar Japanese empire.

**Figure 1: Incoming Migratory Labourers as % of Resident Population in 1924**

The logic for examining dekasegi in the forestry and construction industries is that both industries were of crucial importance to the development of the economy of Karafuto. Forestry supplied the raw materials for the paper and pulp industry which was the pillar of the Karafuto economy in the 1920s and 1930s. The exact number of labourers coming in to Karafuto for such work is difficult to accurately assess due to widespread underreporting, however a detailed contemporary study by Ikeda revealed that 7,418 migratory labourers travelled to Karafuto for forestry work in 1937 from neighbouring Hokkaido prefecture alone.\(^{235}\) Large infrastructure construction projects also became a feature of Karafuto’s economic development with projects such as the building of a road that stretched the course of the island and was commissioned by the military requiring the mobilization of ten to fifteen thousand in 1921.\(^{236}\)

**Managing Migratory Labourers in Karafuto**

In both construction and forestry, operations were often conducted in relatively remote and isolated parts of Karafuto and as such required that lodgings be made for the incoming labourers. These temporary lodges were known as *hanba* (literally ‘eating place’) and were the places where workers ate, slept, washed, and spent their leisure time. The size of a work camp would vary according to the scale of the project/operations and could be composed of several large lodges which typically housed 40-50 workers, with those housing 80-100 workers not unknown. These were rudimentarily constructed out of logs from the surrounding area and were located right next to or very close to the work site. In figure 2 we can see the exterior of one such *hanba* which was used on a road building project.

Figure 3 shows the interior of a typical *hanba* which was composed of a sleeping area/dormitory for ordinary labourers, a bath/washing area, a rudimentary toilet, rooms for storage of tools and provisions, a cooking and dining area, heating stove and a room for the labour boss / *hanba* head (*oyakata / hanba gashira*). Given their remote location and the fact that they would only be temporarily utilized, *hanba* were not electrified, and therefore poorly lit, cramped and far from hygienic with rudimentary toilets located inside the *hanba* perhaps so as to prevent runaways. The workers dormitory area would typically be composed of a long raised wooden platform which ran along each side of the *hanba* walls separated by a thin

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strip of earthen floor that ran from the eating area through the centre of the dormitory area. Here workers would sleep side by side on top of this wooden platform, which would be covered by coarse straw matting and any bedding such as a futon which workers either brought with them or rented from the hanba head.

Figure 2: Makeshift worker lodge (hanba) in Karafuto in the early 1920s

Source: Karafuto-chō (1921) Minami Karafuto Gunyō Dōro Kōchiku Kinen

Figure 3: Interior of a typical hanba in Karafuto

Based on: Kokusaku Kenkyūkai (1925) Kangoku-beya Haishi yori Dorei Kahiō e made, p.13.

For the labour bosses of these construction and forestry operations the hanba was more than just a temporary abode it was a method of labour management. Subcontracting of tasks related to labour in temporary or low-skilled operations was common in prewar Japan, allowing large firms a degree of flexibility in the expansion and contraction of operations and the ability to avoid responsibility for temporary staff. In some cases hanba were used to regiment workers and punish them with physical violence with such workers lodges popularly called tako-beya (literally ‘octopus room’). It is clear from contemporary colonial media

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Tako-beya were also referred to as kangoku-beya which means ‘prison cell’. The origin of the term tako-beya is unclear.
that *tako-beya* existed throughout the colonial period yet the shock which greeted reports of incidents of coercion and violence at *hanba* suggests they were far from common.

In my own interviews with former Karafuto settlers only 1 out 8 when asked whether they had ever seen a *tako-beya* responded positively yet all had heard of them growing up in the colony and had seen various *hanba* around Karafuto. The testimonies of seven former migratory labourers from Akita prefecture in northern Japan are full of vivid depictions of *hanba* life over a period of many years yet none of them ever ended up in a *tako-beya*.\(^{238}\) For most of them it was not the exploitation of the labour boss which really took a chunk into their wages it was their own squandering of their pay on booze, gambling and women either in the *hanba* itself or after they received their final wages. Indeed these former labourers all attest to the attractiveness of migratory labour work with higher wages than elsewhere in the Japanese empire for such work. At this point we may ask if *tako-beya* did exist then why were migratory labourers from Akita able to avoid them and how can we reconcile their nostalgic stories with the picture painted by concerned social reformers? The answer lies in geography.

**Geography, Recruitment and Abuse**

Figure 4: *Prefectural origins of migratory labourers in total and in incidents of abuse*

![Diagram](image)

*Source:* The left hand chart is calculated from; Chūō Shokugyō Shōkai Jimukyoku (1927). The right hand chart is calculated from 114 articles which detail labourer abuse incidents between 1910 and 1936 in the *Karafuto Nichi Nichi Shimbun*.

The recruitment of labourers and their passage to the worksites in Karafuto was no mean feat as these projects often involved the mobilization of hundreds or even thousands of labourers. Each labour contracting group utilized a vast network of recruiting agencies in various localities to reach its recruitment target. Some of the labour needs would have been filled with the settler population in Karafuto but inevitably Karafuto labour contractors needed to utilize their connections in the prefectures of their birth or former residence. The majority of Karafuto’s settler population and labour contractors hailed form Hokkaido and Japan’s northeast in prefectures such as Akita, Aomori, Iwate and Yamagata, and thus it followed that these became the major recruiting grounds. Indeed the data presented in figure 4 confirms this much, with the prefectures which make up Japan’s northeast and central Japan

\(^{238}\) Nozoe, Kenji & Tamura, Kenichi. (eds.) (1977) *Karafuto no Dekasegi Ringyōhen*,

116
sea coast (Hokkaidō, Tōhoku and Hokuriku) accounting for up to 96% of the total number of recruits.

Knowledge of the work and wages available in Karafuto’s forestry industry was well diffused in places such as Akita prefecture with recruiters regularly visiting the area and friends and relatives telling stories upon their return the fears potential new recruits had about going to work for a period of months in an unfamiliar place were reduced. For recruits from the major recruiting grounds with which the Karafuto based contractors had links of native place, the need to maintain the relationship was stronger on both sides with recruits incentivized to fulfill their contracts so as to avoid being turned down by recruiters in the following year and giving their village a bad name. For the Karafuto contractors abuse of employees from these regular recruiting grounds could equally give them a bad name and reduce their capacity to recruit in the same areas in following years. Therefore the potential for repeat transactions in the regular recruiting grounds was strong and thus reputation played a part in contract enforcement and overcoming the principal-agent problem.

Despite the efforts made to recruit workers in the areas Karafuto contractors had the strongest connections and indeed in Karafuto itself, the numbers recruited sometimes fell short of the actual requirements especially on the large-scale projects. In 1922 for example, a railway construction project required the mobilization of 6,000 labourers however only around 2,100 had been mobilized by August of that year. Given this kind of shortfall it is not surprising that some Karafuto labour contractors developed relations with recruiters in the major informal labour markets in mainland Japan which were often located in and around noted slum districts of major urban areas where large numbers of casual labourers resided due to the existence of a large day labour market (yoseba). These recruiting agents known as shūsenya did not travel throughout the countryside looking for labourers as casual labourers gathered there from nationwide.

In far off urban locations recruitment proceeded in the knowledge that transactions were likely to be one-off affairs. Urban recruiters were not dependent on Karafuto projects with the majority of their recruiting activities focused on the area in which they were based, such as Tokyo and Osaka, which provided a regular stream of projects in which to match labourers and contractors. Given this situation and the relatively abundant supply of day labourers in these yoseba there was less of a need to maintain a relationship with each casual labourer or to provide ‘quality’ labour to the Karafuto contractors who used the urban recruiters more in desperation than as preference. On the other side of the coin, day casual labourers from these yoseba unlike their counterparts recruited in the northeast had both poor information regarding conditions in Karafuto and for the most part were not concerned with reputation issues of their community with Karafuto contractors, and thus had little incentive to fulfill their contracts.

The left hand side of figure 4 which is constructed from reports of incidents of abuse of migratory labourers reported in the Karafuto Nichi Nichi Shinbun, Karafuto’s leading newspaper, confirms the importance of geography and local connections. The picture that emerges is an overwhelming prevalence in such incidents of those from prefectures ‘other’ than the regular recruiting grounds (Hokkaido, Tōhoku, Hokuriku). These ‘other’ prefectures only made up 4% of the migratory labour force in construction and forestry yet account for a disproportionate 71% of those involved in incidents of reported abuse. In stark contrast the regular recruiting grounds of the north accounted for 96% of the labour force but only a mere

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239 Ibid p.42 & 76.
240 Ibid p.16 & 41.
29% of incidents, providing grounds to support the idea that workers recruited in casual labour markets in urban areas not well connected to Karafuto such as Tokyo and Osaka were most likely to suffer abuse.

**Conclusion**

In the majority of Karafuto *hanba* conditions were not as appalling as those in the reports of social reformers yet it is clear that coercive *hanba* never totally disappeared in Karafuto. As we have seen, coercion and violence tended to be associated with those migratory labourers who came from locations furthest afield which were characterized by poor information and a lack of connections to Karafuto. This situation left labourers exposed to recruiters and labour bosses who were willing to use coercion to maintain their workforce in the absence of any effective punishment mechanism. Unfortunately this kind of labour market has parallels today such as the case of Nepalese construction workers who have been duped by recruiters about conditions and wages in far off world cup stadium construction sites in Qatar only to find squalid worker lodges, the constant threat of violence, and the withholding of passports and wages.244

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244 *The Guardian* (26th Sept. 2013) ‘Qatar under pressure over migrant labour abuse’.
Globalization is often portrayed as something new, something unique to the end of the twentieth century and the start of the twenty-first. We know that at least since 1492 we have lived in a truly global world; but the present day seems qualitatively different from any other period in human history. But for all our technological innovations, the half century before the First World War was at least as globalized a world in many ways as our own if not more so. The international movement of goods, labour and capital, at least, was generally much freer than the present.

No one in the late nineteenth century wrote a book called Globalization and its Discontents. But if that period was defined by the former it was certainly also home to the latter. This talk is about one group of American workers, the Order of the Knights of Labor, and the ways in which they expressed their discontents with globalization as they understood it. Founded in 1869, the Knights combined fraternal practices with workplace organization and an ambitious programme of political and social reform. In 1886 they reached a million members before falling into decline over the next decade. Historians have viewed the Knights in their various American and Canadian aspects but they have not proved so quick to treat the Order as an international body with international concerns. The Knights, after all, did set up their assemblies, the name they gave to their branches, in England, Scotland, Ireland, Wales, France, Belgium, Italy, Australia, New Zealand and South Africa, and possibly Mexico, Germany and the Scandinavian countries as well.

The aim of this paper is to rectify that. Knights were not against globalization per se, just as anti-globalization campaigners today, most of them at least, take issue with the nature rather than the fact of globalization. Knights envisaged an alternative international order to the emerging monopoly capitalism of the late nineteenth and early twentieth centuries. They called this alternative the ‘cooperative commonwealth’, where fraternal and cooperative ideals would triumph over individualism and greed. And like the socialists, they combined this ‘maximum programme’ with a series of transitory goals that we might dub their ‘minimum programme’. The international movement of labour, goods and capital would all be highly regulated. This would work to the benefit of workers elsewhere as well as for American workers. Indeed, by looking at the Knights in a global perspective we can understand their stances on immigration restriction and protectionism, particularly, in new and more complex ways.

And with both the maximum and minimum programmes the question of ends was closely bound up with the question of means. The international spread of the Knights of Labor was designed to ensure that international regulation, particularly of labour but also of goods and capital, would occur in spite of the opposition of unfriendly governments and employers. This same expansion would also bring the triumph of cooperation and the cooperative commonwealth across the world within sight. For American workers struggling to create an alternative to the kind of globalization that they found harmful, the Knights of Labor were both means and end.


246 The only two extended studies of Knights outside North America are Dommanget (1967), and Weir (2009).
The Minimum Programme

When Knights thought in global terms the first thing most of them thought of was immigration. American trade unionists had long grappled with the problems of mass immigration, from the frequent use of immigrants as strikebreakers, to the downward pressures they could exert on wages and the ways in which they threatened the survival of union standard wages and conditions.\(^{247}\) The Knights rose to their greatest height in the 1880s, a decade where more than half a million people on average arrived in the United States every year, a number that was double the previous decade and outstripped the 1890s as well. Immigration became an issue that could not be ignored. And while Knights attempted to lobby Congress for legislation to restrict what they considered as particularly harmful forms of immigration – excluding all Chinese workers and those brought over by employers already under contract – these legislative gains ultimately proved difficult to enforce and only had a negligible effect on immigration as a whole.\(^{248}\)

But the Knights of Labor was not simply an Order of knee-jerk restrictionists who might, to paraphrase Gordon Brown, call for ‘American jobs for American workers’. They also sought to combat the dangers of uncontrolled immigration firstly through attempts to build alliances with overseas unions, who could then warn prospective emigrants of unemployment and strikes taking place in the United States. In particular, Powderly attempted to build close ties with Alexander MacDonald and Thomas Burt, both Liberal MPs and leaders of coal miners’ unions. This course did not lead to much success. But the other course was far more ambitious and at least temporarily more successful – organizing workers directly under the banner of the Knights of Labor.

The first Knights to do this were the window-glass workers of LA300, an immensely powerful body that was, despite its name, not restricted to any one locality like other local assemblies and was really an autonomous trade union within the Order. LA300 boasted an almost complete closed shop over the United States, organizing around nine-tenths of all window glass workers throughout the 1880s. Its members enjoyed long summer vacations, extremely high wages, and the assembly’s treasury totalled more than $100,000. After winning several sustained strikes against employers between 1882 and 1884, where the Assembly had been faced with strikebreakers imported from Europe, LA300 helped lobby for legislation banning the importation of contract labour from abroad. But as legislation proved an unwieldy instrument the Assembly turned to the direct organization of labour abroad. Its representatives had already visited Europe in 1880 to gauge the possibilities of greater cooperation between glassworkers in Europe and America. This visit proved to be premature, but in 1884, after the strikes had been won, two representatives of the assembly set out for Europe. The result was the Universal Federation of Window-glass Workers.\(^{249}\)

The Universal Federation brought together organized glassworkers in England, Belgium, France, Italy, Germany, the United States and possibly Portugal as well. The idea was that by uniting these different national organizations, or creating them where necessary, the Federation could provide the necessary assistance for any one national section to win strikes and lockouts. But its primary function was to regulate the movement of glass workers from country to country. This regulation, it was felt, would end the danger of foreign strikebreaking, and would ensure that a surplus pool of unemployed skilled labour could not be used to set up non-union establishments outside the control of the Federation’s affiliates.

For about five years, from 1884 to 1889, it looked as if the Federation might actually succeed in its task. LA300 allowed maybe a thousand European glassworkers to emigrate and take up positions in the United States. It also financed the workings of the Federation and

\(^{247}\) For extended discussion of immigration and American labour, see Yearley (1957), Hingham (1963), Curran (1975), Lane (1987), and Briggs (2001), among others. For an overview of the historical literature see Fine and Tichenor (2009).

\(^{248}\) For American labour and Chinese immigration see Saxton (1971).

\(^{249}\) For the history of Local Assembly 300 see Ware (1964), and Foner (1975).
gave further financial assistance to workers on strike. Eventually it failed. By 1890 European glassworkers kept clamouring to come to the United States but LA300 could not offer them positions, while European glassworkers failed to organize several key glassworks and thus proved of little use to the Federation as a whole, and the Assembly instead turned to other devices for protecting its closed shop, like increasing its initiation fee fourfold.  

But LA300, and many leading Knights, did not see the regulation of immigration as the end of the issue. What was the point of keeping out cheap immigrant labour, they asked, if the goods produced by cheap labour abroad were allowed to freely enter the United States and thereby undermine the wages of American workers. Terence Powderly, the General Master Workman or top executive of the Order, put it in the strongest possible terms, “I am a high tariff man and a protectionist for the reason that I am an American and a friend of American labor,” he said in 1888. “Raise the duties so high that not a single article of foreign manufacture can come into the country”.  

Not all Knights agreed. Debates over the merits of free protectionism raged within the Order and the American labour movement at large throughout the late nineteenth century, especially given the popularity of the theories of Henry George, whose arguments for a single tax on land went along with his support for free trade. As with the question of immigration, many Knights saw the Order’s international expansion as a potential solution to the problem of cheap foreign competition. The Secretary of LA300 put it in these terms in 1885: “The question of foreign competition must be solved either by lower wages at home, or advanced wages and better organization abroad”. And Charles Lichtman, who was the General Secretary of the Knights several times in the 1880s, made things even more implicit. He said in 1888 that “When the Knights of Labor and kindred organizations shall have obtained in foreign lands the same commanding position and influence enjoyed in the United States, the inequality of wages will disappear, not by levelling our wages down but by levelling their wages up”. The expansion of the Knights across the world would thus lead to higher wages abroad. This would reduce foreign competition with American products. It would also at the same time reduce the material incentives for immigration to the United States.  

The Knights thus stood for the tight international regulation of the flow of goods as well as of labour, and they did so on what they saw at least partially as internationalist grounds. They also stood for the regulation or even outright restriction of international capital flows, though this was never so well defined as when it came to immigration and trade. The Knights’ journal, the Journal of United Labor (JUL), regularly featured attacks on the foreign ownership of land and sometimes of industrial enterprises. Powderly, for example, hoped that soon “the wings of the eagle shall no longer spread over a single acre of land owned or controlled by an alien landlord or a native rogue”.  

So we have here a conception of an international economic and social order very different from the unregulated one with which the Knights were faced in the late nineteenth century. But Knights recognized that either these conditions would not of themselves solve the problems of workers in the United States and elsewhere, or these conditions could never be met. Trade unions and tariffs might protect workers for a while, claimed an editorial in the JUL, but immigration “is gradually but surely reducing the distinction between the labourer in this country and in Europe. And it is doubtful whether, supposing such a course to be practicable, a remedy in the long run would be found in hermetically sealing our country against foreign products and workmen”. The answer, the article concluded, was in

251 Box 46, Terence V. Powderly Papers (TVPP), (Catholic University of America).
252 Box 12, TVPP.
cooperation – what Knights, like many other nineteenth-century radicals, called the ‘cooperative commonwealth’.

**The Maximum Programme**

If the Knights of Labor offered any alternative to capitalism as it existed in the late nineteenth century it was this nebulous phrase. Knights, from Powderly down, did try at times to fill this term with some kind of practical content, but did not get much further than vague noises about abolishing the wage system and instituting cooperative enterprises in its place. This is not a unique problem – every social and political movement that seeks to revolutionize society usually must talk about its ultimate aims in extremely general terms. But at the very least, Knights understood that the victory of any kind of cooperative alternative to capitalism must be an international one for that alternative to survive. One Local Assembly claimed in 1882 that “The cooperation of only a limited number of individuals will not result in the triumph of the cooperative principle all over the globe; it would only improve the condition of those who were participants in the respective enterprises, for a short time”.

In lieu of a worked-out plan, Knights hoped that this international order would be based on an overarching and lofty principle, which they like many other radicals called Universal Brotherhood. The global organization that Uriah Stephens, the founder of the Knights, wanted to institute would “include men and women of every craft, creed and color […] It will make labor honourable and profitable and lessen its burdens; it will make idleness a crime, render wars impossible, and obliterate national lines”. This was the brotherhood of the fraternal order and the assembly hall, not so much of the workplace, though later Knights placed more and more emphasis on the latter rather than the former. It also provided an ideological glue that could allow Knights to proclaim their sympathy with workers in the rest of the world while simultaneously calling for the exclusion of them and their products from the United States.

Powderly put it best, when in 1888 he addressed the questions of immigration and internationalism. Knights countries outside North America, he wrote,

> Are to be taught to reform existing abuses at home, so that emigration for the purpose of bettering their lot will not be necessary; they are to be taught that the right to enjoy life in the land of his birth is inherent in man. Once these doctrines begin to spread abroad the people will begin to take more of an interest in home affairs.

By supporting foreigners to stay and fight in their own countries the Knights would thus solve the problems of workers in both the Old and the New Worlds, and all in a spirit of Universal Brotherhood.

**Conclusion**

So we have seen that the Knights of Labor, always more implicitly than explicitly, had an immediate, or minimum set of goals and an ultimate, or maximum set of goals that was international in scope. In crucial ways these two programmes overlapped. Protectionism and the regulation of immigration, they thought, would not only benefit American workers if these were accompanied by a spread of the Knights of Labor abroad – by organizing would-be emigrants in their home countries the Knights would help to equalize wages between the New and Old Worlds. This would make further immigration restrictions and protectionism unnecessary. It would also help bring the future cooperative commonwealth that much closer to reality. And this cooperative commonwealth would be instigated and directed by the

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255 *Proceedings of the General Assembly of the Knights of Labor (PGA)*, (1882).
256 *PGA* (1897).
Knights of Labor on a worldwide scale. If this is utopian, it is utopianism of a rather practical kind.

This is perhaps what differentiates the Knights from the sort of goals outlined by trade union leaders and labour’s mainstream political leaders in the twentieth century, particularly after the Second World War. Then, too, they called for limits on the free international movement of labour and capital, and also called for protective tariffs for the benefit of local workers. But this was no longer so much allied to any wider aspirations for social, economic and political change. The Knights, by contrast, saw these measures as a necessary prelude to the cooperative commonwealth, and through their international expansion, and through such innovations as the Universal Federation of Window-glass Workers, they tried to give these aspirations some concrete expression. If their international programme was flawed, if it ultimately failed, the Knights can at least be acquitted of any lack of global imagination.
Technology shocks, relative productivity, and son preference: the long-term effect of cotton textile production in Ming China

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This paper seeks to better understand the historical determinants of son preference among Han Chinese. I test the hypothesis that historical textile production led to a reduction in son preference. I exploit county-level variation in historical textile production, following a technology shock in the late thirteenth century, to identify the causal impact of historical textile production on son preference. I find that historical textile production is positively correlated with female labour participation, and negatively correlated with sex ratio imbalances and sex-specific parental investment. I use an instrumental variable strategy to account for potential endogeneity and measurement error in historical textile production, and generate estimates that are comparable to OLS estimates. My results are robust to the use of different samples, and remain robust after matching counties on pre-treatment characteristics.

1. Introduction

This study examines an important deeply held belief in China that sons are superior to daughters. Despite the general son preference, the degree of preference varies widely across regions. A direct consequence of son preference is sex selection at the foetal stage. Every year, some regions have many more sons born than daughters; others regions have roughly the same number of sons and daughters born. The variations are visible in the population censuses. According to the Chinese population census in Jincheng, 102 boys were born to every 100 girls; whereas in Erzhou, 170 boys were born per 100 girls.

My interest is in the role past historical events have played in shaping this preference for sons. I test the hypothesis that historical textile production led to a reduction in son preference. Textile production, following major technological innovations in the thirteenth century, greatly increased women’s productivity. Textile production required adroitness and patience, but not as much body strength as animal husbandry. The emergence of textile production increased women’s productivity relative to men’s, raising the relative benefit of having daughters. However, as regions varied in their local geo-climatic suitability for textile production, it was women in textile-suitable regions who reaped the greatest benefit from the technological innovation.

I exploit a technology shock in textile production that was exogenous to China. In the Yuan dynasty (1271-1368), Huang Dao Po, a Shanghai native (1245-1330), learned new technologies in both spinning and weaving from Hainan Island. She developed a pedal spinning wheel with three spindles, a piece of equipment similar to the spinning jenny.

I link historical textile production data obtained from local gazetteers, indicating whether a place has historical textile production, to contemporary measures of son preference and gender inequality. My outcome variables include sex ratios at age zero, female labour participation, as well as the education gap between sons and daughters within a family. My analysis examines variation across counties and individuals. I find a strong negative relationship between historical textile production and son preference today. Historical textile production is positively correlated with female labour participation, and negatively correlated with sex ratios, as well as education gap between sons and daughters within a family.

To identify the causal impact of historical textile production on modern outcomes, I apply various empirical strategies including instrumental variable (IV) estimation and
propensity score matching. The baseline estimates suggest that the presence of cotton textile industry is associated with a reduction of 3% in the sex ratio.

I include controls for a number of historical characteristics of each county, such as the suitability of its environment for agriculture, its distance to Grand Canal or Yangtze River, and its level of economic development before the adoption of textile technologies, as well as sets of geographic controls, such as latitude, longitude and distance to coast. I also control for current per capita GDP, percentage of agricultural workforce, and percentage of non-agricultural household registration. Region and province dummies are included in all specifications.

2. Data and historical context
Following the technological breakthrough in cotton textile production around 1300, the industry went through a period of rapid expansion. Cotton quickly gained popularity for many of its attractive properties, compared with silk and linen.

To account for the location of textile production within China I use climate data. The climate research unit of the University of East Anglia, UK provides 30-year monthly average relative humidity data across 10 arc-minute by 10 arc-minute grid cells globally. I extract relative humidity values on the basis of x, y coordinates. I construct a relative humidity variable at the county level by averaging over all relative humidity values within a polygon that stands for a county.

Due to lower transportation costs, a higher percentage of counties located near the Yangtze River and Grand Canal produced textiles historically (Huang 1964). I obtain shape files that contain historical characteristics for the counties within China. I calculate the distance to the Grand Canal or Yangtze River at the county level by matching the shape file for Grand Canal, the shape file for Yangtze River. To best control for pre-adoption levels of economic development prior to 1300, I match the shape file for commercial tax quotas in 1077 and the shape file for contemporary China to obtain an estimate for historical level of development.

Throughout the Ming Dynasty, only about 8% of all counties produced textiles. Despite later improvements in humidification, textile producers from less humid areas struggled to compete with their counterparts from more humid areas, particularly in the high-end market, because top quality cotton cloths had to be weaved in a more humid environment than those less humid areas could ever provide. Thus the prices of textiles stayed at a level that generated enough income for a skilled textile worker to support a family of four.258

Textile production was predominantly performed by women. The earnings of women from cotton textile production were important. Allen’s wage regressions (Allen 2011) indicate that textile workers earned a wage premium compared with workers in construction or agriculture.

Using data from local gazetteers between 1368 and 1644, I construct an indicator variable on historical textile production at the county level. Local gazetteers were mostly at the prefecture level, and contain information on produces and manufactured products for counties under the governance of prefecture governments. A smaller set of counties are known to produce textiles. I match county names with county names in a shape file that codes all counties in 1300. I combine the 1300 county shape file and the shape file for the 2000 population census to obtain an estimate of the distribution of then textile-producing counties across China today.

China has had the most unbalanced sex ratios in East Asia for the past decade. In the 2000 census, the national average sex ratio for age 0 is 118:100. That means every 118 boys were born as every 100 girls were born. Prior to the one-child policy, most families went for

258 Allen(Allen, 2008) shows one day’s work by a weaver in the late seventeenth century produced 7,684 calories, which was adequate to support a family.
higher-parity births, if they were unable to have male births in the first few attempts. In the 1980s, the state initiated its well-known one-child policy. Families partly lost their ability to pursue sons by going for higher-parity births. As sex-selective technology improved, families started to rely on ultrasound and other technology to aim for a son in their first or second attempt, depending on their household registration status.259

3. Baseline results

3.1 County-level OLS estimates

I test my hypothesis by estimating the following equation:

\[
y_i = \alpha + \beta \text{Textile}_i + \gamma \text{Controlling}_i + \delta \text{Geographical}_i + \epsilon_i,
\]

(1)

Where \( y_i \) denotes a county. \( \text{Textile}_i \) is my measure of historical textile production at a county level. \( \text{Controlling}_i \) is a vector of historical controls, and \( \text{Geographical}_i \) and \( \text{Geographical}_i \) are vectors of geographical and contemporary controls respectively, each measured at the county level.

The historical control variables \( \text{Controlling}_i \) capture historical differences between counties that produced textiles and those that did not. The contemporary control variables \( \text{Geographical}_i \) include the natural log of a prefecture’s per capita GDP measured in 2000 and its squared term, share of urban residents, percentage of population working in agriculture, and whether being located in a provincial capital. The geographic controls include \( \text{Geographical}_i \) distance to coast, latitude and longitude. OLS estimates of equation (1) including above controls are reported in table 2. Column 1 reports estimates with a few variables being flexibly controlled (in quartiles). Column 2 reports estimates when actual values of control variables are used instead of their quartiles. Column 3 reports standard errors clustered at the prefecture level. Column 4 shows the estimates based on a subsample: counties located in a prefecture that had at least one administrative office in 1300. The coefficient estimates are both statistically significant and economically meaningful. Based on the estimates from column 1, a one-standard-deviation increase in historical textile (0.272) is associated with a decrease in sex ratios of 0.83 (3.041*0.272).

As a robustness check, I omit prefectures where no administrative office existed in 1300, so there is no direct evidence on historical textile production. The coefficient estimate is slightly smaller on the subsample compared with that on the full sample, but retains most of its strength. To better solve the problem arising from heterogeneity in the sample, I also apply a propensity score matching exercise. After using the method of nearest neighbour matching on pre-treatment characteristics, two counties become off support, which leads to only a small change in average treatment effect on treated (ATT).260

259 Though one-child policy is strictly enforced among Chinese citizens on non-agricultural registration status, a more relaxed version of one-child policy is enforced among those on agricultural household registration status.

260 ATT changes from -5.8 to -5.1
New Researchers - Session I / H

3.2 Micro-level analysis

I use the 1990 population census to construct my outcomes of interest: female labour force participation and education gap between daughters and sons. Table 3 describes my micro analysis sample. A higher percentage of prefectures (47%) engaged in textile production in the past, compared with the percentage of counties. As high as 94.8% of the females in my sample are part of the workforce. Educational attainment takes the value of 0 for ‘illiterate’, 1 for ‘primary education’, 2 for ‘middle school education’, 3 for ‘high school education’, and 4 for ‘university education or above’.

My estimation equation is:

\[ y_{it} = \alpha + \beta_{textile} + X'_{it} \gamma + \epsilon_i \]  

(2)

Where \( \beta \) denotes a prefecture. \(^{261}\) is my measure of historical textile production aggregated to the prefecture level. \( X'_{it} \) includes the same historical controls as in equation (1), with the exception of population density in 1820.\(^{262}\) \( X'_{p} \) and \( X'_{c} \) are vectors of geographical and contemporary controls respectively, each measured at the prefecture level. \( X'_{i} \) denotes current individual-level controls: age, age squared, mother’s education, father’s education, total number of children in the household and education fixed effects.\(^{263}\) Standard errors are clustered at the prefecture level for all specifications. Column 1 reports OLS estimates of equation (2) given outcome variable being education gap. Column 3 reports estimates that control for historical levels of development prior to the onset of industrialization, as proxied by population density in 1820.

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\(^{261}\) In the 1990 census data, individuals only report their residence at the prefecture level.

\(^{262}\) Population density in 1820 is only available at the prefecture level, so it was not included in equation (1).

\(^{263}\) Household income is crucial to the decision to educate children, but is unfortunately not available in the census data.
Estimation results are reported in table 4. Coefficient estimates are statistically significant for column 1 through column 3, and economically meaningful. The presence of historical textile production is associated with a reduction in education gap of 0.055, or about 3 months of education, which is equal to 13.9% of the sample mean. Historical textile production is also associated with a higher likelihood for the most educated daughter in the household to be in the workforce. A one-standard-deviation increase in historical textile production (0.499) is associated with an increase of labour force participation of 1.24 percentage points (2.48*0.499). When population density in 1820 is controlled for, the coefficient estimates for education gap do not change much, but the strength of the coefficient for female labour participation is reduced.

3.3 IV estimation

A potential concern with the OLS estimates is the counties that were textile producers in the Ming Dynasty may have a higher likelihood of adopting textile technologies. It is possible that counties that were economically more developed were more likely to have adopted textile technologies, and counties that were closer to the market or transportation routes were more likely to sustain its production.

An important determinant for the location of textile industry is geo-climatic conditions. Among all contributing factors, scientists, engineers and industry experts highlight the importance of relative humidity in producing textiles. In Textile World Report V.37, the word ‘humidity’ appeared more than 100 times, suggesting the pivotal role of humidity in the textile industry.

Textiles could be produced much more efficiently during the part of the day that was relatively humid, and during the part of the year that was humid. Hardly any textiles can be produced when relative humidity drops below 60%, and the benefit of moisture is offset by stickiness of the fibre once relative humidity exceeds 80%.

I begin my IV estimation by testing the relationship between my relative humidity index and historical textile production. I use a treatment-effect model for IV estimation, which is mostly the same as a regular IV estimation strategy, with the first stage being a Probit model. Panel A of table 5 shows the estimates from the first stage: relative humidity index is positively correlated with historical textile production. Second-stage results are reported in panel B. Column 1 includes province fixed effects, which generates a more conservative estimate than the specification including region effects (column 2). Column 3 reports estimates of a specification with more flexibly controlled historical variables. Overall, IV
estimates, ranging from -5.913 to -7.288, are comparable to OLS estimates. That means the surplus of boys is reduced by roughly six to seven boys per a hundred girls, if a county produced textiles historically versus not.

<table>
<thead>
<tr>
<th></th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Stage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relative humidity index</td>
<td>0.241**</td>
<td>0.253*</td>
<td>0.237*</td>
</tr>
<tr>
<td></td>
<td>(0.0990)</td>
<td>(0.108)</td>
<td>(0.108)</td>
</tr>
<tr>
<td>Second Stage</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Textile production by 1644</td>
<td>-5.913*</td>
<td>-7.288**</td>
<td>-7.179**</td>
</tr>
<tr>
<td></td>
<td>(2.500)</td>
<td>(2.358)</td>
<td>(2.497)</td>
</tr>
<tr>
<td>Contemporary controls</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Historical controls</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Geographic controls</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Fixed effects</td>
<td>Province</td>
<td>Region</td>
<td>Region</td>
</tr>
<tr>
<td>*</td>
<td>0.189*</td>
<td>0.183*</td>
<td>0.179*</td>
</tr>
<tr>
<td></td>
<td>(0.0933)</td>
<td>(0.0856)</td>
<td>(0.0942)</td>
</tr>
<tr>
<td>Observations</td>
<td>1146</td>
<td>1035</td>
<td>1035</td>
</tr>
</tbody>
</table>

| Standard errors in parentheses | * p < 0.10, ** p < 0.05, *** p < 0.01 |

4. Conclusion

I provide empirical evidence that suggests that a portion of the variation in son preference in modern day China can be accounted for by the historical textile production in a location. Broadly, I find evidence that gender norms can be shaped by long-lasting relative productivity shocks. I use both OLS and IV to estimate the impact of historical textile production on today’s son preference and gender equality. The results are robust to the exclusion of regions famous for historical textile production, such as Yangtze delta, and regions that barely had any textile production. As part of the robustness checks, I perform propensity score matching methods to exclude the off-support counties. My micro-level analysis lends support to my county-level analysis, and generates additional insights that allow me to extend my analysis to include other variables more commonly discussed in the context of gender equality. I find that historical textile production also helps to eliminate sex-specific parental investment and to increase female labour workforce participation.

References


### Table 1: Summary statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min.</th>
<th>Max.</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Textile production by 1644</td>
<td>0.08</td>
<td>0.272</td>
<td>0</td>
<td>1</td>
<td>1035</td>
</tr>
<tr>
<td>Sex ratio at age 0</td>
<td>119.39</td>
<td>15.169</td>
<td>91.622</td>
<td>193.16</td>
<td>1035</td>
</tr>
<tr>
<td>Per capita GDP</td>
<td>8552.796</td>
<td>9577.788</td>
<td>2282.008</td>
<td>133304.563</td>
<td>1035</td>
</tr>
<tr>
<td>% Ethnic population</td>
<td>1.458</td>
<td>6.974</td>
<td>0</td>
<td>94.05</td>
<td>1035</td>
</tr>
<tr>
<td>% Agriculture workforce</td>
<td>65.979</td>
<td>22.395</td>
<td>0.11</td>
<td>96.59</td>
<td>1035</td>
</tr>
<tr>
<td>Share of urban residents</td>
<td>19.257</td>
<td>14.351</td>
<td>3.43</td>
<td>89.72</td>
<td>1035</td>
</tr>
<tr>
<td>Provincial capital</td>
<td>0.103</td>
<td>0.305</td>
<td>0</td>
<td>1</td>
<td>1035</td>
</tr>
<tr>
<td>Region</td>
<td>3.581</td>
<td>2.274</td>
<td>1</td>
<td>8</td>
<td>1035</td>
</tr>
<tr>
<td>Province</td>
<td>9.51</td>
<td>5.366</td>
<td>1</td>
<td>18</td>
<td>1035</td>
</tr>
<tr>
<td>Distance to Great Canal or Yangtze River</td>
<td>2.036</td>
<td>1.932</td>
<td>0</td>
<td>9.122</td>
<td>1035</td>
</tr>
<tr>
<td>Commercial tax quotas in 1077</td>
<td>18346.25</td>
<td>28728.671</td>
<td>274.91</td>
<td>217343.172</td>
<td>1035</td>
</tr>
<tr>
<td>Relative humidity index</td>
<td>-27.591</td>
<td>14.851</td>
<td>-64.004</td>
<td>-12</td>
<td>1035</td>
</tr>
<tr>
<td>Agricultural suitability</td>
<td>-4.331</td>
<td>1.905</td>
<td>-8</td>
<td>-1</td>
<td>1035</td>
</tr>
<tr>
<td>Distance to coast</td>
<td>395.877</td>
<td>351.1</td>
<td>0.087</td>
<td>1175.69</td>
<td>1035</td>
</tr>
<tr>
<td>Latitude</td>
<td>31.879</td>
<td>4.59</td>
<td>20.42</td>
<td>39.96</td>
<td>1035</td>
</tr>
<tr>
<td>Longitude</td>
<td>114.123</td>
<td>4.69</td>
<td>102.284</td>
<td>122.391</td>
<td>1035</td>
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### Table 3: Summary statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min.</th>
<th>Max.</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education gap</td>
<td>0.395</td>
<td>0.879</td>
<td>-4</td>
<td>4</td>
<td>54090</td>
</tr>
<tr>
<td>Textile production by 1644</td>
<td>0.476</td>
<td>0.499</td>
<td>0</td>
<td>1</td>
<td>54090</td>
</tr>
<tr>
<td>Female labor force participation</td>
<td>0.948</td>
<td>0.22</td>
<td>0</td>
<td>1</td>
<td>54090</td>
</tr>
<tr>
<td>Education attainment</td>
<td>1.697</td>
<td>0.402</td>
<td>0</td>
<td>4</td>
<td>54090</td>
</tr>
<tr>
<td>Mother’s education</td>
<td>0.414</td>
<td>0.701</td>
<td>0</td>
<td>4</td>
<td>54090</td>
</tr>
<tr>
<td>Father’s education</td>
<td>0.981</td>
<td>0.86</td>
<td>0</td>
<td>4</td>
<td>54090</td>
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<tr>
<td>Age</td>
<td>28.016</td>
<td>4.898</td>
<td>23</td>
<td>89</td>
<td>54090</td>
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<tr>
<td>Total number of kids</td>
<td>3.08</td>
<td>1.303</td>
<td>2</td>
<td>14</td>
<td>54090</td>
</tr>
<tr>
<td>%Ethnic population</td>
<td>1.036</td>
<td>2.54</td>
<td>0.08</td>
<td>77.19</td>
<td>54090</td>
</tr>
<tr>
<td>%Agricultural workforce</td>
<td>6.163</td>
<td>13.362</td>
<td>0.2</td>
<td>63.5</td>
<td>54090</td>
</tr>
<tr>
<td>%Share of urban residents</td>
<td>0.298</td>
<td>0.118</td>
<td>0.113</td>
<td>0.802</td>
<td>54090</td>
</tr>
<tr>
<td>Agricultural suitability</td>
<td>-4.023</td>
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<td>-7</td>
<td>-1</td>
<td>54090</td>
</tr>
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<td>Distance to Grand Canal or Yangtze River</td>
<td>2.362</td>
<td>2.421</td>
<td>0</td>
<td>8.584</td>
<td>54090</td>
</tr>
<tr>
<td>Commercial tax quotas in 1077</td>
<td>19318.552</td>
<td>30863.208</td>
<td>407.218</td>
<td>217343.172</td>
<td>54090</td>
</tr>
<tr>
<td>Distance to coast</td>
<td>274.489</td>
<td>307.97</td>
<td>0.087</td>
<td>1175.69</td>
<td>54090</td>
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<tr>
<td>Longitude</td>
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<td>54090</td>
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<td>Province</td>
<td>37.991</td>
<td>8.848</td>
<td>13</td>
<td>61</td>
<td>54090</td>
</tr>
</tbody>
</table>
A struggle for freedom and liberty?: Reflections on the causes of the 1381 Peasants’ Revolt

Mingjie Xu, University of Cambridge
(mx213@cam.ac.uk)
Supervisor: Professor John Hatcher

The 1381 Peasants’ Revolt has been long placed among the most dramatic episodes in the history of medieval England. A revolt on such a big scale and with such a dramatic course poses a question to historians: why did it happen? In the massive historiography devoted to the revolt it is one of the most enduring narratives that the 1381 Peasants’ Revolt was deeply rooted in the economic and social life of the later middle ages and its outbreak was due primarily to the social crisis, that is, the exacerbated tension between landlords and common people before the revolt. Nineteenth-century historians developed this idea, exemplified in Rogers’s argument that labour services increased in the late fourteenth century and the cause of the revolt was ‘the incidents of villeinage, and the dissatisfaction felt at revived oppression’.264 Modern historians stressed this diagnosis even further. Rodney Hilton, a notable historian of Marxist persuasion, maintained that antagonism and conflict between the ruling landed class and the ruled peasantry was exacerbated due to the lords’ reaction during the three decades after the Black Death, which was accountable for the open revolt in 1381, and that ‘judging both by [the rebels’] actions and their demands it was serfdom and those things that flowed from it which baulked largest in their grievances’.265 Although recent historians have been somewhat more restrained in their pronouncements, the belief in the importance of widespread tension between lords and tenants prior to 1381 has remained staunch. For instance, Christopher Dyer contended that the revolt ‘can be readily explained in terms of the tension between entrenched lordly power and the changes, or potential changes, in peasant society’, and Herbert Eiden regarded that ‘unjust and bad exercise of lordship on the manorial, communal and governmental level’ was the origin of the revolt.266 It is necessary to place any study of the causes of the revolt in the economic and social background of fourteenth-century England, but any generalization on the issue should also consider local variations given the large number of counties and towns that were subject to violence in 1381. Based on a comprehensive study of the excellent records of the revolt in rural Cambridgeshire, it is argued in this paper that the dominant narrative elaborated above cannot be applied generally to all local rebellions and that political factors commonly featured of primary importance among the causes of the revolt.

The revolt in Cambridgeshire was an intense but relatively brief affair. Substantially, it spanned just two weeks with the great bulk of the action taking place in just three days in mid-June. The earliest recorded outbreak of violence occurred on 9 June at Cottenham, but the revolt only reached its height from 15 June. The following three days witnessed massive and widespread violence in the county, both in rural areas and towns. From 18 June the disorder began to fade out as a force led by Bishop Henry of Norwich came to the north of the county. After defeating the rebels of Peterborough and Ramsey, Bishop Henry, the notable suppressor of the revolt in East Anglia, pushed on to Cambridge perhaps on 18 June, where he successfully broke the resistance of the insurgents. The collapse of the revolt in Cambridge

was quickly followed by the end of riots in rural Cambridgeshire and the crushing of the rebels in Ely.

| Table 1: Rebellion and disorder in the County of Cambridge and the Isle of Ely |
|----------------------------------|----------------|----------------|----------------|
|                                  | Incidents      | Named Rebels   | Victims        |
| Rural Cambridgeshire             | 67             | 107            | 4              |
| Cambridge                        | 19             | 115            | 10             |
| Ely                              | 13             | 64             | 3              |
| Totals                           | 109            | 296            | 15             |

If all surviving archives are grouped together as the sources to study central themes of the revolt, Table 1 is the result, and clearly shows that rural Cambridgeshire was subject to severe violence in 1381 and produced a large number of violent incidents, rebels and victims. It is also easy to observe the geographical distribution of violence over the region, as map 1 displays.

Map 1: Incidents in Rural Cambridgeshire, 1381

There were a variety of violent acts in the course of the Cambridgeshire disorder including attacks on landlords and officials, blackmailing and stealing, and the burning of court rolls, not unlike those discovered by historians in other tumultuous areas. For the convenience of calculation, in Table 2 all the violent actions committed by rebels are grouped into three categories: burning court rolls, attacking or threatening people as well as destroying or taking away property. It is clear from the results in the table that the third type of action is by far the most common, accounting for more than three-quarters of total cases, while attacks or threats to people make up less than 20 per cent, and the burning of court rolls occurred only rarely. This last feature goes against much of the literature on the Revolt which sees the widespread burning of court rolls as an action that indicated strong opposition to landlords
and the system of serfdom, demonstrating ‘a specific sense of grievance against the bureaucracy of lordship’\textsuperscript{267}, or even standing for the beliefs of the rebels to free themselves from the dues, labour services, and all the other obligations recorded in the rolls.\textsuperscript{268} However, whatever significance underlies it, and whatever its scale elsewhere, the burning of court rolls was unusual in our region, despite the fact that Cambridgeshire was an area of relatively heavy serfdom.

<table>
<thead>
<tr>
<th>Table 2: The Forms of Violence</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No.</strong></td>
</tr>
<tr>
<td><strong>Burning court rolls</strong></td>
</tr>
<tr>
<td><strong>Attacking or threatening people</strong></td>
</tr>
<tr>
<td><strong>Destroying or taking away Property</strong></td>
</tr>
</tbody>
</table>

Similar to other areas experiencing the peasants’ revolt, rebels in rural Cambridgeshire in 1381 mounted their attacks overwhelmingly against members of the landed class. As shown in table 1, 37 people or institutions were exposed to the violence, among who there were 33 lay people and 4 religious orders. Despite this, detailed analysis shows that the rebels’ choice of landlords to target was highly selective. The sources tell us that a high proportion of victims had previously held or were holding such offices as sheriffs, tax collectors or justices of peace. As displayed in table 3, of 33 lay victims in my sample 11 fall into this category and the number of attacks suffered by them is 31, which comprise up to 46.3 per cent of the total incidents. In terms of economic and social standing, these victims belonged to the gentry class. The fact that they were sought out for attacks might be explained by the structure of magistracy in local counties. During the three decades before the revolt, social grievances were caused by the vicious policies of government, such as frequent taxation and enforcement of labour laws. As Gerald Harriss pointed out, the gentry rather than nobility acted as governors and magistrates in local counties,\textsuperscript{269} thus social grievances about the repressive policies could easily be directed by the rebels towards them for redress, and so people with such posts as sheriffs, poll tax collectors and justices suffered most.

<table>
<thead>
<tr>
<th>Table 3: List of victims with offices</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No. of attacks suffered</strong></td>
</tr>
<tr>
<td>Roger Harlaston</td>
</tr>
<tr>
<td>Thomas Hasilden</td>
</tr>
<tr>
<td>John Sybyle</td>
</tr>
<tr>
<td>John Walter</td>
</tr>
<tr>
<td>Henry English</td>
</tr>
<tr>
<td>Thomas Torell</td>
</tr>
<tr>
<td>Edmund Walsingham</td>
</tr>
<tr>
<td>William Bateman</td>
</tr>
<tr>
<td>William Margarete</td>
</tr>
<tr>
<td>Thomas de Bradfield</td>
</tr>
<tr>
<td>Sir William Croyser</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
</tr>
</tbody>
</table>

MP and JP are abbreviations of Member of Parliament and Justice of Peace


\textsuperscript{268} Herbert Eiden, ‘Joint action against “bad” lordship’, p.15.

In contrast to the widespread attacks on the property of gentry who filled administrative and legal roles, despite the prominence of ecclesiastical landlords in the county the property of only four religious institutions was reported as attacked. These institutions were the Bishopric of Ely, the Priory of Ely, the Priory of St John of Jerusalem and the Priorress of Ickleton. Of the total seven documented incidents, four were relevant to the manors of the Priory of St John of Jerusalem. There is no sign that the ecclesiastical order incurred hatred because of its ill treatment towards tenants or its failure to fulfil its religious role. Instead the reason why the rebels acted harshly against the Priory of St John was underlined by the fact that Robert de Hales, the grand master of the order, was the architect of the notorious poll taxes as the royal treasurer and had been killed by rebels in London. Considering that there were more than 30 religious orders owning property in our region, it is very straightforward to say that the vast majority of religious landlords escaped the revolt.270

There were also attacks on small landowners. Unfortunately the background behind these attacks cannot easily be traced due to the sparse nature of the sources and research to uncover information about them is still proceeding. Yet it is possible to discern several possible explanations. One of them is that insurgents intended to take the opportunity of disorder to benefit themselves by stealing or robbing. In a number of cases small landholders fell prey to local insurgents, for instance, Robert Elteslee at Clayhithe (Horningsea) whose timber was taken away by villagers.271

A study of what rebels actually did in the revolt reminds us that overall they were motivated by various factors, including political antagonism towards the government, local feuds as well as personal motivation of self-benefit or revenge. Among these factors, however, political antagonism appears to stand out as a primary element, and there are no clear indications that the target of attacks was directly towards serfdom or lordship. This observation differs from other studies on local revolts, exemplified by the works of Dyer and Eiden, which grant priority to serfdom or bad lordship.

A local revolt with stark contrasts with those in neighbouring counties provides a good opportunity to reflect on the causes of the 1381 Peasants’ Revolt in general. In recent literature of the economic and social history of later medieval England, the revolt is often studied under a model of social relations between the two classes of the landed and the peasantry in the context of central themes such as the influence of the Black Death and the decline of villeinage and serfdom.272 It is widely believed that during the three decades after the Black Death social relations between the classes were deteriorating while the landed class manoeuvred to revive the status quo ante, which is often labelled as the ‘seigneurial reaction’ or ‘the second serfdom’. According to this hypothesis the conclusion to be arrived at is that the Peasants’ Revolt derived from the so-called ‘seigneurial reaction’, was directed towards serfdom, and despite its apparent failure had long-term consequences for economic and social history by accelerating the decline of villeinage and serfdom. This picture is well painted, yet it is by no means free of pitfalls and problems. At least, it appears inconsistent with the observation drawn from the study here. Moreover, the model is exposed to challenge by the most recent cutting edge research, exemplified by Mark Bailey’s reconsideration on the decline of villeinage and the ‘seigneurial reaction’. It is argued by him that villeinage in many English manors, both ecclesiastical and lay, actually started to decline with high speed as early as 1350s and that ‘there are plausible grounds for reconsidering the nature, and perhaps even the very existence, of a seigniorial reaction in England between c.1350 and 1381’.273

271 PRO JUST 1/103, Membrane 7d.
273 Mark Bailey, ‘Decline of serfdom in England, 1350-1500: chronology and causation’, a seminar paper given
Likewise there are grounds for reconsidering the importance ascribed to the ‘seigneurial reaction’ or ‘revived serfdom’ as a cause of the revolt.

It is not the intention of this paper to undermine the importance of the economic and social history of England in the third quarter of the fourteenth century. On the contrary, the outbreak of the revolt was underpinned by the improved opportunities and raised expectations of the peasantry after 1350 which consequently made them more confident, more assertive and more sensitive to what they saw as the oppressive policies of both royal and local governments.\textsuperscript{274} The aim of this paper is to point out that a range of factors contributed to the Revolt of 1381 and that in some counties the final and most powerful push seems to have come from politics. It is time to rein back the exuberance with which historians have long sought to undermine the significance of political factors. When the new Chancellor of England, Sir Michael de la Pole, addressed Parliament in 1383 on the causes of the revolt, he was unequivocal that:

The acts of disobedience and rebellion … towards the lesser servants of the king, such as the sheriffs, escheators, collectors of the subsidies and others of the same type, were the source and chief cause of the treasonable insurrection … This insurrection … was firstly a rebellion against the said lesser servants, then against the great officers of the kingdom and finally against the king himself.\textsuperscript{275}

Sir Michael’s conclusion could be closer to the truth than many historians have thought.
Finance and trade under Henry VI of England

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Supervisor: Professor WM Ormrod

1. Finance and trade in later medieval England

The process by which the fourteenth-century English government developed a system of indirect taxation which allowed the state to profit from overseas trade is commonly recognized to be one of the marvels of later medieval institutional and financial history.\footnote{276} The later medieval indirect tax system was originally based on relatively minimal permanent customs charges on wool exports, alien imports of wine and imports and exports of general merchandise, and cloth exports. The need for increased revenues in order to finance the Hundred Years War led Parliament to grant a heavier subsidy on wool exports – the \textit{maltolt} – from the 1330s. The 1350s witnessed a boom in wool exports and, thanks to Parliament’s regular re-granting of the \textit{maltolt}, the state was able to extract over 23.5 per cent of the value of commodities subject to indirect taxation. Yet the onset of a long-term decline in wool exports from c.1360, caused by the adverse economic context of Parliament’s regularization of the \textit{maltolt}, resulted in a creeping decline in \textit{maltolt} revenue. The Crown responded by negotiating Parliament’s regular granting of a new subsidy – tonnage and poundage – on imports of wine and imports and exports of general merchandise from the 1380s. This lessened the fall in total indirect tax revenue which resulted from the decline in \textit{maltolt} revenue, yet it failed to prevent the percentage of the value of overseas trade subject to taxation from falling to 15 per cent by the final decade of the fourteenth century.

Remarkably little work has been done to extend the narrative of later medieval finance and trade outlined above into the fifteenth century. Perhaps this owes to a preference, on the part of historians, for examining the successful early development of the later medieval indirect tax system rather than the long-term implications of its decline from the late fourteenth century. Whatever the reason, fifteenth-century finance and trade is an important subject which requires detailed study. Mark Ormrod has recently suggested that total indirect tax revenue may have fallen to around 12 per cent of the value of commodities subject to taxation by the 1440s.\footnote{277} This is based upon rough estimates of total indirect tax revenue, derived from multiplying the rates of the customs and subsidies by the volume of trade, viewed in the context of published data relating to the value of total exports. Ormrod’s fiscal estimates suggest that total indirect tax revenue fell from between £40,000 and £50,000 during the reign of Henry V (1413-22) to around £25,000 during the 1440s.\footnote{278} If these workings are anything to go by, it would appear as though the late Lancastrian period – that is, the reign of Henry VI (1422-61) – witnessed the abasement of the later medieval system of indirect taxation. Moreover, the broader fiscal implications of a crisis in indirect taxation must have been significant, given the late Lancastrian government’s well-publicized budgetary problems.\footnote{279} It is the aim of this paper to clarify these issues. A quantitative overview of material derived from the late Lancastrian enrolled customs accounts is provided in order to accurately identify trends in indirect tax revenue during the reign of Henry VI. Trends in the parliamentary negotiation of monetary and fiscal policy are examined in order to gain an

\footnote{277} Ormrod, ‘Finance and Trade under Richard II’, p. 186.
\footnote{279} See, in particular, R.A. Griffiths, \textit{The Reign of King Henry VI} (Stroud, 1981), Chapters 6 & 15.
insight into the political context of the history of indirect tax structures during this period. And an attempt is made to clarify the relationship between finance and trade under Henry VI and broader trends in the history of late Lancastrian public finance and fiscal politics.

2. Indirect tax structures in late Lancastrian England

Figure 1 presents annual average revenue from the maltolt, tonnage and poundage and the customs during four phases of Henry VI’s reign:

Figure 1: Annual average indirect tax revenue during the early minority, late minority, early majority and late majority of Henry VI

![Graph showing annual average indirect tax revenue](image)


During the early years of Henry VI’s minority (1422-29), total indirect tax revenue per annum stood at just under £42,000. This figure is a few thousand pounds less than total indirect tax revenue per annum during the reigns of Henry IV (1399-1413) and Henry V derived from published material, yet such differences are relatively inconsequential in comparison with the sharp decline in total indirect tax revenue per annum during the later years of Henry VI’s minority (1429-37). The late minority witnessed a 30 per cent decline in total indirect tax revenue per annum, which stood at £29,197 during this period. Underlying this sharp decline there was a staggering 44 per cent fall in maltolt revenue per annum. A relatively minor increase of around £2,000 in tonnage and poundage revenue per annum during the late minority served to minimize the fall in total indirect tax revenue per annum noted above. The situation remained more or less the same during the early years of Henry VI’s majority (1437-44). A very slight increase in maltolt revenue per annum, coupled with continuing buoyancy in tonnage and poundage revenue per annum, resulted in a minor increase in total indirect tax revenue per annum, which edged above £30,000. During the late majority period (1444-53), however, revenue per annum from both the maltolt and tonnage and poundage fell to a new low, resulting in total indirect tax revenue per annum standing at just over £27,000.

Two questions, in particular, arise from the foregoing analysis. Why did maltolt revenue fall so dramatically after 1429? And why was the government of Henry VI unable to compensate for the fall in maltolt revenue by restructuring the indirect tax system so as to make it less dependent upon the export trade in wool? The answer to the former lies in an understanding of the late Lancastrian government’s monetary policy. During the early

280 Ormrod, ‘Estimated revenue’.
Lancastrian period, the governments of Henry IV and Henry V had sought to provide denizen traders with commercial advantages at a time of increasing crisis in the export trade in wool by placing fiscal and legal restrictions on alien traders.\textsuperscript{281} What happened during the minority of Henry VI was the protectionist dogma underlying these developments gave rise to a monetary policy, known as ‘bullionism’, which ostensibly sought to protect the domestic sterling currency.\textsuperscript{282} The Bullion and Partition Ordinances issued at the Parliament of 1429-30 required all purchases of exported wool to be in gold or silver. Credit was prohibited from sales. One third of the wool price was to be delivered by the seller, in bullion or foreign coin, to the Calais mint. And wool merchants were required to partition all of their receipts, and were not to receive payment until the entire stock had been sold.

Thanks to the researches, in particular, of T.H. Lloyd, it is well known that these measures forced alien traders and lesser denizen traders without access to large-scale capital out of the export market.\textsuperscript{283} In light of the serious fiscal impact of monetary protectionism evident from the above analysis of trends in indirect tax revenue, however, it needs to be asked why the Crown consented to such a policy. It is tempting to suggest that this must have been forced on the Crown by a cabal of very wealthy merchants who sought to hegemonize the export trade in wool. Certainly, it cannot be ignored that in the aftermath of the Ordinances a conglomerate of prominent merchants, the Corporation of the Staple, began to lend significant amounts of money to the government.\textsuperscript{284} Yet the Parliament Roll states that the Ordinances were issued at the instigation of the House of Commons, which was concerned at the long-term decline in maltolt revenue and, rather ironically, believed that monetary protectionism would strengthen the export trade and be to the profit of both the king and the common weal.\textsuperscript{285} It thus seems reasonable to suggest that misguided populist economic logic combined with the lobbying of the Staple capitalists to result in the Crown’s issuing of the Ordinances, which seem to have been enforced for the remainder of Henry VI’s reign.

Having established why maltolt revenue declined so markedly during the late Lancastrian period, it remains for us to question why the government of Henry VI did not attempt to compensate for this by restructuring the indirect tax system so as to make it less dependent upon the export trade in wool. The analysis of trends in indirect tax revenue provided above would seem to suggest that the government made limited moves in this direction during the later years of the minority, when a minor increase in tonnage and poundage revenue per annum ensured that total indirect tax revenue per annum did not decline quite so sharply as maltolt revenue per annum. Yet this was not the case. What actually happened was that denizens, who had been exempt from paying tonnage and poundage during the period 1422-5, were brought back into the payment of this subsidy from 1425, at the same rate as aliens.\textsuperscript{286} From 1425, denizens had been exempt from paying poundage on cloth exports. During the early 1430s the Crown sought the re-imposition of poundage on denizen cloth exports, which culminated in two parliamentary grants imposing subsidy payment on denizen cloth exports.\textsuperscript{287} Under pressure to increase their fiscal contributions, the Commons also imposed a new subsidy from 1431, as part of their tonnage and poundage grants, on alien sweet wine imports.\textsuperscript{288} Moreover, between 1432 and 1437 the

\textsuperscript{282} For the remainder of this paragraph see J.H. Munro, \textit{Wool, Cloth and Gold: The Struggle for Bullion in Anglo-Burgundian Trade} (Toronto, 1972), p. 84.
\textsuperscript{283} T.H. Lloyd, \textit{The English Wool Trade in the Middle Ages} (Cambridge, 1977).

\textsuperscript{286} \textit{PROME}, Parliament of 1425, item 17.
\textsuperscript{287} \textit{PROME}, Parliament of 1429-30, item 15; \textit{PROME}, parliament of 1433, item 21.
\textsuperscript{288} \textit{PROME}, Parliament of 1431, item 14.
Commons raised alien poundage rates. These impositions lay behind the minor increase in annual average tonnage and poundage revenue during the late minority. Yet from the late 1430s no new initiatives along these lines were formulated, and the surcharge on alien poundage was not renewed. Moreover, after 1436 poundage was never again imposed on denizen cloth exports. And from 1437 the Prussian merchants of the Hanse were formally exempted from payment of this subsidy. The disappearance of the Hanseatics and denizen cloth exports from the indirect tax system needs to be viewed in the context of the failure of Henry VI’s government to develop a new tax on cloth exports, the volume and especially the value of which were rising during the late Lancastrian period. These developments combined to result in total indirect tax revenue falling to between 11 and 12 per cent of the estimated value of overseas trade by the early and late majority periods.

3. Politics and finance in late Lancastrian England: the broader context

It is necessary for us to question how the abasement of the later medieval system of indirect taxation during the 1430s and 1440s traced above, impacted upon the broader fiscal and political stability of the late Lancastrian government. Figure 2 expresses estimates of annual average maltolt revenue lost out upon as a result of the government’s pursuit of ‘bullionist’ monetary policies alongside the sum total of annual average government debt during the three phases of Henry VI’s reign after 1429:

Figure 2: Annual average maltolt revenue lost out upon as a result of the government’s ‘bullionist’ monetary policy expressed vis-à-vis annual average government debt during the late minority, early majority and late majority of Henry VI

Sources: Figure 1, for difference between maltolt revenue p.a. before 1429 and maltolt revenue p.a. during later periods of Henry VI’s reign; A.B. Steel, The Receipt of the Exchequer, 1377-1485 (Cambridge, 1957), pp.459-61.

According to these estimates, had maltolt revenue per annum not sunk beneath pre-1429 levels as a result of royal ‘bullionism’, it would have been possible, during the late minority period, for the government to finance almost all of its debt per annum from maltolt revenue.

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289 PROME, Parliament of 1432, item 12.
290 PROME, Parliament of 1437, item 29.
293 In arriving at this conclusion, I have used the same statistics relating to the ‘value’ of overseas trade as Ormrod, ‘Finance and Trade’, p. 185.
Government debt per annum increased markedly vis-à-vis figure two’s projected increase in maltolt revenue per annum during Henry VI’s majority. This occurred because the incurring of heavy debts over time increased public expenditure commitments. In the absence of an indirect tax system capable of being reformed in order to yield significant sums unrelated to the maltolt, it fell to the government to attempt to raise the funds necessary to finance expansive expenditure through persuading the Commons to grant direct lay taxation on movable property. Elsewhere I have demonstrated the ideological inability of the Lancastrian state to publicly justify the need for lay taxation as a means of financing debts, a very large proportion of which related to ‘ordinary’, government charges which contemporaries expected the government to fund from its domainal income and indirect taxation.294 One can conclude from this that the only means by which the late Lancastrian government could realistically have secured the supply required to finance the ballooning debt of the majority period would have been for it to abandon its ‘bullionist’ monetary policy. According to figure 2, this would have resulted, during the late majority, in the government securing sufficient maltolt revenue per annum in order to finance half of the debt per annum incurred during this period. One can suggest that the government would have been able to finance at least a portion of the 50 per cent of remaining debt per annum from loans raised against the security of increased maltolt revenue. Even if a policy along these lines would have been unable to completely eradicate the backlog of debt, it would have prevented the debt burden from rising to an unprecedented £372,000 prior to the Wars of the Roses.295

4. Conclusion

This paper has provided the first detailed quantitative analysis of the later medieval indirect tax system during the late Lancastrian period. It has demonstrated the process by which indirect tax structures became ossified after 1429, when maltolt revenue collapsed as a result of the Crown’s ‘bullionist’ monetary policy and the government was politically unable to reform operative indirect tax structures in order to compensate for this. This impacted decisively upon the solvency of the late Lancastrian government. Insight into the potential broader significance of these developments can be gained through turning to the work of the fiscal theorist Joseph Schumpeter.296 On surveying the history of the late modern fiscal state, Schumpeter concluded that contemporary fiscal systems tended to be undermined by political lobbying on the part of elites whose sectarian economic interests often shaped fiscal policy for the worse, the result being public debt crises. If the history of late Lancastrian finance and trade is anything to go by, then historians of pre-modern fiscal history, of all time periods and geographical areas, may have to adopt Schumpeter’s interpretative framework.


295 PROME, Parliament of November 1449, item 53.

Gilboy revisited: or low(er) wages and the pre-industrial London building craftsman

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The level and form of early modern wages has always been a controversial topic in economic history. Most European wage data was collected when historians wanted to know if the poverty and depravation seen as a result of the industrial revolution damaged the living standards of the working class. Now wages are given a critical role in causing industrialization. Allen argues that Britain was a ‘high wage economy’ in the late seventeenth and early eighteenth centuries, creating an incentive structure for labour saving mechanization. Other accounts suggest that high wages created higher human capital and innovation through nutrition, education, and accumulation. The high wage argument and evidence has provoked some challenges, but, as Humphries recently noted, no one has challenged the veracity of the sources.

This paper re-examines one of the core wage series used to establish the ‘high wage’ argument for England: builders’ wages in London. It sets the wage evidence back into the contractual basis within which the work was undertaken. Using records from St Paul’s Cathedral, Westminster Abbey, The Office of The Kings works (OKW) Westminster Bridge and Bridge House, it shows that the ‘day wages’ that historians have used extensively were no such thing. The actual wage level in London construction was significantly below the level suggested by Gilboy and her later users.

London wages: what do we know?

The eighteenth century wage series cited by Allen and used in analysis relies to a major degree on a very small dataset. England’s ‘high wages’ rest largely on the work of Elizabeth Gilboy who spent two years in the early 1930s transcribing wage rates found in estates and institutions in Britain. Subsequent work has expanded information on the earlier (Boulton to 1721) and later periods (Schwarz from 1787). The core remains hers.


299 Advanced by many authors including Elizabeth Gilboy herself (1938). The most recent and comprehensive is J. Mokyr. The Enlightened Economy, Yale, 2009. Note R.C.Allen & J.Weisdorf ,Was there an industrious Revolution?, Economic History Review, Volume 64, No.3


301 Schwarz’s 1985 dataset uses the same sources as Gilboy.
Gilboy’s accuracy was extraordinary, but her data need to be understood in their organizational, institutional and technological context. Most wage series from Bowley onwards assume the institution was paying for labour directly, and that a recorded ‘day rate’ was the wage received by a craftsman or labourer for a day’s work. Neither assumption holds for Gilboy’s series. First, this data records head contractors’ bills submitted to large institutions. Second, there is compelling evidence that these are not the wages that labour actually received.

Contracting building work in early modern London

Institutions in London may once have hired building labour directly. However, architectural historians agree that direct labour hiring had died out by the mid-sixteenth century. In the later seventeenth century, the huge demand for construction workers created by the Great Fire of 1666 had two further effects on the labour market. First, the Carpenter’s and Mason’s Livery Companies’ stronghold over building in London was broken, allowing cheaper flexible labour into the city. The ban on non-guild members working in London had no effect after the fire. Second, the pressure on supply chains strengthened the subcontracting system in the building sector. Faced by a scarcity of skilled labour, institutions turned to experienced and well-networked building contractors to recruit and supply labour, and to take on the high transaction costs this involved.

Subcontracting was ubiquitous at the institutions Gilboy used as sources. If we take her largest source, Westminster, her data is entirely based on bills submitted by contractors to the paymaster of the institution, commencing with contractors hired by Christopher Wren for the refurbishment of the chapel 1712-20. They reflect contracts for specific work, and are not records of actual days worked. The individuals named as masons and carpenters were large contractors who hired labour for the work they carried out. For instance, Edward Tufnell is a known master Mason contractor and a Burger of Westminster. The carpenter’s bills are submitted by Elizabeth Gregory and involve approximately up to a thousand days in any one year. At the Office of the King’s Works William Meredith contracts up to 150 days per

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303 Bowley, Wages in the United Kingdom in the 19th century, 1900.


month of pavoiurs and labourers at various sites from Kensington to Tower Bridge through the 1750s to the end of the century.307

The ‘day’ rates that Gilboy recorded were used for a particular type of sub-contracted work. Three types of contract were commonly used in eighteenth century construction308

First, work ‘by the day’ was of high quality, where time was needed for skilled craftsmen to take necessary care. Carving on site is by the day whereas carving that can be done offsite is by the piece. By example, the risky cutting of expensive black marble for St Paul’s was carried out by the day.309

Second, work ‘by the measure’ was used in most building contracts, and is effectively a piece rate for specific lengths or quantities of construction. Wren was an advocate of work ‘by the measure’ citing it as best value, only using ‘day bills’ for exceptionally skilled work.310

Finally, work ‘by the great’ was a fixed price for an entire project.

‘Day’ work was rare. At St Paul’s, Westminster, Greenwich Hospital, and OKW ‘day’ work accounts for up to at most 35% of work; work ‘by the measure’ was the norm. Bridge House records more direct and weekly payments.311 Most work was within piece rate contracts ‘by measure’. Yet Gilboy only records rates from day work: her data captures a small proportion of building work with a bias to payments for highly skilled tasks.

Was a ‘day’s work’ a day’s wage?
The ‘day’ presented in payments to contractors was a unit of billing. It reflects charge for labour at a specified level of skill. In ‘measured’ bills, labour is not charged separately making it easier to recognize the likely presence of a contractor’s margin. Figures 2-7 show the small proportion of bills that ‘day’ bills and ‘day’ make up.

Figure 2: Mason’s and Carpenter’s Day Bills as % of totals312

![Figure 2: Mason’s and Carpenter’s Day Bills as % of totals](image)

307 TNA WORK 5.
309 LMA, CLC/313/I/B/012/MS25481/001 – 008.
311 LMA CLA/007/FN/03, 04 (series).
312 Wren was well known for allowing carpenters the greatest proportion of skilled time and work due to his construction processes. See Campbell op cit 2007.
Figure 3: Carpenter’s Day and total bills 1713-18

Figure 4: Mason’s Day and total bills 1713-18

Figure 5: Plumber’s Day and total bills 1713-18
But day rates also had a margin built in. The size of the contractor’s margin can be approached in three ways:

a) Contractors provided substantial credit to institutions

Credit for customers was one of the major costs faced by eighteenth century building contractors. Their (rare) accounts books make plain the risk of bankruptcy this produced.\(^{313}\) At Westminster and Greenwich payments were typically made 15 to 20 months after the work was carried out, for example.\(^{314}\) Credit was particularly concentrated on their wage bill. Small advances were given to key contractors (£50 to £100 for Edward Tufnell, Mason at Westminster in a period where his contracts were worth more than £1,500), but would have been swallowed up by materials as they paid their own suppliers on delivery. Particularly


\(^{314}\) Westminster Muniments Cat. 34513. LMA ref. CLC/B/227-175.
large or special materials are, for example, specified as paid in cash in the bills of Elizabeth Gregory, carpenter, 1713-14.\textsuperscript{315}

Credit was not offset by perquisites. Institutions offset the value of everything taken off site against contractors’ bills. Plumbers are charged for old lead discounted, and bricklayers for old tiles, at only 25-35\% discount to the cost of new.\textsuperscript{316}

What was the cost of credit? Annual interest rates or discounts on trade bills of exchange were commonly around 6\%, suggesting that an 18-month delay in payments cost a contractor 9\% of his bill.

\textit{b) The ‘day’ rate that was paid was often lower than the bill}

Not only did contractors run large credit lines for their clients, their bills were also frequently discounted before payment: they did not receive the day rates they charged – and that Gilboy recorded – in full.

Institutions wrote this right to discount into construction agreements, as can be seen in a rare surviving mason’s contract for Greenwich Hospital. Prices for work were agreed prior to commencement, but the client retained the right to discount for any work they had complaint or changed requirements for. The contract did not give reciprocal rights to the contractor.\textsuperscript{317}

Discounting could have a substantial impact. The account book of the mason Edward Strong 1699-1709 contains copies of bills submitted to Greenwich hospital. About 30\% were day bills and the rest measured. Both types of bill were regularly discounted; the average discount (by value) was 8.4\%.

\textit{c) Wages were lower than ‘day’ rates}

Contractors were able to recoup credit and anticipate discounting because actual day wages were lower than the ‘day rates’ they charged to institutions. Architectural historians reckon between 20\% and 40\%. Where salaries for direct labour are recorded they were substantially below day rates. From the 1720s to the 1760s the Wilmor family were carpenters for Bridge House. William Wilmor, Master, the most senior member of the family and a member of the Court of Common Council, was paid 16s. a week throughout the period, 15\% below Gilboy’s median wage for journeymen. In 1779, any master mason at Bridge House still earned 16s. a week, a journeyman or more junior mason earned 12s. The junior mason’s wage was approximately 30\% below Gilboy’s median wage from day rates.\textsuperscript{319} At the Office of the Kings Works salaries in 1793 were similar. This calls into real question whether anyone under £61 a year was labouring poor as Schwarz attest for earners after 1775.\textsuperscript{320} It has long been mentioned that Gilboy’s exceeds Campbell’s 1747 given rates for labour in the building trades.\textsuperscript{321} William Pain’s 1761 ‘A Builders companion’ has Gilboy’s rates as those of the best and most expensive skilled labour in the market; again, this is what a contractor would charge a client, not what labour might expect to take home.

\textbf{Conclusion}

An analysis of the records for ‘Prices and Wages’ show that Beveridge’s figures for building trades are a composite of direct and contracted payments up to the eighteenth century.\textsuperscript{322} That may be representative of the way that the organizations and trade worked until the mid-

\begin{footnotes}
\begin{footnote}{\textsuperscript{315} Westminster Cat. 34513, 34514, 34518.}\end{footnote}
\begin{footnote}{\textsuperscript{316} Westminster Cat. 34513. OKW TNA WORK 5 /146-166.}\end{footnote}
\begin{footnote}{\textsuperscript{317} A copy of the contract is in Strong’s account book LMA ref. CLC/B/227-175.}\end{footnote}
\begin{footnote}{\textsuperscript{318} LMA ref. CLC/B/227-175, formerly MS00233.}\end{footnote}
\begin{footnote}{\textsuperscript{319} LMA CLA/007/FN/03.}\end{footnote}
\begin{footnote}{\textsuperscript{320} L.D Schwarz 1992 \textit{op cit.}}\end{footnote}
\begin{footnote}{\textsuperscript{321} R. Campbell, The London Tradesman, 1747. Noted by Schwarz 1985 \textit{op cit.}}\end{footnote}
\begin{footnote}{\textsuperscript{322} Beveridge, Prices and Wages in England, LSE Archive, Beveridge Price History D:3/4/5, E:7b/8/9/10/24a/25 F:1/8/9.}\end{footnote}
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seventeenth century, but the wholly subcontracted nature of building in eighteenth-century London means that to record a day rate as what a labourer took home in this period is to ignore the overwhelming evidence of how builders contracted, accounted and billed for their work. But, without builders wage series we have very little else. Work on the structure of pay and the social composition of the workforce could shed further light on this. However, there are indicators, which provide a starting point. It is shown that in the Low Countries the relative status of building craftsmen declined substantially across the seventeenth century. If the social structure of the Low Countries and England were similar then the stagnation of the nominal wage, and implicit fall in the real wage for building craftsmen could indicate the same. Although journeymen and labourer’s pay was declining in real terms, the opportunity to make a fortune, or to run a profitable contracting business existed for skilled tradesmen, albeit with substantial risk.

Beyond this evidence, there are solid theoretical and historical reasons why London’s early modern builder’s wages series have provoked discomfort. What we know of the eighteenth century labour market is not a clear picture, but existing literature agrees that structurally and institutionally it was different to that of the century before or after. Labour was not organized in the same way nor was the experience of employment the same. Studies suggest that market frictions were substantial. Scholars have argued that the market was characterized by custom, networks and institutions that created barriers to the free movement of workers and their rights. This raises the question whether the market can be modelled as one where the laws of supply and demand work in the same way as for the mid-nineteenth century onwards and the age of mass formal employment.

If we want a series that is representative of what craft and labour were paid in eighteenth-century London building trades then we should deflate the series presented by Allen by at least 15%. Figures 8, 9 and 10 give examples of such deflation, for nominal and real wages. Initial investigation indicates the wage figures for other cities are not so wholly reliant on builders, however this needs further research. If a series of 15-30% lower is a more accurate representation of what builders in London were earning, Woodward’s question about how representative builders are of the labour force as a whole remains. Only better data for other trades, skilled and unskilled can help answer this, which is the subject of my further research.

Figure 8: Nominal Silver Wages, Building Craftsmen. Source Allen 2001. Table 1

Figure 9: Nominal Silver Wages, Building Labourers. Source Allen 2001. Table 2
Figure 10: Real wage Data (Allen, 2001) with deflation of -15% and -30% for London
The competitive edge of the reliable Friends?
Quaker contract enforcement, c.1660-1800

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The early modern Atlantic witnessed an unprecedented expansion of trade. During this time, London became the biggest port in the western hemisphere. It also became home to the largest single community of Quakers, a community that for almost 400 years has enjoyed a reputation for being disproportionately successful in trade. In 1700 there were six Monthly Meetings in London, representing 5000-8000 Friends. Membership decreased thenceforth. Quakers occupied a central place in business when Britain emerged as the world’s leading trading nation because, so the story goes, they were Quakers.

Quakers present a paradigmatic case of a religion generating economic benefits to its members. However, they differ from other faith-based merchant communities, such as the Maghrebis in that they did not depend only on informal institutions, such as reputation mechanisms. The literature on Quakers has attributed their commercial success to their reputation for honesty. Quakers regarded honesty as a core virtue, and Friends were expected to honour contracts and repay all their debts. But honesty was not just a norm. According to the literature, the Society of Friends provided an institutional enforcement mechanism that sanctioned members’ breaches of contracts, whether the transaction was with another Friend or an outsider. The result was reduced risk for anyone conducting transactions with Friends, making them desirable business partners for Quakers and non-Quakers alike. This provided Friends with a competitive advantage.

This paper explores the empirical basis for the argument that the Quakers enforced honesty among their members. I focus on Quaker institutions, not the norm of honesty per se, as this is their distinctive feature, and take repayment of debts as a crucial indicator of contract enforcement and honesty. By exploring the scale of enforcement, the significance of debts in Quaker references, and their punishment of known bankrupts, I show that Quaker institutions cannot be the explanation for their early commercial success.

Quaker distinctiveness: the literature
The literature has emphasized Quaker meetings’ enforcement of debts. Hannah argued that “Quaker discipline was direct, relentless, comprehensive and intrusive”, and that “the power to enforce implicit contracts through the (...) meeting gave a special competitive advantage in (...) long-distance trade”. Thereby Quakers helped “create a climate conducive to rapid economic growth” in early modern England. Tolles claimed that Philadelphia meetings disowned all those who refused to give up all their possessions to their creditors. Walvin argued an “efficient bureaucracy was put to work to ensure that even the humblest of Friends accorded with Quaker standards”.

However, the empirical basis for these views is remarkably thin. For example, neither Hannah nor Tolles include references to cases of disownments for debts. Walvin largely relies on Pressnell’s ‘Country Banking’ for evidence that in Norwich, 60 insolvencies became subject to investigation between 1701-73. Pressnell used Eddington’s transcript of Norwich meeting’s eighteenth-century minutes. Of the Norwich insolvencies Walvin describes, only

328 Yearly Meeting Epistles 1692, 1703, 1708, 1724.
330 Tolles 1948: 73,74; Grubb 1930: 90.
331 Walvin 1997: 33, 72, 73; Milligan 2007: 582; Raistrick 1950: 46.
332 Walvin 1997: 73.
333 Eddington 1936.
two cases occurred before 1750; neither led to a disownment. Norwich’s first disownment for debt occurred in 1755. Beyond this, Walvin narrated three further instances of York Quakers who in the eighteenth century were pressured by their meeting to repay their debts. Similarly, Lloyd provided one example of an investigation into debt by a meeting from 1673. Prior and Kirby cited four cases during the eighteenth century in which a Leeds meeting oversaw the repayment of debts. Only one of them took place before the mid-century, in 1721.

Two problems appear with the literature: First, the Society’s involvement in business is treated as static. Thin evidence from the seventeenth to nineteenth centuries is used indiscriminately. Second, there have been no studies of Meetings’ capacity to capture misconduct. Therefore, Prior and Kirby’s conclusion that ‘the close internal control exercised by the Meeting in the oversight of debt is of considerable importance to the Quaker success story’ seems premature.

How actively did Quaker Meetings punish business misconduct?

No analysis of the evolution of the Society’s activities over time has been conducted before. To assess their level of activity against commercial misconduct, I surveyed the frequency with which Quaker Meetings sanctioned business offences, relative to other breaches of discipline. This indicates whether or not Meetings took an interest in the conduct of business. If the literature is correct on the Society’s role in enforcing contracts, we should find considerable efforts to police business in London, where Quakers were most active in trade.

Because the surviving Meeting records are very extensive, I used separate collections of sanctioning records kept by three Meetings, Horsleydown, Peel and Ratcliff as a sample. Enforcement of Quaker values was in the hands of the Monthly Meetings, which, constituting one level in the hierarchical organizational structure of the Society, each were in charge of enforcing Quaker discipline among several meetings for worship in their area. These records include copies of testimonies of denial, i.e. documents certifying the Society’s disunity with an offender, circulated by all London and Middlesex Meetings. Because testimonials were circulated the records overlap. However, each collection includes some testimonies which are missing in the others. In order to achieve that largest possible scope, I have used all three.

The records of the London Meetings include 1,128 sanctions for the period 1660-1794, among which 135 are related to debts, bankruptcy and fraud (figure 1). The remaining sanctions were for alcoholism, irregular marriage or unspecified ‘evil practices’. The total number of sanctions before 1750 was extremely limited, and just nine cases concerned business. Three of the business sanctions were self-condemnations of Friends to their Meetings for neglecting their businesses or not paying their debts. None of these were disowned. Among the rest, debts appeared only as a contributing factor, listed among other forms of anti-social behaviour. For example, in 1749 Nathan Tillotson was found guilty of ‘drinking to excess, gaming, and other evils, and late absconded from his family and creditors with great part of his effects, and left his wife and child in a very miserable condition destitute of subsistance’. The evidence suggests that London Meetings were not very active in sanctioning misconduct in the first half of the eighteenth century, nor did they display a particular interest in debt or business misconduct.

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335 Lloyd 1950: 37.
336 Prior & Kirby 1993: 74-76.
338 Including several double entries, where sanctions were recorded by several meetings. Most were disownments, as well as a few self-condemnations from Friends for misconduct in the seventeenth century.
339 In one later case a self-condemnation was insufficient: Joseph Lovell, 1763, in Ratcliff Testimonies.
This changed after 1750. The second half of the eighteenth century witnessed a large increase in disownments in general, and the number of disownments for business offences increased dramatically. Debts emerged as a main and even sole reason for disownment. Bankruptcy first appeared as a reason for disownment in 1754, when Horsleydown disowned Jonathan Hobson, who ‘is become a Bankrupt, and not able to pay his just Debts’. It became an increasingly common cause of disownment after 1770.341

We know little about those disowned. In 74 cases, an occupation could be identified. They include apprentices and servants, merchants and factors, as well as drapers, tailors, two watchmakers and one surveyor of ships. For others we have some indication of how they made their living because they were disowned for bankruptcy, which only applied to large traders. The information we do have indicates a predominantly middle class background for this group. Moreover, the disownments include cases of individuals both from the core and periphery of the Society. Some were officers of Meetings; others had lost touch with the Society.342

The lack of sanctions by Quaker Meetings for bankruptcy and insolvency before 1750, and their rapid increase thereafter, has not previously been identified. There is little here to indicate that the Quakers actively enforced their values, as argued in the literature.

Were the Quakers concerned with debt and honesty?

It may be that these formal Meeting records of sanctions are misleading. Perhaps the Quakers were so honest they were never punished. Or perhaps enforcement occurred through a different mechanism that left no records. If this was so, we would still expect to see a concern with business misbehaviour in other Quaker records.

Fortunately, official Quaker attention to individual’s business behaviour can be observed in situations that did not involve serious misbehaviour. To explore this, I studied a

341 Horsleydown Disorderly Walkers, 3.7.1754.
342 Joseph Pearce Horsleydown 1760, George Rand Devonshirehouse 1786, Thomas Benwell Westminster 1786.
second set of sources, certificates of removal, written character references issued by Quaker Meetings when Friends moved to a new area.\textsuperscript{343}

The records of the London Meetings contain certificates from all over Britain, Ireland and North America. As figure 2 shows, the pattern of their references to debts parallels that displayed by the testimonies of denial.

\textbf{Figure 2: Certificates of Removal}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Certificates_of_Removal.png}
\caption{Certificates of Removal}
\end{figure}

\textit{Source: Certificates of Removal, Devonshirehouse, Peel, Horsleydown Monthly Meetings}

Before 1750 certificates rarely mentioned debts. The only occasion when debts appeared was when an individual had failed to pay them. Miles Walker’s certificate issued by Devonshirehouse in 1734 is typical of this small group. It stated that “after due inquiry made we do not find but that he & his wife have been of a sober conversation though he hath met with disappointments in the world under which circumstances he advised with Friends in accommodating his Affairs and their removal is with our consent”.\textsuperscript{344}

Later, confirmation of clearness of debts became commonplace. From the 1750s, certificates regularly take the form apparent in one received by Horsleydown on behalf of Ann Kellet from Leeds in 1771: “This may certify that (…) her conduct has been orderly, that she left us free from Debts & Marriage engagements”.\textsuperscript{345}

By 1800 most certificates confirmed the bearer’s solvency. Along with an individual’s marital status and general conduct, it became part of the core information provided.

Quaker character references support the conclusion that the Society was not particularly concerned with debt and business misbehaviour before 1750. There is no evidence that the disownment records are unrepresentative.

\textbf{Did the lack of Quaker enforcement reflect Quaker honesty?}

The increase in policing of misbehaviour after 1750 may reflect an increase in misconduct among London Friends rather than institutional change. We cannot easily measure Quaker honesty. However, if the Society of Friends did police business misbehaviour, we would expect to find that Quakers who had become bankrupt were sanctioned and forced to honour their debts.\textsuperscript{346}

To evaluate this, I examined how Quaker Meetings dealt with bankrupt Quakers. Information on bankrupts was found in the London Gazette, the chancery docket books, and

\textsuperscript{343} This policy closely followed the Settlement Acts.
\textsuperscript{344} Devonshirehouse certificates, 2/1734.
\textsuperscript{345} Southwark Book of Disorderly Walkers.
\textsuperscript{346} Rowntree, 1859; Hoppit 1987: 36.
secondary literature. By comparing the names of 150 Quaker merchants to those listed as bankrupts, I identified seven bankrupt and one insolvent Quaker merchant for the period 1697-1761. Belonging to different generations and stemming from a wide range of local origins across England and Scotland, they share few commonalities. Ormston and Hitchcock appear in the 1695 census of the Inhabitants of London within the Walls as worth £600 or more, the highest income category in the census.

<table>
<thead>
<tr>
<th>Merchant</th>
<th>Date of Failure</th>
<th>Monthly Meeting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strutt, Joseph</td>
<td>1697</td>
<td>Ratcliff</td>
</tr>
<tr>
<td>Coysgarne, Joseph (senior)</td>
<td>1707</td>
<td>Barking/ Ratcliff</td>
</tr>
<tr>
<td>Ormston, Joseph</td>
<td>1720</td>
<td>Bull &amp; Mouth</td>
</tr>
<tr>
<td>Hitchcock, John</td>
<td>1721</td>
<td>Bull &amp; Mouth</td>
</tr>
<tr>
<td>Lovell, William</td>
<td>1727</td>
<td>Bull &amp; Mouth</td>
</tr>
<tr>
<td>Coysgarne, Joseph (junior)</td>
<td>1752</td>
<td>Devonshirehouse</td>
</tr>
<tr>
<td>Farmer, James</td>
<td>1755</td>
<td>Devonshirehouse</td>
</tr>
<tr>
<td>Barclay, David</td>
<td>1761</td>
<td>Gracechurch Street</td>
</tr>
</tbody>
</table>

I searched the Meetings’ records for references to their business failures. While all these merchants appear, their bankruptcies are not mentioned, and none of them were investigated or disowned. The Meetings took no recorded action even in public instances of high profile failure, where we would expect debt repayment to be a major issue.

This does not appear to be because enforcement was not recorded in Meeting records. External records contain no information about reprimands from the Society. The letter book of Ormston’s son Charles, a merchant in Kelso, Scotland, includes correspondence with his father 1720-30. Charles appears to have been very religious, acting as a minister and using Quaker terms of address, according to conservative Friends’ custom. Yet there is no indication that he was concerned by his father’s possible disownment in his letters. Until his bankruptcy, Farmer acted as the London representative of his firm Farmer & Galton of Birmingham, a leading gun manufacturer and main supplier to the African company. His correspondence contains much information on his bankruptcy, but no indication of concern about censure from the Society.

Nor was it because the Society was somehow ignorant of these bankruptcies, despite their public announcement. The creditors suing Lovell were fellow Quakers, who were officers of the Society and interacted regularly with his monthly Meeting. Coysgarne’s creditors were active members of his Meeting, frequently donating funds. Farmer’s brother-in-law was a member of his Meeting. Therefore, the Meetings must have been aware of the failures.

The Meetings’ failure to investigate or sanction the eight merchants provides further evidence that they were not interested in enforcing business behaviour.

**Conclusion**

Contrary to the literature, the Quakers did not possess a formal institutional mechanism to enforce honesty and police business misbehaviour before 1750. The Society only started sanctioning debt after 1750.

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347 Joseph Strutt: Gauci 2001:45; Docket Books: TNA.
348 Quaker Family History Society Database.
349 Glass 1966.
350 Letter book Charles Ormston, NLS
351 Lovell was sued by Richard How and John Eccleston, a Devonshirehouse Meeting officer. Coysgarne Jr. by John and Capel Hanbury. Barclay was sued by John Barclay, David Barclay Sr. and David Barclay Jr.: Docket Books.
This change probably constituted a response to the rise of public anxiety about debts.\textsuperscript{352} The second half of the eighteenth century witnessed a broad debate on private debt. In this period, 90 per cent of English and Welsh prisoners were debtors, their number more than doubling from between 1759-79.\textsuperscript{353} Moreover, the average number of bankrupts, which stood at only 44.9 per year in the decade from 1691-1700, had increased to 210.2 annually by 1751-60, and rose to 762.7 per year in 1791-1800.\textsuperscript{354} London Quakers must have shared the public concern about debts. Their increased sanctioning of malpractice in business and failure to pay creditors therefore constituted a response to contemporary economic developments.

Quakers’ reputation for honesty as well as their commercial success during the crucial period of trade expansion in the seventeenth and early eighteenth centuries may have been caused by other, informal attributes of the religion. However, the Society’s formal mechanisms for contract enforcement, its distinguishing feature among merchant communities, emerged only in the mid-eighteenth century, and cannot explain their prominence in the early Atlantic economy.

\textbf{Literature}

Greif, A. (2006). Institutions and the Path to the Modern Economy, CUP.

\textsuperscript{352} Litigation for debt had peaked in the seventeenth century and since subsided. In the eighteenth century, conflict over debts became viewed as negative and was no longer normalized. Muldrew 1998.


\textsuperscript{354} Hoppit 1987: 45.
The impact of access to railroads on economic growth in the Ottoman Empire, 1893-1914

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I. Introduction
In the late nineteenth and early twentieth centuries, there was an important transition in the Ottoman Empire regarding its transportation networks, which could have caused economic growth. This consisted of the construction of railroad lines between 1856 and 1914. The building of railroads began in 1856 and railroad networks grew rapidly until 1914. As shown in figure 1, railroad lines connected Rumelia with other parts of the Ottoman Empire, such as Hejaz, Syria, Iraq, and Anatolia. The railroad networks were not as dense as one might expect because of financial difficulties, wars, and political obstacles, limiting construction even up until 1914 (von Pressel 1966, 91; Schoenberg 1977; Ortaylı 2010, 163-65; Geyikdağ 2011, 90-8).

Figure 1: Railroad Lines in the Ottoman Empire (1856-1914)

In the Ottoman Empire, there were only a few railroad lines that were built by the state itself. Many railroad lines were constructed and operated by the foreign railroad companies of major European powers. This could be due to the fact that the Ottoman state did not have the funds to finance the construction of railroads. Its financial situation became worse during the 1850s and it went bankrupt in the 1870s because of its debts. The Ottoman Empire was also behind the contemporary technological knowledge for building railways (Schoenberg 1977; Gülsoy 2010, 27; Geyikdağ 2011, 119-126).

The Ottoman state primarily wanted the railroads to be built so it could exercise political control over its territories. The major European powers constructed several railroads, such as the line connecting Izmir with Aydın, to extend their economic control and import raw materials from the Ottoman Empire. The decreasing transportation costs made it easy to obtain imports from the Ottoman Empire. However, only a few railroad lines were allocated to places of economic importance (Kolars and Malin 1970; Karkar 1972, 65; Schoenberg 1977).

355 Land of the Ottoman Empire in Europe.
356 They were the UK, France, Germany, and Austria-Hungary.
In the historical literature, there are controversial arguments for the impact of railroads on economic growth in the Ottoman Empire. Several researchers argue that there had been a substantial increase in trade and agricultural production as places had gained access to railroads. On the other hand, while railroads are generally viewed as having a positive effect on growth, there is a strand of literature where it is argued that railroads could lead to lower production in connected places, as there was an increase in imports due to railroads, which resulted in the domestic industry being hampered in places where railroad lines were located. In another strand of the literature it is argued that railroads did not lead to economic growth in the Ottoman Empire. This strand is based on the argument that railroad lines were not adequately connected to one another and as a result passenger and goods traffic was not intense.

To shed light on this issue, this paper examines whether access to railroads induced economic growth in the Ottoman Empire, using data for 455 judicial districts (known as kazas) from 32 provinces (known as vilayets) in the Ottoman Empire for the years 1893 and 1914. Hornung (2012) uses population growth as a proxy for economic growth in Prussia. He reports the positive impact of railroads on population figures in connected cities for the period 1840-71 and argues that railroad access induced economic growth and increased employment opportunities in connected cities. Higher employment opportunities attracted people into the respective cities to look for jobs. There is no data source with information about economic outcomes, trade, transportation costs, and internal migration at the judicial district level. This paper conducts a similar analysis to that of Hornung (2012). Population data come from the 1881/82-93 and 1914 censuses, which have been made available by Karpat (1985, 122-50, 167-90). This paper constructs a detailed map that shows the location of the railroad lines by both place and year.

II. Empirical approach

This paper runs the following regression:

\[
\log(P_{icpt}) = \beta_0 + \beta_1 \log(R_{icpt}) + \beta_2 D_{icp} \times \gamma_1 + \beta_3 M_{icpt} + \rho_p + u_{icpt}
\]

where \(i\), \(c\), \(p\), and \(t\) indicate the judicial district, county, province, and year, respectively. \(\log(P_{icpt})\) is the logarithm of the judicial district level population for judicial district \(i\), located in county \(c\) of province \(p\), in year \(t\). \(\log(R_{icpt})\) is the logarithm of the distance between the nearest railroad line and each judicial district, in year \(t\). To control for initial conditions in a judicial district, this paper uses \(D_{icp}\) that equals 1 if natural disasters were seen in judicial district \(i\) of county \(c\), located in province \(p\), between the 1800s and 1850s, and zero otherwise. \(M_{icpt}\) is a dummy variable which equals 1 if there was at least one operating mine, such as a coal, gold, or copper mine, in judicial district \(i\) of county \(c\), located in province \(p\), in year \(t\), and zero otherwise. There was an increase in the population and production in several places.

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358 This is because all major European powers wanted to build railroads to control places politically and economically (Illich 2007, 91-3; Geyikdağ 2011, 54-5). Furthermore, the construction of the railroads by one power would create a threat to its rivals’ economic and political dominance in the respective location. Competition among the major European powers to control the respective location via railroad investments would lead to conflicts (Ortaylı 2010, 165-6). For instance, in 1836 Colonel Chesney, who was a British engineer, had proposed the construction of several railroads in the Ottoman Empire to the UK government. The railroads would have connected the Syrian coast with Baghdad (von Pressel 1966, 92). However, since railroads would create a threat to the economic dominance of France in these areas, France blocked the building of these railroads using a French diplomat, that is, Ferdinand de Lesseps (Gülsoy 2010, 43-4).

359 Another reason for this is that railroads were not connected with highways (Elmen 1994, 105).

360 The 1881/82-93 census was conducted after 1881 and submitted to the Sultan in 1893 (Karpat 1985, 30-6).
such as Balya judicial district in Balıkesir, after coal mines had been operating in the 1900s in the respective locations (Su 1939, 6-12). In addition, the regression includes the interaction of $D_{icp}$ with year dummies ($t$) that control for the time varying effects of different initial conditions in judicial districts on the population. $p$ are province fixed effects that account for time-invariant characteristics at the province level (for example, the presence of mountains, rivers, and lakes, and geographic size). Lastly, $u_{icpt}$ is the error term while $\beta_1$ is the coefficient of interest.

III. Results

The OLS (Ordinary least squares) estimate for the effect of railroads in column (1) of table 1 is statistically significant at 10 per cent. The point estimate reveals that a 1 per cent decrease in the distance from a judicial district to the nearest railroad line leads to an increase in the population of the respective judicial district by 0.03 per cent, on average.

<table>
<thead>
<tr>
<th>Dependent variables: log(Population) and log(Distance to railroad lines)</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>log(Distance to railroad lines)</td>
<td>-0.033*</td>
<td>-0.056</td>
<td>--</td>
<td>-0.033*</td>
</tr>
<tr>
<td>Presence of natural disasters</td>
<td>0.065</td>
<td>0.052</td>
<td>-0.466</td>
<td>0.065</td>
</tr>
<tr>
<td>Presence of mines</td>
<td>0.223***</td>
<td>0.226**</td>
<td>0.092</td>
<td>0.223***</td>
</tr>
<tr>
<td>log(Distance to trade and caravan routes)</td>
<td>--</td>
<td>--</td>
<td>0.302***</td>
<td>(0.110)</td>
</tr>
<tr>
<td>log(Distance to lines proposed by Colonel Chesney)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>-0.118</td>
</tr>
<tr>
<td>log(Distance to lines proposed by Levant Herald)</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>-0.004</td>
</tr>
<tr>
<td>Province fixed effects</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Presence of natural disasters×year fixed effects</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
</tr>
<tr>
<td>Constant</td>
<td>9.628***</td>
<td>9.670***</td>
<td>1.008***</td>
<td>9.628***</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.41</td>
<td>0.41</td>
<td>0.58</td>
<td>0.41</td>
</tr>
<tr>
<td>$F$</td>
<td>--</td>
<td>--</td>
<td>7.48***</td>
<td>--</td>
</tr>
</tbody>
</table>

Notes: Column (1) reports the OLS estimates for equation (1). In column (2), regression is estimated by 2SLS (Two-stage Least Squares). Column (3) shows the first-stage regression of 2SLS. The dependent variable in column (3) is the logarithm of the population in a judicial district in year $t$. Column (4) reports the OLS estimates for the regression that examines the impact of lines that were planned but that were not built. Heteroskedasticity-robust standard errors corrected for clustering at the province level are reported in parentheses. *** and * denote statistically significant differences from zero at the 1% and 10% levels, respectively. N. of obs. is the number of observations. In the last row, the $F$ statistic on the excluded instrument in the first-stage regressions is reported. Lastly, the distance to the trade and caravan routes is the instrumental variable.

In line with the findings of Hornung (2012), the empirical results imply that access to railroads had induced economic growth, which led to a higher population figure in the respective judicial district. The results are also parallel to those in the historical literature, indicating that there was an increase in international and interregional trade because of lower transportation costs, which led to higher agricultural production in places that had gained access to railroads. Higher trade and agricultural production resulted in increasing employment opportunities, which attracted an inflow of people looking for employment and
This paper also addresses the possibility that the placement of railroad lines could be endogenous to the population size (that is, reverse causality), which leads to a bias in the OLS estimates for the impact of railroads. This is because in the historical literature it is indicated that one of the railroad lines was allocated to places that were commercially important (that is, İzmir and Aydın) (Kolars and Malin 1970; Karkar 1972, 65, 79). The Ottoman state wanted several railroad lines to be built in unpopulated places, such as Bandırma and Balıkesir, due to famines. The railroad lines would decrease food shortages and prevent future famines in the respective places (Quataert 1996, 789; Erler 2010, 304-12).

To address the reverse causality issue, this paper pursues two different strategies: (I) an instrumental variable for railroads based on trade and caravan routes is constructed; and (II) this paper examines the effect of un-built lines on the population in the proposals of Colonel Chesney and Levant Herald.361

The second stage result, using the instrument (that is, the logarithm of the shortest distance between each judicial district and the trade and caravan routes) to predict the distance to the railroads, is presented in column (2) of table 1. The IV estimate for the effect of the railroads is not statistically different from zero. Furthermore, the IV estimate is larger than the OLS coefficient in magnitude, which suggests that the OLS estimate is biased downward. The coefficient estimate for the impact of the distance to the trade routes in column (3) is statistically different from zero at 1 per cent. However, the IV estimate is not precise enough to provide information on railroad line placement decisions, as the F-statistic in column (3) is not larger than 10.

To further address reverse causality concerns, in column (4), this paper examines the effect of lines that were planned but that were not constructed. Column (4) reports that the coefficient estimate for the impact of the distance to the railroads is negative and statistically different from zero, as before. In addition, column (4) reports that the coefficient estimates for the effects of Chesney’s proposal and Levant Herald’s proposal are not statistically significant. These results imply that reverse causality is not an important concern. This could be due to the fact that the railroads in the Ottoman Empire were primarily built for political, religious, or military rather than economic reasons. This is also in line with Jedwab and Moradi (2012), who examine the impact of railroads on cocoa production and population growth in Ghana.

IV. Conclusion
The findings show that railroad access induced economic growth, which led to expansion in the affected areas. Railroads can be an important driver of economic growth in places where road networks are poor before railroads are built, as those of the Ottoman Empire were, even if economic factors do not play an important role in the construction of railroads.

This paper contributes to previous literature in several respects. It is the first study that uses a unique historical dataset of railroads and judicial district population figures to analyse the impact of railroads in the Ottoman Empire. It provides empirical evidence to help inform the historical literature as to whether access to railroads induced economic growth in the Ottoman Empire. It is the first study that uses a unique historical dataset on trade and caravan routes in the Ottoman Empire as well as proposals by Colonel Chesney and Levant Herald in order to deal with the endogeneity issue of where railroad lines in the Ottoman Empire were

361 Before 1870, Colonel Chesney and Levant Herald proposed the construction of several lines that would have been located in Syria, Iraq, and Anatolia. The positioning of the proposed lines was related to the population in a similar way to how the railroad lines were actually built. Furthermore, events that were less likely to be related to economic conditions in the judicial districts (such as financial difficulties faced by the Ottoman state, which could have arisen due to wars and its debt) were mainly responsible for the fact that none of the proposed lines attracted considerable interest.
built; that is, it represents the first attempt to study decisions about the placement of railroad lines empirically. Finally, it extends the empirical literature on the impact of railroads by presenting empirical evidence from history, using a unique historical dataset on the Ottoman Empire, whose borders included many present-day countries.362

**Bibliography**


Ortaylı, İ. (2010). Osmanlı İmparatorluğu’nda Alman Nüfuzu. İstanbul: Timaş Yayınları.


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362 These countries are Turkey, Greece, Syria, Iraq, Lebanon, Israel, Palestine, Jordan, and Yemen, and some parts of Albania, Macedonia, Kosovo, and Saudi Arabia.
Railroads and the regional concentration of industry in Germany 1861-82

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Introduction

The introduction of railroads in the nineteenth century lowered transportation costs on routes where rivers and canals were not available or unreliable, making it easier for manufacturers to reach customers in distant markets. In Germany the large river systems of the Rhine and the Elbe supported trade, but they were not connected through a waterway until 1938. This suggests that railroads had the potential to greatly reduce transportation costs. The first railroad opened in 1835 with a short track of 7.5 km but like other early railroads it did not attract cargo traffic because the high cost of transhipment made its incorporation into longer trade routes too expensive (Heinze and Kill 1988). The first connection between the Rhine and the Elbe was achieved in 1847 and the boom in railroad construction that followed over the next 30 years created a dense network across the states that formed the German Empire in 1871.

This article investigates the impact of this railroad boom on the regional diffusion of industrial development. As railroad construction took off in the middle of the nineteenth century, so did early industrialization. Employment in manufacturing increased, water and steam powered factories displaced smaller workshops, and coal supplanted charcoal as the standard fuel in most industries. In this setting improvements in transportation could have had two very different effects on the diffusion of industry. On the one hand, railroads could have promoted the growth of industry outside of traditional manufacturing centres, where land and labour were presumably cheaper. Recent studies about the impact of transportation investments in developing countries provide empirical evidence for this dispersion effect in the immediate surroundings of industrial centres (Baum-Snow et al. 2013, Rothenberg 2011).

On the other hand, the same transportation improvements could have increased the value of existing manufacturing centres, encouraging further geographic concentration. If economies of scale and agglomeration provided a competitive advantage to producers in manufacturing centres, high transportation costs might have acted as a protective barrier for manufacturers outside of these centres. Empirical evidence for this effect is found by Faber (2012), who observes lower industrial GDP growth in peripheral regions that were included in China’s national highway network compared to similar areas outside of the network. Similarly, Tang (2013) shows a positive relationship between railroad access and manufacturing start-ups in densely populated prefectures in Japan but finds a negative relationship in prefectures with low populations.

My analysis shows that transportation improvements had a positive impact on manufacturing growth in regions with above median levels of per capita manufacturing employment. For regions below this mark the impact was negative, implying that better transportation increased the spatial concentration of manufacturing. Motivated by this finding I investigate regional diversity within manufacturing to find evidence for the mechanism behind this effect. A reduction in diversity would suggest that spatial concentration was driven by gains from specialization. The results show that better market access decreased diversity in regions with above median levels of per capita manufacturing, but did not have a significant effect on diversity in regions below this mark. This suggests that better transportation increased the spatial concentration of industry by raising the competitive advantage of specialized manufacturing centres.
Empirical Framework
My goal is to investigate the impact of transportation improvements on the regional diffusion of industry, which requires measurement of transportation costs at the regional level. The argument that links transportation and distribution of industry is about market integration; therefore, I measure transportation costs using an index of market access that sums over all sources of demand measured by the regional population $P_{jt}$ and weighs each one by the cost $C_{ijt}$ of reaching that particular market.

$$Access_{it} = \sum_{j=1}^{I} \frac{1}{C_{ijt}} P_{jt}$$

Improvements in market access are measured by the difference $\Delta Access_{it} = Access_{it+1} - Access_{it}$.

I assess the stage of regional industrialization using the level of per capita employment in manufacturing. Since factories displaced smaller workshops during early industrialization, regions often lost establishments even as they gained employment in large numbers. Therefore, employment better captures the expansion of industry than establishment counts. Industrial development is again assessed by the difference between employment levels $\Delta Industry_{it} = Industry_{it+1} - Industry_{it}$. I use a simple regression model to estimate the impact of better market access on industrial development. The equation is given by

$$\Delta Industry_{it} = \beta_0 + \beta_1 Industry_{it} + \beta_2 Access_{it} + \beta_3 \Delta Access_{it} \times Industry_{it} + X_{it} + \epsilon_{it}$$

The interaction term $\Delta Access_{it} \times Industry_{it}$ allows the impact of improvements in market access to vary across regions with different levels of industrial employment. The vector of control variables $X_{it}$ includes a region’s access to coal and lignite, measured by indicators that are equal to one for regions with annual production above 10,000 tons. The transition from charcoal to coal as the main fuel in many manufacturing industries suggests that these endowments provided an advantage for regional industrialization. In addition, $X_{it}$ includes provincial and year fixed effects. The 10 provinces are identical to the large German states of 1861 with the exception of Prussia, which is divided into three parts to account for the special status of eastern Prussia and the addition of the Rhineland and Westphalia in 1815. The fixed effects control for differences in taxation, education, and other policies that affected industrial development. They are assumed to be constant time because most policy tools remained at the state level even after unification in 1871. Therefore, the fixed effects also control for broad geographic differences like ruggedness and forest cover in the south and a milder climate in the north.

The identifying assumption for this model requires that improvements in market access were not motivated by the prospect of industrial development. Most, railroad projects were initiated and financed by local commercial groups, therefore regions with higher expected gains might have been more successful in completing them. Similarly, the prospect for jobs affected migration and the movement of population. To address these endogeneity concerns I instrument for market access using:

$$Access_{it}^V = \frac{Network_{it}}{D_{ij}} P_{jt-2s}$$

$D_{ij}$ is the straight line distance between region i and region j and $Network_{it}$ is the total length of the transportation network. The idea behind this first part of the instrument is that the cost for transporting goods between i and j should be a function of the distance between these regions if a direct connection exists. Without a direct connection transportation costs can be much higher because goods have to travel circuitous routes. Additional construction makes it more likely that a direct connection exists, so that $C_{ij}$ should also be inversely correlated with $Network$. To minimize endogeneity of the population measure I use the regional population lagged by 26 years as an instrument for the current population.
In the second part of the analysis I investigate changes in the regional diversity within manufacturing using a Herfindahl index proposed by Duranton and Puga (2000). The authors adjust each sector’s share in the regional employment $s_{ikt}$ by its share in national manufacturing employment $s_{kt}$, which is important for this setting to account for changes in industrial structure over time. The adjusted index is given by:

$$RDI_{it} = \frac{1}{\sum_{k=1}^{K} |s_{ikt} - s_{kt}|}$$

The value of $RDI_{it}$ increases as employment is distributed across more industries or as the industrial structure in a region becomes more similar to that of the national economy. This means that low values of $RDI_{it}$ can be used to single out regions with high levels of specialization that are not simply mini replicas of the larger economy. Changes in the degree of regional specialization are again measured by the simple difference in the index values $\Delta RDI_{it} = RDI_{it+1} - RDI_{it}$.

Features of the Data

My data cover 1861, 1875, and 1882 and comes from two main sources. The measurement of market access is based on shapefiles of railroads and waterways that were created by Kunz and Zipf (2008).

Figure 1: Waterways (grey) and railroads (black) in the area of the German Empire in 1861 (left) and 1882 (right), Source: HGIS-Germany (Kunz and Zipf 2008)

Table 1: Summary Statistics Market Access, Sources: Own calculation based on historical freight rates and HGIS-Germany (Kunz and Zipf 2008)

<table>
<thead>
<tr>
<th></th>
<th>Year</th>
<th>N</th>
<th>Mean</th>
<th>Std.Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Shipping cost</strong></td>
<td>1861</td>
<td>80</td>
<td>2,192.18</td>
<td>585.06</td>
<td>1,532.26</td>
<td>4,240.07</td>
</tr>
<tr>
<td></td>
<td>1875</td>
<td>80</td>
<td>1,530.45</td>
<td>354.18</td>
<td>1,080.20</td>
<td>2,831.98</td>
</tr>
<tr>
<td></td>
<td>1882</td>
<td>80</td>
<td>1,110.56</td>
<td>278.24</td>
<td>794.48</td>
<td>2,138.24</td>
</tr>
<tr>
<td><strong>Market access</strong></td>
<td>1861</td>
<td>80</td>
<td>507.66</td>
<td>288.56</td>
<td>55.90</td>
<td>1,324.96</td>
</tr>
<tr>
<td></td>
<td>1875</td>
<td>80</td>
<td>555.98</td>
<td>351.75</td>
<td>65.44</td>
<td>1,513.29</td>
</tr>
<tr>
<td></td>
<td>1882</td>
<td>80</td>
<td>644.69</td>
<td>428.40</td>
<td>85.95</td>
<td>2,437.33</td>
</tr>
</tbody>
</table>

Figure 1 shows the growth of this transportation network from 1861 to 1882. Most district capitals had access to a waterway or a railroad in 1861, but the connections between nearby districts could still be circuitous. In comparison, the 1882 network has direct connections between almost all pairs of district capitals. I combine these maps with information on freight rates to calculate the minimum shipping cost for one ton of goods between each pair of regions in each census year (Falzarano et al. 2007). The summary statistics in table 1 show...
that railroad construction and falling freight led to a reduction in the average shipping costs by almost 50 per cent between 1861 and 1882.

Data on regional manufacturing employment comes from the censuses of the German Zollverein in 1861 and the German Empire in 1875 and 1882. Changes in boundaries and industry classifications require some aggregation, resulting in 72 regions and 23 industrial sectors for the analysis.

Figure 2: Per capita manufacturing employment in 1861 (left) and 1882 (right)

Figure 3: Specialization within manufacturing in 1861 (left) and 1882 (right)
Figure 2 shows the differences in total per capita manufacturing across these regions with levels ranging from less than 6 to more than 18 per cent. Both maps show manufacturing centres in the western Rhineland, southern Baden and Bavaria and in central Saxony, but the overall distribution of employment appears more even in 1882. In particular, darker colours in several northern and central Germany suggest some diffusion of industrial development. Regional diversity within manufacturing is shown in figure 3, where darker colours indicate lower diversity or a higher degree of specialization. The left map shows high specialization in the manufacturing centres of the western Rhineland and central Germany, but also in northeastern Prussia where per capita employment in manufacturing was low. In 1882 there are new regions with high degrees of specialization that are spread out more, which is consistent with the idea that better transportation encouraged the spatial concentration of industries.

Regression Results

The regression analysis shows that improvements in transportation had a differential impact on the growth of industry and industrial specialization in regions with different levels of manufacturing employment. Table 2 presents the coefficient estimates from OLS regressions with 10 and 20-year growth rates. In both regressions the negative coefficients for $\Delta$Access indicate that better market access reduced industrial growth in regions with low manufacturing employment. However, the coefficients for the interaction term $\Delta$Access×Industry indicate that this effect was positive in regions with high levels of per capita manufacturing. The finding is confirmed by the instrumental variable regression in the last column. The estimates are statistically not distinguishable from each other, possibly because differences in industrial potential are already captured by the level of manufacturing employment.

Table 2: Regression results for manufacturing growth and diversity in manufacturing

<table>
<thead>
<tr>
<th></th>
<th>$\Delta$Industry</th>
<th>$\Delta$Diversity</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>short term</td>
<td>long term</td>
</tr>
<tr>
<td>Industry</td>
<td>-0.2859***</td>
<td>-0.4441***</td>
</tr>
<tr>
<td></td>
<td>-0.4739***</td>
<td>(0.0812)</td>
</tr>
<tr>
<td></td>
<td>-11.9277***</td>
<td>(4.0795)</td>
</tr>
<tr>
<td></td>
<td>1.9334***</td>
<td>(0.9542)</td>
</tr>
<tr>
<td>$\Delta$Access×Industry</td>
<td>0.9440***</td>
<td>1.0151***</td>
</tr>
<tr>
<td></td>
<td>(0.3255)</td>
<td>(0.3256)</td>
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<tr>
<td></td>
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<tr>
<td>Coal</td>
<td>2.2823</td>
<td>3.2178</td>
</tr>
<tr>
<td></td>
<td>(3.9257)</td>
<td>(3.9257)</td>
</tr>
<tr>
<td></td>
<td>-0.0739</td>
<td>(0.1527)</td>
</tr>
<tr>
<td>Lignite</td>
<td>4.7059**</td>
<td>8.8408**</td>
</tr>
<tr>
<td></td>
<td>(4.6874)</td>
<td>(4.2621)</td>
</tr>
<tr>
<td></td>
<td>0.2177**</td>
<td>(1.459)</td>
</tr>
</tbody>
</table>

| Provincial FE    | Yes              | Yes               | Yes              | Yes              | Yes              |
| Year FE          | Yes              | No                | No               | No               | No               |
| N                | 154              | 72                | 72               | 72               | 72               |
| F-statistic      | 17.32            | 13.24             | 13.11            | 2.94             | 2.95             |

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1
Figure 4: Effect of an improvement in market access of 100 units on growth in per capita manufacturing employment. The solid lines show the estimated marginal effect and the dotted lines represent 95% confidence intervals.

Figure 5: Effect of an improvement in market access of 100 units on change in diversity within manufacturing. The solid lines show the estimated marginal effect and the dotted lines represent 95% confidence intervals.

Figure 4 shows the marginal effect of better market access over the range of per capita manufacturing employment in the sample. Using the coefficients from the short term growth regression the impact of better market access turns positive when per capita employment is equal to 9.9283 per cent or the 56th percentile of the distribution. The average short term growth of market access across all regions in the sample was 81.50 and the average increase between 1861 and 1882 was 161.46. In the regression market access is divided by 100 to adjust the size of the coefficients, therefore the effect of an average increase in market access would be the number shown on the vertical axis of the graph multiplied by 0.8150 or 1.6146 respectively. For example, for a region with 5 per cent of the population in manufacturing the average increase in market access meant a reduction in industrial employment of 3.7912 percentage points.

The second part of the analysis shows a very similar result for the impact of better market access on regional specialization within manufacturing. In the last two columns in
table 2 the positive coefficients on ΔAccess suggest that better market access encouraged diversity within manufacturing, but figure 5 shows that this effect is not statistically significant at the 95 per cent level once the interaction ΔAccess×Industry is taken into account. The combined marginal effects show that better market access decreased diversity within manufacturing in regions with manufacturing employment above 9.2338 per cent or the 48th percentile based on the 2SLS results. In other words, better access to regional markets made manufacturing centres more specialized, but it did not have a clear effect on specialization in regions with low industrial employment.

**Conclusion**

This paper shows that the railroad boom had very different effects on industrial development in manufacturing centres and regions with low manufacturing employment. The findings imply that manufacturers responded to lower transportation costs by concentrating production in fewer regions. This conclusion is consistent with a small empirical literature that looks at the impact of railroad and highway access on industrial growth in peripheral regions in developing countries. I contribute to this literature by investigating the diffusion of industry across all regions in a larger economy and by providing empirical evidence for one mechanism that links transportation and the diffusion of industry. The finding that better market access increased specialization in regions with high manufacturing employment provides support for the argument that manufacturing centres expanded because better transportation allowed for higher gains from specialization in industrial clusters.

The analysis contributes more broadly to our understanding of the role that railroads played in German industrialization. Previous studies have focused on direct linkages between railroad construction, mining, and metal production (Fremdling 1979) or investigated the effects of railroads on commodity trade in grain and coal (Keller and Shiue 2008; Fremdling 1995). My findings are consistent with their argument that railroads improved the integration of regional markets. I show that better market integration encouraged the growth of specialized industry clusters and contributed to regional differences in industrial development. The question which types of gains from specialization mattered most for this effect is left for future research.

**References** (a complete list is available upon request)


The Press and company promotion during the Railway Mania of 1845

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Supervisor: Professor Marc Flandreau

Several scholars have noted that the 1845 bubble in British railway shares known as the Railway Mania was accompanied by a prodigious and related media frenzy.\(^{363}\) The circulations of newspapers increased markedly and the profitability of the sector seems to have sharply increased. When the bubble peaked in October 1845, the financial press entered a period of decline, with most of the new financial publications shutting down between 1845 and 1847. In short, the rise and fall of the railway mania mimicked an episode of boom and bust in the media market. Previous researchers have emphasized the role of the press in manias.\(^{364}\) My goal is to review the evidence on the expansion of the press and offer a potential explanatory framework for its connection to the bubble in railway shares.

Contemporary accounts allege that the press was engaged in a practice known as ‘puffing’, wherein they received side-payments from railway companies to help market railway shares. However, a careful recent study failed to find an effect of positive media statements in two leading journals on the price at which companies’ securities were trading.\(^{365}\) This suggests that the purpose of the ‘puffs’ was to ensure the successful flotation of new companies, and that the availability of revenues from ‘puffs’ accounts for the rapid growth of the press in 1845 and its subsequent collapse.

Company Promotion

My contention is that the growth of the press and the system of puffing emerged to facilitate the flotation of new railway companies. In the 1840s, British railways went public using a fixed-price IPO process.\(^{366}\) This meant that railway companies would affect the transaction by advertising a fixed-price at which scrip in the company could be purchased. Prospective shareholders would write to the railway company requesting that a certain number of shares be allotted to them at the pre-specified price. The railway company would then determine how many shares to allocate to each applicant. Successful flotations were ‘oversubscribed’ and unsuccessful flotations ‘undersubscribed’.\(^{367}\)

The IPO process circumvented traditional financial intermediaries such as bankers or stockbrokers. Historians have long noted the relative absence of traditional banking houses in

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\(^{365}\) Campbell, et al., “The Role of the Media” 461-468.

\(^{366}\) Modern IPOs are largely conducted via book-building or through auction, both involving soliciting information about demand from the market in the course of determining the issue price. See Jay R. Ritter, “Investment Banking and Securities Issuance,” in *Handbook of the Economics of Finance*, Vol.1, Ch.5, pp.279-230.

financing the growth of British rail. Stockbrokers were more involved than banks, but as Pollins makes clear “stockbrokers were acting for the railway companies as agents; the final allocation of shares remained in the hands of the company”. Companies determined share allocation, designed the prospectus, and had it marketed in the financial journals. As Pollins put it, “at the height of the boom it was sufficient for a company to place an advertisement in a railway journal for it to be flooded with applications”. The only constraint on successfully marketing a railway concern was advertising – one had to be noticed to be subscribed to.

The Rise and Fall of the Press

England in the 1840s employed a number of measures to regulate the press. Among these was the requirement that newspaper proprietors register their paper and pay a ‘stamp tax’: a penny tax on each newspaper sold. Stamp tax returns document the existence of journals and the number of papers they expected to sell. I rely on the parliamentary returns of newspaper stamps between 1837 and 1850 broken down by newspaper, and on the bibliography of railway newspapers compiled by John Palmer. I use Palmer’s work to match the parliamentary data on the number of stamps issued to specific journals to the frequency with which specific railway papers were published and their start and end date. This enables me to calculate the annual average circulation per issue of the most important railway papers.

Figure 1 shows the average circulation per issue of the most important railway journals from 1836-50. The start of a line indicates the initiation of a new journal, and the end of a line indicates a journal going out of business. Figure 2 expands the coverage by graphing the total annual number of stamps purchased in aggregate for all journals published in London that engaged in commercial or financial coverage. This should be a close approximation to the total number of commercial newspapers sold each year for the period 1837 to 1850.

Figure 1

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368 See Leland Jenks: “The names of Rothschild, Baring and Ricardo… will not be remembered as having inspired or encouraged the domestic railway movement. Nor did the leading bankers…” in his The Migration of British Capital to 1875, London: Alfred Knopf, 1927, p.130.
370 Ibid. p.233.
371 Parliamentary Papers, 1852(42) Newspaper stamps.
372 John Palmer, Railway Periodicals of the Nineteenth Century Published in the British Isles, Unpublished Dissertation, University College London, School of Librarianship and Archives, 1959.
Figure 2

The figures document a remarkable expansion in the press devoted to coverage of the railway market. We have reason to believe this included a rise in profitability. *Glasgow Herald* editor Alexander Sinclair claimed that supplements were used during the mania to cope with excess advertising demand. Alexander Sinclair, *50 Years of Newspaper Life 1845-1895*, Printed for Private Circulation, Glasgow, 1895, p.16. Supplements required a halfpenny stamp tax, thus we can proxy for advertising demand with the number of halfpenny stamps purchased. Figure 3 shows the aggregate trend in the issue of halfpenny stamps, and it is clear that it explodes in 1845.

In addition, anecdotal evidence suggests greatly increased profitability. Journalist Gustave Strauss remarked about his friend – and editor of the *Iron Times* – Thomas Holt that, “Holt told me himself that he might dispose of his property and interest in the paper by sale for £15,000 cash … One day he brought home with him a bag, with a thousand sovereigns in it, which he emptied on the bed, then lay down upon them, and rolled over them”. Victorian journalist George Sala – a friend and colleague of Holt’s – suggests a similar reading of Holt’s success: “Its [the *Iron Times’*] columns … were inundated with advertisements of newly projected lines, the promoters of which rarely paid for their advertisements in cash, but were always ready to hand over fully paid-up shares in exchange for the public announcements of their schemes”. Sala alleged that Holt had been inundated with railway scrip from willing promoters seeking publicity, and “had he realized them all, he might … have been the possessor of perhaps a hundred-and-fifty thousand pounds”.

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373 Alexander Sinclair, *50 Years of Newspaper Life 1845-1895*, Printed for Private Circulation, Glasgow, 1895, p.16.
376 Ibid. p.239.
In addition, the *Times’* official history notes that “The prosperity during 1845 had been without precedent”,\(^{377}\) and James Grant reports that the *Times* was making £6,500 a week in advertising revenue at the height of the mania.\(^{378}\) In short, of the millions of pounds poured into railway investment in 1845 a significant portion seems to have gone into the pockets of newspaper editors.

**Evidence of Puffing**

The description of Holt’s revenues points towards the system of ‘puffing’. Naturally, ‘puffing’ is difficult to document. However, the collapse in railway share prices engendered a conflict between the *Times* and the railway press – who felt their business model threatened by the *Times’* pessimism. The conflict resulted in the revelation of some press behaviour that might otherwise have remained hidden.

The railway press’s investigations of the *Times* revealed a share-puffing scandal. The scandal emerged when the *Railway Critic* reported in September that the *Times’* money article had glowingly reviewed the Direct London and Exeter (DL&E) railway.\(^{379}\) The *Morning Herald* added that the DL&E “was quoted in its [the *Times*] columns at a premium, although it is perfectly well known that it was not entitled to be quoted at all” and that this could be accounted for by referring to “the names of its [the railroad’s] provisional committee”.\(^{380}\) It was revealed that W.F.A. Delane – who was the managing director of the *Times* – appeared in the list of provisional directors of the DL&E,\(^{381}\) and that the railway was repeatedly puffed in the city article edited by Delane’s son, and written by Thomas Alsager.

The *Times* responded to its critics by alleging the existence of a thoroughgoing system of deception:

The provisional director got a market for his shares, the holder of an allotment got a premium for his scrip, and the newspaper conductor – the ‘stag’ of the press – the most

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\(^{379}\) *Railway Critic*, 1 November 1845, pp.158. The *Times’* puff of the DL&E can be found in the Times, 23 September 1845, p.7.

\(^{380}\) *Morning Herald* quoted in *Railway Critic*, 1 November 1845, p.159.

\(^{381}\) See the following advertisements: *Times*, 16 August 1845, p.3; *Times*, 21 August 1845, p.3; *Railway Chronicle*, 13 September 1845, p.1268.
dishonest of all – got the advertisement repeated as long as he could help to keep the bubble up by puffing it.\textsuperscript{382}

On 18\textsuperscript{th} November the \textit{Times} ran a letter signed by ‘A Journalist’ stating that “gentlemen … possessed of the means of being accurately informed, assure me that new railway companies systematically and generally assign a certain number of shares for the press. … The implied compact is, that the journalists who receive these shares shall be puffers of the companies”.\textsuperscript{383} The accusation was given extra weight by a small editorial sentence inserted by the \textit{Times} at the foot of the letter, which read: “We are sorry to say that we have been for some time in possession of information which leaves no doubt of the existence of the practices at which our correspondent is so justly scandalized”.\textsuperscript{384}

A few days later, the \textit{Times} published a report of a dialogue between an unnamed newspaper proprietor and the secretary of a railway company.\textsuperscript{385} In the dialogue, the newspaper proprietor demands and receives £1,300 in payment, and 25 shares of scrip in the railway company. The accuracy of this report was endorsed by the \textit{Railway Record}, who reported that the offending editor “is confidently said to be Mr. Thomas Holt, editor or manager of the \textit{Iron Times}”,\textsuperscript{386} and \textit{Bradshaw’s Railway Gazette} concurred that “there can be no hesitation or doubt as to the identity of the paper and person meant”.\textsuperscript{387}

Court cases prove another source of evidence on ‘puffing’. A legal report from the \textit{Times} revealed that \textit{Bradshaw’s} had taken the Great European Railway to debtors court.\textsuperscript{388} It appeared that \textit{Bradshaw’s} had allowed the Great European to advertise its prospectus on credit. It claimed to have done so because the \textit{Iron Times} reported scrip in the Great European to be trading at a premium – suggesting that some deposits had been paid. In fact, as \textit{Bradshaw’s} later reported, “the Great European never appeared in any authorized list in any share market in the kingdom” and “no shares whatever can be in the market”.\textsuperscript{389} \textit{Bradshaw’s}, claiming to be taken in by the puff, brought suit against the \textit{Iron Times} for assisting in the fraud.

The \textit{Times} took a very contemptuous view of the whole affair, condemning both journals for their role:

… a portion of the press has given credit to the concoctors of this ridiculous scheme for their advertisements, on the faith of the money being extracted from the pockets of the public at a future period; while another journal has gone so far as to aid the delusion by quoting the imaginary shares in this most flatulent of bubbles at an imaginary premium.\textsuperscript{390}

\textbf{The System of ‘Puffing’}

‘Puffing’ appears as a response to the way in which railway companies were promoted. The techniques ranged from a willingness to advertise a ludicrous prospectus on credit to fabricating price quotations. The underlying intention was to ensure that the IPO was well-subscribed.

Melsheimer and Laurence’s account of the laws of the London Stock Exchange (written in 1879), describes this system, which they claim to have been universal ‘a few years ago’.\textsuperscript{391} They agree that the central problem for a company promoter is ‘how to get the whole

\textsuperscript{382} \textit{Times}, 27 October 1845, p.4.
\textsuperscript{383} \textit{Times}, 18 November 1845, p.5.
\textsuperscript{384} Ibid. p.5.
\textsuperscript{385} \textit{Times}, 21 November 1845, p.5.
\textsuperscript{386} \textit{Railway Record}, 22 November 1845.
\textsuperscript{387} \textit{Bradshaw’s}, 3 December 1845, p.757.
\textsuperscript{388} \textit{Times}, 30 December 1845, p.8.
\textsuperscript{389} \textit{Bradshaw’s}, 27 December 1845, p.979.
\textsuperscript{390} \textit{Times}, 30 December 1845.
\textsuperscript{391} \textit{The Law and Customs of the London Stock Exchange}, London: Henry Sweet Law Publisher, 1879, pp.117-
or a sufficient number of shares applied for by the public’ and argue that what tempts a would-be investor is “the statement which he reads in the newspapers, that the shares of the company, not yet allotted, are already being sold in the market”. As the authors note, this premium is “in many cases fictitious, an artificial price being purposely created in order to allure and deceive the public”.

As we have seen, the evidence suggests this practice was common. The Railway Critic argued that this practice was at the root of problems of bubble company promotion:

It is the purchasing at premiums that creates the peril and proves the snare; and a system of deception is at work in the share lists, converting them into traps and tricks for the unwary. Proffers have positively been made to newspapers … to tamper with these share lists, for purposes of fraudulent traffic.

The Banker’s Magazine also noted the problem, remarking that “the prices of shares, as quoted in newspapers, are seldom accurate”.

The press expanded in 1845 because it played a niche role in the ecology of company promotion: it could attach to nascent railway projects ‘media valuations’ that aided the flotation of new companies. Ultimately, the system was unstable. The proliferation of journals of dubious quality tainted the reputation of information providers. The collapse in share prices stopped the flow of new companies and hence the source of revenue from ‘puffing’. The railway newspapers collapsed.

The system of ‘puffing’ was not sui generis; Bignon and Flandreau documented a similar dynamic in the nineteenth-century French financial press. They found a system of ‘badmouthing’, whereby French newspapers threatened businesses with defamation unless paid. This system was made possible by a historically liberal law of press libel. In contrast, the British press was tightly regulated by the Campbell Act, which, specifically forbade ‘badmouthing’, making both “publishing or threatening to publish a Libel” punishable by incarceration.

We might conjecture that the conservatism of the English law of libel tilted the system away from ‘badmouthing’ and toward ‘puffing’ whereby the press extracted side-payments for enhancing the valuation at which companies entered the market. ‘Puffing’ predisposed the English system toward overvaluation, as criticism was constrained while flattery was encouraged. The expansion of the press on the revenues of puffing could only be maintained while the supply of new companies continued unabated. When the supply of new companies dried up, the bubble in the media collapsed.

120.
393 Ibid. p.118.
394 Railway Critic, October 25th 1845, p.120.
397 Ibid. p.621.
399 Ibid. p.970.
Knowledge and the English East India Company’s Bengal silk enterprise, 1757-1812

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In contrast to the cotton industry, eighteenth-century Indian silk production was not at the technological cutting edge. Still the English East India Company (EEIC) ascribed large potential to the trade in Bengal raw silk. I argue that the Company decided to expand its trade in Bengal raw silk as part of its efforts to ‘put [its Indian territorial] revenues in train’.400 The focus on raw silk seems rational. However, the extension of the trade in raw silk could only be achieved by improving the quality of the Bengal silk thread and therefore satisfy the demand for high quality raw silk among British manufacturers. The Company, therefore, resolved to alter the reeling practices and draw on knowledge transfer from Europe.

In the eighteenth century, India was the ‘textile factory’ of the world.401 Indian cotton production was exported to other regions of Asia, to Africa, the Americas, and Europe propelling long-distance trade and conquering foreign markets. India’s preeminent position in producing cotton textiles in the pre-modern period was underpinned by a superior knowledge of dyeing, printing as well as by the precision of its weavers and other artisans.402 India’s ‘comparative advantage rested upon knowledge’ which stemmed from long-term familiarity and deductive practices of Indian artisans.403 Yet, the Indian silk industry was lagging behind that of countries such as China, Italy, and France, the world leaders in silk manufacturing. Indian raw silk production was of lower quality and was considered too coarse and unequal in skeins to be used by the European silk manufactories and weavers.

Still the demand for raw silk in Europe and the favourable proportion of freight-to-sale amount attracted the interest of the European trading companies. It was particularly the EEIC that was keen to export raw silk from Bengal. The main market for the Bengal raw silk was Britain, as the climatic conditions rendered the British silk weaving sector dependent on imports of raw silk. However, Bengal raw silk failed to achieve high quality standards; lightness, equality of silk threads in respect to fineness, smoothness, and strength.404 Bengal silk’s cost was increased by the fact that it often necessitated reworking prior to utilization. The problems with the quality of the silk were so severe that at times they threatened to halt the trade altogether.405

404 Although, the text was written at the end of the seventeenth century, no change of technology or fashion, which would lead to increased demand for different qualities of silk thread, occurred. William Aglionby, ‘Of the Nature of Silk, as It is Made in Piedmont’, Philosophical Transactions 21 (1699), pp. 184-5.
Figure 1: Plate depicting the practices of sericulture and silk reeling in Bengal

The main reason for the silk’s comparatively lower quality was the methods used in its production. One of the best descriptions of the methods is by George Williamson, a former employee of the EEIC. A plate of drawings accompanied his description of rearing and feeding worms and of reeling, and winding of silk (figure 1).\footnote{George Williamson, *Proposals Humbly Submitted to the Consideration of Court of Directors for Affair of the United Company of Merchants of England Trading to the East Indies: For Improving and Increasing the Manufacture of Silk in Bengal* (London, s.n., 1775) Goldsmiths´ Library [G.L.], 1775 fol.: 17-18.} Figures 1 to 6 depict the practices of rearing silkworms, figure 7 the ‘country’ method of reeling silk thread from cocoons, and figures 8 to 10 the process of re-reeling of silk. Both the methods of silkworm rearing and silk reeling can be summarized as inefficient and wasteful. The practices such as feeding the worms with low quality mulberry leaves, economizing on leaves consumption and keeping the worms crowded were detrimental to their health and lowered the quality of cocoons the worms produced. Moreover, the method of killing the chrysalis in the cocoon by
sunlight rather than by temperature of 70° or 80°C in oven or steam was highly unreliable. It led to wasting of considerable number of cocoons, which were pierced by the moths. Overall, it was argued by several of the Company’s agents that the methods of sericulture represented an obstacle for attaining high quality silk thread.

In spite of the problems with silkworm rearing, the Company identified the reeling practices as the most immediate problem. The silk from the cocoons was either reeled in peasant households or by Cuttanies, reellers travelling from village to village as depicted in stage 7 of figure 1. Silk reeled by this method was known as ‘country-wound’ or Putney and was deemed as silk of low quality as silk of different length and fineness was reeled together. Another problem was the inequality in the skeins as some contained single, double, triple or even quadruple parts. A further issue was that much of the final silk was dirty or unfit for use. Such silk would not find a market in Europe. The initial approach adopted by the Company was to have the silk re-winded before sending it to Britain. However, rewinding only solved the problem of inequality in skeins. Moreover, rewinding was detrimental to the quality of silk as it meant that it had to be soaked in water twice and therefore part of the silk was often wasted. This practice also necessitated more labour, gave rise to principal-agent problems and created the need of supervision of the re-winders.

Facing these problems the Company attempted to introduce new practices, such as the knotting of silk to make the thread more round. However, implementing changes under the putting-out system, under whichrewinding was carried out, made all these attempts problematic. Thus, the Company concluded that if it wanted to improve the quality of the Bengal raw silk to capture a higher share of the British market, it needed to completely alter the system of reeling and carry it out under its supervision in centralized silk filatures. The Company therefore decided to rely on knowledge transfer by adopting the Piedmontese system of silk reeling as it was considered the most advanced in Europe. In 1769 the Company sent three silk specialists, James Wiss, J. Robinson, and William Aubert, as well as silk reellers and mechanics from Italy, France, and England to acquire sufficient knowledge to set up the Piedmontese-type filatures and implement this new method of reeling in Bengal. Also the equipment for the filatures, such as cog reels, furnaces, and frames, was sent from Europe to India. The advertised goal of the Company was to produce ‘Bengal Italian raw
silk’ of quality high enough to substitute the importation of Italian silk into the British market. The first silk produced in the Company’s new filatures in Bengal reached Britain in 1772 and by 1775 the new mode of production was in full operation.\textsuperscript{420} 

In most of the Company correspondence and documents from the 1760s to 1770s raw silk was considered to be of one of the ‘choicest’ goods with potentially high returns.\textsuperscript{421} It was believed that the adoption of a new method of reeling and a consequent increase in the quality of the thread would result in a 25 per-cent increase in the price of Bengal raw silk in the British market.\textsuperscript{422} The EEIC had high expectations about its venture into the Bengal silk industry. The question that arises is; what underpinned these expectations and induced the Company to become a silk manufacturer in Bengal? My thesis argues that the EEIC’s interest was informed by the British government’s support of the domestic silk industry as well as by the changes to the EEIC’s finances in the aftermath of the Battle of Plassey (1757) and the assumption of the diwani of Bengal, Bihar, and Orissa.

The initial view of the Company was that the acquisition of Bengal would present it with secure financial gains. However, the revenue needed to be transferred to Britain. Huw Bowen and other historians have argued that expanding the Company’s exports to Europe became an essential instrument for transferring the territorial revenue surplus to Britain.\textsuperscript{423} The Company workers in India were repeatedly ordered to increase investment in exportable goods, particularly in raw silk, raw cotton, indigo, and textiles. What connects the attempts at enlarging the export of the aforementioned goods is the Company’s effort to accommodate their quality to the demand in the export markets. Such steps were often indispensable as ‘there was no point in importing commodities into Britain if nobody wished to buy them’.\textsuperscript{424} In this respect, the most thorough attempt to accommodate to the demand of an export market was undertaken in the silk industry.

The Company’s expectation for silk to be one of the ‘choicest goods’ was supported by the proportion of freight-to-sale amounts (percentage of the cost of freight). Table 1 shows that with a mere 3.7 per cent raw silk was the most profitable commodity per freight unit.\textsuperscript{425} Extending the trade in raw silk seemed a reasonable move also because such a commodity was already an important part of Bengal’s exports. K.N. Chaudhuri’s data for the 1750s show that raw silk represented 9.4 per cent of the value of the EEIC’s Bengal exports and was the second most important item in the Bengal export trade.\textsuperscript{426} Moreover, the Company’s interest was facilitated by the British government’s support to the domestic silk weaving industry. As the British silk industry lacked a source of domestic provision of raw silk, and faced the competition of the superior silk production of France, it could only be sustained through protective legislation.

\textsuperscript{420} [G.L.], 1795 fol. 16280, \textit{Reports of the Committee of Warehouses}, p. 16.
\textsuperscript{421} For instance IOR/E/4/621: ‘Mr Wiss, Superintendent of Silk Trade, in Bengal Despatches, 24\textsuperscript{th} November 1772, India Office Records and Private Papers’, pp. 379-80.
\textsuperscript{422} IOR/E/1/61 ff. 486-487v: ‘Letter 240 James Wiss in London to the Court outlining the advantage of the Italian method of spinning silk in Bengal, 18\textsuperscript{th} November 1777, India Office Records and Private Papers’, p. 487.
\textsuperscript{424} Huw V. Bowen, \textit{Business of Empire: The East India Company and Imperial Britain, 1756-1833} (Cambridge: Cambridge University Press, 2006), p. 236.
\textsuperscript{425} Although, the data refer to 1800s there is no reason to believe that the proportions were significantly different in the previous decades.
\textsuperscript{426} The most important Bengal export item was textiles, which accounted more than 85% of the total on average.
The British silk industry was supported by three of the seven mercantilist measures named by Adam Smith; the import of silk fabrics was curtailed by prohibitions or duties; the importation of raw silk was encouraged through decreases of import duties; and measures encouraging the export of British silk fabrics were put in place.427 Never a leader in international markets, still from the seventeenth up to the beginning of the nineteenth century, British silk products were among the principal export goods of the British Isles. The weaving sector was dependent on imports of raw silk and its consumption was not trivial. Mitchell’s historical statistics show that in the 1750s and 1760s raw silk was quantitatively the most important raw material imported into Britain and the fastest growing as well.428 This explains why the British government was keen on securing supply of raw silk from colonial settlements for instance by imposition of low import duties (table 2).

Table 2
Silk Import Duties (per sm. lbs. of 16 oz)

<table>
<thead>
<tr>
<th>Year-79</th>
<th>China</th>
<th>Raw</th>
<th>Italy</th>
<th>Thrown</th>
</tr>
</thead>
<tbody>
<tr>
<td>1704-47</td>
<td>2s. 6d.</td>
<td>1s. 3d.</td>
<td>11d.</td>
<td>1704-47</td>
</tr>
<tr>
<td>1747-50</td>
<td>3s. 2d.</td>
<td>1s. 7d.</td>
<td>1s. 3d.</td>
<td>1747-65</td>
</tr>
<tr>
<td>1750-1765</td>
<td>3s. 2d.</td>
<td>1s. 3d.</td>
<td>1s. 7d.</td>
<td>1765-79</td>
</tr>
<tr>
<td>1765-79</td>
<td>10d.</td>
<td>10d.</td>
<td>10d.</td>
<td>1779-81</td>
</tr>
<tr>
<td>1779-84</td>
<td>11d.</td>
<td>11d.</td>
<td>11d.</td>
<td>1781</td>
</tr>
<tr>
<td>1784</td>
<td>3s. 0d.</td>
<td>3s. 0d.</td>
<td>3s. 0d.</td>
<td>1782-4</td>
</tr>
<tr>
<td>1797</td>
<td>3s. 3d.</td>
<td>3s. 3d.</td>
<td>3s. 3d.</td>
<td>1784</td>
</tr>
<tr>
<td>1801</td>
<td>5s. 1d.</td>
<td>3s. 9d.</td>
<td>5s. 1d.</td>
<td>1797</td>
</tr>
<tr>
<td>1807</td>
<td>5s. 5d.</td>
<td>4s. 9d.</td>
<td>5s. 5d.</td>
<td>1805</td>
</tr>
<tr>
<td>1817-23</td>
<td>5s. 6d.</td>
<td>3s. 6d.</td>
<td>5s. 6d.</td>
<td>1807</td>
</tr>
</tbody>
</table>

Source: Coleman, Courtaulds: An Economic and Social History, pp. 18-19.


I have shown that the Company’s focus on the silk industry was underpinned by four factors. First, the importation of Bengal raw silk was supported by low duties. Second, raw silk was quantitatively the most important raw material imported into Britain in the 1750s and 1760s. Third, Bengal raw silk was the Company’s second most important Bengal export item. Finally, the proportion of freight to sale amount was the lowest for raw silk. All these factors made the plan to extend the trade in raw silk a rational decision on the part of the Company. Yet, if Bengal raw silk was to capture higher shares of the British market, the quality of the silk had to be improved. The Company decided to alter the method of reeling silk and implement the Piedmontese method. However, the part of my thesis dedicated to the analysis of the Bengal production methods shows that altering solely the reeling methods was an inadequate step that did not produce the results that the EEIC had hoped for.

429 Ibid., p. 463.
The principal-agent problem revisited: supercargoes and commanders of the China trade

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Introduction

Scholars have long been fascinated with the organizational structures that characterized early modern long-distance trade. The European joint-stock companies provide an attractive topic for economists, sociologists and economic historians alike for studying principal-agent problems via a combination of economic modelling and the qualitative analysis of historical records. Unsurprisingly, a number of recent studies have focused on the different degrees of success or failure by which the competing East India Companies of the eighteenth century exercised control over potentially malfeasant, self-interested and corrupt employees in geographically dispersed nodes of the Asian trading networks.\footnote{E.g. Julia Adams, ‘Principals and Agents, Colonialists and Company Men: The Decay of Colonial Control in the Dutch East Indies’, American Sociological Review, 61:1 (1996), pp. 12-28; Santhi Hejeebu, ‘Contract Enforcement in the English East India Company’, Journal of Economic History, 65:2 (2005), pp. 496-523.} In this literature, private trade is consistently seen as an unavoidable feature of long-distance trade that was tolerated by the Companies to varying degrees in order to contain the damage for the Company monopoly.

This paper argues that such a ‘negative’ interpretation of private trade is problematic and at least partly misleading. By focusing on the role of merchant-mariners active in the Canton trade in the first half of the eighteenth century, this paper aims to challenge the assumed rigid divide of interests between ‘principals’ and ‘agents’ on the basis of an in-depth analysis of private and Company records.\footnote{The examples chosen derive from the English and Swedish East India Company records.} By means of an exemplary case study, it will focus on the synergies between Company trade and private enterprise rather than on individual acts of malfeasance that form the usual focal point of the discussion. To be sure, there is much scholarly merit in analysing the firms’ use of incentives to try to align the interest of the agent with those of the principal (shareholders and managing directors). There is, however, too much of an emphasis on the costs for principals to uncover or limit acts of sabotage (such as smuggling, fraud, nepotism and so forth). As a consequence, the important contributions of the private trader for the Companies’ success have been silenced in most studies, contributions that were well understood by Company directors at the time. It is argued that by focusing exclusively on the negative effects of the agents’ multi-tasking, there is a danger to overlook some crucial aspects of a trade system that lasted for more than 200 years in different incarnations. Private enterprise was always a vital part of that trade.

Mariners as merchants

The size and scope of private trade in Chinese export wares has been greatly underestimated for the first half of the eighteenth century. One crucial reason for that is the very limited selection of archival material that is generally used to measure the flow of private goods on Company ships. Historians of the Canton trade have mostly relied on official records, Company by-laws, privilege trade regulations and registers for calculating the volume on board of individual ships, and for establishing long-term trends.\footnote{Earl H. Pritchard, ‘Private Trade between England and China in the Eighteenth-Century (1680-1833)’, Journal of the Economic and Social History of the Orient, 1:1 (1957), pp. 108-37. H.B. Morse, Chronicles of the East India Company in China, Vol. V. Christian Koninckx made estimates in The First and Second Charters of the Swedish East India Company (1733-1766) (Kortrijk, 1980), esp. p. 267.} To be sure, this focus on official documentation (fragmentary as it is) can give us a clearer picture of the rules
prevailing in different Companies and at certain points in time. However, it rarely tells us what was brought back in reality. Only the comparison between official records and the private correspondence and account books of China traders can reveal the significant gaps between formal ‘rule’ and economic reality, and thus provide us with a better understanding of the functions and importance of private trade activities for the China trade.433

One example may suffice to illustrate this point. In 1738/39, the Aberdonian merchant mariner Charles Irvine (1693-1771) acted as chief supercargo of the Swedish East India Company (hereafter: SEIC) in Canton. Irvine was one of perhaps 50 Britons who joined the Swedish Company during the first two decades of its existence, the majority of whom were Scottish-born like himself.434 Irvine’s mercantile career brought him first to Rouen, from thence to Ostend, from where he sailed to the East for the first time and further to Göteborg.435 He made enough friends in East India circles to secure an offer to join the newly formed SEIC as a supercargo. In 1736/37, Irvine was permitted to bring back to Europe 20 chests or ‘2 ½ last’ of merchandise freight-free, a privilege that reflected his elevated rank on board.436 Since Irvine’s business papers contain an unusually rich set of shipping records for several of his voyages, it is possible to reconstruct his private investments over several years. In 1738/39, Charles Irvine assembled a private cargo in China consisting of 273 chests and 48 tubs of different sorts of fine teas, 1,424 pieces of Indian cotton textiles, 223 pieces of Chinese wrought silks and 70 bales of raw silk.437 A long list of ‘speciality goods’ (including drugs and customized souvenirs) complemented his investment. Even if we consider the unlikely case that Irvine has bought up the entire ‘privilege’ cargo space of his colleagues to transport his goods to Europe, he would still have exceeded the space that was allocated to the entire crew according to the Company instructions. One might reasonably ask, then, why did the Company not dismiss Charles Irvine, but instead sent him to Canton for two more voyages, which were, as Irvine put it himself, ‘more for my Interest then for their Service’?438

In order to explain this incident, we must consider the possibility that Irvine’s private trade was thought to be beneficial to Company concerns, rather than ‘malfeasant’ – as is usually assumed.439 There are a few important points to be made here that help to put into perspective Irvine’s seemingly rude infringement of private trade restrictions. On a purely economic level, exceeding one’s private trade yielded considerable income for the Company. The SEIC settled a ‘fine’ of 1,000 silver dollars for every excess last (the equivalent to 2,448 kg) of privilege trade.440 Thus, instead of preventing the growth of private trade, the SEIC simply charged those employees who had the capital to invest in additional goods.441 On top of the freight-free cargo, China traders were usually permitted to import more goods if there was space left in the hold or their own cabin.442 The payment of ‘indulgence’ fees for excess

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434 See, letter books and account books, legal documents and unclassified papers, Charles Irvine Papers, James Ford Bell Library [hereafter: FBL], University of Minnesota.
436 ‘Instructions etc. for the voyage of ship Three Crowns, 1736-37’, letter books and account books, 1736-48, Irvine Papers, FBL.
438 Charles Irvine (Canton) to Samuel Greenhoug (Madras) 31 January 1746, letter book, 1746-47.
441 Instruction nr. 15, in ‘Instructions (…) Three Crowns, 1736-37’, Irvine Papers.
442 The total volume of private trade on board the Three Crowns (as noted by Irvine as chief supercargo) comprised at least 836 boxes and chests, 139 bundles and tubs as well as a number of Jars and bulky items. ‘Copy of letters Ship Three Crowns 1736 a 1737’, letter books and account books, 1736-48, Irvine Papers.
goods was worth the investment for many private traders and must be regarded as a matter of astute calculation rather than moral decay.\textsuperscript{443} The Company also derived income from every private trade good that passed its public sales because warehouse fees, handling charges and commission had to be paid by the importer. In short, the Company profited directly from the trading activities of its servants through the introduction of duties and charges.

In addition, Charles Irvine’s private trade (whose case is exemplary) was important to the commercial success of the SEIC in a number of other, perhaps more subtle, ways. Instead of thinking of private and Company trade as two antagonistic systems, there is strong evidence to believe that private trade actually contributed a great deal to the competitiveness of the Swedish East India Company. This concerned especially the need to attract foreign buyers, on whose purchasing power the Swedish venture essentially depended, since their home market was too weak to generate a seller’s market. A network perspective is key for understanding the individual contributions of supercargoes, commanders and officers to the success of the SEIC, especially during the critical phase of its first charter (1731-46). After all, this was a period in which the Company was steered predominantly by foreign manpower, capital and expertise.\textsuperscript{444} The multi-national composition of its staff did not only secure valuable overseas experience, but also widespread contacts to buyers and foreign markets. The reason was that the majority of the leading personnel of the SEIC had previous experience in the East India trade as servants of the EIC, the VOC or, most significantly, the Ostend Company.

Charles Irvine continued to rely on his connections to ‘old Ostenders’, such as his long-standing agents in the Low Countries (including George Clifford, Urbano Arnold, and Thomas Wilkieson), once he had joint the SEIC. At Company sales in Göteborg, Irvine bought tea and textiles on their behalf, but he also used them as agents to dispose of his own goods on the continent.\textsuperscript{445} The leading merchant houses that had dominated the public sales of the Ostend Company still featured in the correspondence of these British China traders even when the latter had moved on to Göteborg, Copenhagen or London to seek new opportunities.\textsuperscript{446} The personal networks of private traders to petty smugglers and major wholesale dealers in Britain, Spain, Northern Germany, France and the Netherlands were crucial to the Swedish venture as a whole, as these networks generated a strong base of customers, whose individual needs were known and attended to by individual employees.

There are a number of other ways in which private trade contributed to the mercantile success of the SEIC (as indirect beneficiary). Curatorial research on Chinese porcelain, wrought silks and other export wares revealed that private traders bought more expensive pieces, ready-made objects and novelties of all sorts in comparison with Company imports.\textsuperscript{447} There are many goods that were imported exclusively through private trade channels, such as Chinese paper, soy sauce, rosewood furniture, mirror paintings, armorial porcelain and the most expensive types of black and green tea. Private trade imports thus greatly diversified the range of goods and qualities sold at Company auctions. The impressive trading portfolio of Charles Irvine clearly supports this assumption for the Swedish case. China traders (of all European East India Companies) did not normally specialize in any particular goods, but traded in everything from golden snuffboxes and hand-painted wallpaper to rhubarb and gunpowder. By contrast, the SEIC and most other Companies focused on a much narrower range of imports and qualities, a trend that became even more pronounced in the second half

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\textsuperscript{443} Pritchard, ‘Private Trade between England and China’, p.118.

\textsuperscript{445} Irvine (Göteborg) to Urbano Arnold (Rotterdam), undated, letterbook & account books 1742-3, Irvine Papers.
\textsuperscript{446} Conrad Gill, \textit{Merchant and Mariners of the 18th Century} (London, 1961).
\textsuperscript{447} For a fine overview concerning the main export arts in Canton see Margaret Jourdain and R. Soame Jenyns, \textit{Chinese export art in the eighteenth century} (London, 1950).
of the eighteenth century.\textsuperscript{448} It was no secret to informed contemporaries that private traders in the EIC also dealt in a stunning variety of Chinese export wares ‘by which the company either cannot gain at all by, or are not so gainful as others they prefer to engage in’.\textsuperscript{449} In other words, private and Company trade effectively complemented each other to supply all strata of society and target dispersed markets across Europe with goods matching local demands.

Next to the argument of variety, there is also some consensus among curators and historians that private trade was the more dynamic, experimental and market-specific trade.\textsuperscript{450} This is not to say, however, that the SEIC or any other chartered Company was blind to the wheel of fashion.\textsuperscript{451} Yet, the Companies often picked up ideas only after they were ‘tested’ in private trade and promised safe returns. This is true for the introduction of high quality teas into European markets such as Souchon and Hysan, but also for many other items of trade including fans, lacquered furniture, painted Canton enamels and rhubarb. The commission trade that linked individual commanders or supercargoes to specific clients (who could be collectors, wholesalers, or shopkeepers) was a rich source for innovation and enabled the exchange of patterns, models and instructions that created a continuum of novelties to travel from Canton to Europe and vice versa.

**Conclusions**

As this paper has shown, it is important to acknowledge the vital role that private enterprise played for the competitiveness of the Companies in the European marketplace. Firstly, private trade was a key innovative force. Individual ‘agents’ diversified the market for Chinese export wares in Europe and experimented a great deal to secure novel goods and styles, which the Company often took over only after some time. Secondly, the Companies derived income from every private trade item that was sold at their auctions. On top of the \textit{ad valorem} duties, private traders paid warehouse fees, extra charges of exceeding the value and tonnage, and so on. This meant that private trade was a large and reliable source of income for the Companies. Thirdly, Company servants were among the largest buyers at Company auctions in the first half of the eighteenth century. They operated as agents for wholesalers, shopkeepers and individual consumers, but they also bought goods on their own account. The involvement of China traders in the profitable re-export and wholesale trade in Europe strengthened their influence in Company circles. Thus, private traders were not only employees, but also vital clients for the Company.

Lastly, much of the Company literature that focuses on the principal-agent problem assumes a clear-cut line between the Company as ‘principal’ in metropolitan Europe and their ‘agents’ abroad. In reality, however, this line was very blurry indeed. Many of the managing directors of the Company were heavily involved in private trade. The close cooperation between Company directors and individual traders in the purchase of private cargoes has only started to be uncovered but promises to yield fascinating results. Such personal networks had an important impact on the ways in which private trade was conducted, tolerated and, indeed, nurtured. Supercargoes and commanders were agents for the Company, but they also acted on behalf of multiple other principals (including individual directors, wholesalers, investors, and individual consumers). When considering these double roles of each and every individual within the firm, it is key to identify the synergies that arose from their business activities and information networks for the Companies’ commercial success, instead of focusing on conflicts alone.


\textsuperscript{450} For a good and concise discussion, David S. Howard, \textit{The Choice of the Private Trader}, pp. 18-34.

\textsuperscript{451} IOR/G/12/33, p. 37. ‘Diary and Consultation Book of George Arbuthnot (…) anno 1732’.

183
Avoiding ‘negligence and profusion’: the failure of the joint-stock form in Anglo-Indian trade, 1813-70

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The rescinding of the monopoly held by the East India Company on trade between Britain and India in 1813 presented new opportunities for British trading firms. Subsequently, the value of trade increased extensively and the range of products imported and exported became increasingly varied. To undertake this trade firms utilized partnerships, joint-stock and hybrid forms of organization. This paper seeks to identify how the form of trading firms changed from 1813-70 and what factors determined the entrepreneur’s choice of ownership and organization.

Within the dense literature on firm organization and ownership the arguments that large integrated firms organized as corporations are the superior form of business organization are widely accepted. The combination of deep capital formation, and the integration and management of diverse activities enabled the growth of firms in the early twentieth century on a scale hitherto unknown. This, in turn, drove rapid economic growth. Many historical studies and economic and legal analysis have been narrowly focused on understanding the conditions in which these firms evolved, and how they could be replicated and improved.452

The teleological nature of the existing literature, which reduces the role of other forms of business organization to that of poor substitutes waiting to be replaced, has been critiqued. Lamoreaux et al. have asked, why, when the joint stock form was easily available would firms make such a terrible mistake in choosing another form?453 Authors including Hilt have shown the failure of joint-stock firms in certain industries, and analysed why other business organizations were more successful.454 This literature calls for a more nuanced approach to understanding the trade-offs between organizational and ownership forms. The choices made by the entrepreneur are analysed by looking at the problems they attempt to solve through an evolving choice of ownership and organizational forms.

This paper draws on this evolutionary approach. The first section presents an overview of the number of firms undertaking trade activities and identifies the form of ownership they employed. It reveals that joint-stock firms emerged in a number of sectors, but were quickly replaced or evolved into hybrid firms known as managing agencies. The second section uses a case study of the Assam Company to explore why the joint-stock form failed to proliferate in the tea industry despite favourable conditions for its adoption. Drawing on transaction cost and principal agent theory the paper proposes that inherent principal agent costs of the joint-stock form incentivized the switch. These findings challenge the entrenched preference for the joint-stock form as the optimal form of business organization, and shows how entrepreneurs adapted and adopted innovative forms of ownership and organization to overcome external and internal transaction costs.

British trading firms in India between 1813 and 1870

In the years after 1813 a number of Agency houses established themselves in Calcutta. Organized as partnerships, these firms undertook a range of mercantile and banking services. They traded on commission in a variety of British exports, whilst arranging imports of a range of Indian products. The firms also acted as bankers and investors for members of the European community in India. After a financial panic in the early 1830s caused by the failure of the largest of the agency houses, the trading firms evolved. The new firms tended to be more specialized in the goods they traded with, and traded on their own account rather than for commission.

Figure 1: The number of firms undertaking trade activities in Calcutta, 1813-68

As shown in figure 1, the period after the panic of the 1830s saw a gradual increase in the number of joint-stock firms registered in Calcutta. Prior to the 1840s the earliest joint-stock firms had been banks; subsequently a number of firms in transport, infrastructure and manufacturing, incorporated. In 1850 the Indian government passed an act similar to the British Companies Act of 1844. Likewise, in 1857, only two years after its passage into UK law, a Limited Liability Act was passed in India. These two pieces of legislation significantly lowered the costs of incorporation, and the number of Calcutta registered joint-stock firms rose rapidly from 30 in 1858 to 173 1868.

Sources: Systematic sample of Calcutta and Bengal published commercial registers between 1813-68 in the British Library (BL).
Incorporated firms proliferated in four sectors. In 1868 these were banking, tea, navigation and presses.\textsuperscript{455} The form really proliferated in the tea sector, which accounted for 40 per cent of all the joint stock firms. It is noticeable that the activities in these four sectors had predominantly been undertaken by the trading partnerships in the earlier period.

**Figure 3: The number of managing agencies and the number of firms they represented, 1858-68**

As the number of joint-stock firms increased in the late 1860s, a major change to the organization of many of these firms occurred. As shown in figure three, by 1868 the number of managing agents had increased and their services increasingly adopted. Managing agencies performed two main functions: first providing management capabilities to other firms, and second, promoting joint stock enterprises in both Britain and India. Contracts for providing management capacity were often signed in perpetuity, giving the managing agency extensive

\textsuperscript{455} Sundry trade was a heading to account for a range of general trade and service providers, which did not fit in the other sectors.
control over the managed firm. They were almost all organized as partnerships. By 1868, 42 per cent of joint-stock firms had appointed agents. Indeed 46 of the 70 tea firms in that year were listed as having a managing agent. Why, despite having adopted a supposedly superior form of organization did so many of these joint-stock firms give up extensive levels of control, and actually pay for this arrangement?

**Ownership and finance in the tea industry**

To understand the decision of owners to appoint managing agents, the paper looks at the case of the Assam Company in the tea industry. This was the first tea company established in India in 1839, and was founded to take advantage of efforts promoted by the British government to produce tea commercially outside China. The demand for tea in Britain was growing throughout the nineteenth century, and tea produced in India was an increasing proportion of these imports.\(^{456}\)

This attracted capital from British and Indian investors, and during the early 1860s a tea boom occurred in Bengal where 53 joint-stock firms incorporated between 1851 and 1865.\(^{457}\) The tea firms, like the Assam Company, were founded to, ‘manufacture and dispose of the tea, the growth thereof … manufacturing or preparing the same for sale and exportation’.\(^{458}\) The integration of production and sales activities marked a distinct change from the use of trading firm intermediaries.

Although the market for tea was increasing, this was a nascent industry located in difficult terrain. There was a need for both sunk and fixed cost investments in infrastructure, particularly transportation, and clearing land to prepare it for planting. The early subscribers to the Assam Company saw that this opportunity ‘may be advantageously prosecuted on a scale beyond the resources and enterprise of individual capitalists’.\(^{459}\) To access capital they founded a joint-stock corporation with a nominal capital of £500,000 raised from 10,000 shares, with 8,000 shares allotted to the UK and 2,000 to subscribers in India.\(^{460}\)

In 1840 the total expenditure of the company was close to £50,000. This amounted to nearly half of the paid-up capital to that date. Of this expenditure, 33 per cent can be classified as fixed investments into large equipment such as river boats and a saw mill, and the development of both the land and infrastructure in Assam. Variable costs, such as the annual outlay on cultivation and harvesting, and the management of activities, were 45 per cent of the budget. The other 22 per cent was spent on coolie labour.\(^{461}\)

The requirements to invest in land and infrastructure increased the need for deeper capital reserves and were a significant factor in the adoption of the joint-stock form. These investments can also be seen as ways to reduce transaction costs. Trading companies had bought products either directly from manufacturers or through public auction. To improve access to supply and reduce transaction costs of using the market and threats of hold up increased integration of activities was a rational response.

**Organization and governance**

To undertake these activities the Assam Company was organized with two boards, one in London and one in Calcutta. The board members were elected at an AGM from amongst the shareholders and given overarching decision-making control of the company. The

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\(^{456}\) From 1866 to 1883 India went from supplying less than 5% of the UKs total imports of tea to 34%, in Griffiths, The History of the Indian tea industry, Cloves and Son, London (1967) p.125.


\(^{458}\) Original Act XIX of 30th August 1845 for incorporating the Assam Company, London Metropolitan Archive (LMA) MA08796.

\(^{459}\) Original Act XIX, LMA MA08796.

\(^{460}\) Original Act XIX, LMA MA08796.

\(^{461}\) Reports of the local board in Calcutta 1841, LMA MS27047. By comparison no fixed capital investments were made in indigo after 1829, between 1825-29 Rupees 678,897 was invested. The Assam Company spent a total of Rupees 549,495 of which Rupees 178,968 was fixed capital in 1840 alone.
organization in India was based on a hierarchy of senior European managers (Superintendents) overseeing different regions of cultivation. European assistants (junior managers) undertook functions such as book-keeping, surveying and overseeing cultivation and production. Manual labour was undertaken by coolies. The dual board and hierarchical structure attempted to resolve the issues of making decisions at distance as the owners and managers were separated by 10,000 km. Likewise the operations in India were difficult to coordinate as Assam was nearly a 1,000 km from Calcutta, and solely accessed by boat with up to a two months sailing time.

This structure had a significant governance problem beyond the division between owners and managers. The local board was charged with decision-making in India but decisions had to be undertaken, ‘provided always that they shall in all respects conform to these presents and any rules or regulations … given by the general (London) directory of the company’.462 This created problems in defining decision rights, with the London board often feeling that its views were ignored and that it was not properly informed of events in India.

The structure generated two major conflicts of interest paving the way for opportunistic behaviour: first between the two boards and subsequently the directors and managers. Several directors in Calcutta held appointments with other tea firms, or had interests in their own tea gardens. This division of interests saw directors misuse company resources for personal gain. In one case two directors, “took advantage of our position as two of the directors of the Assam Company to obtain, and apply to our own use, for clearing and planting our estate, seed and labour, rightly belonging to the Assam Company; at a time when that seed and labour were required for the company”.463

The problem of divergent interests was also prevalent amongst managers in Assam. A shareholder in Calcutta blamed the declining performance of the firm on the failure to ensure that manager’s efforts were focused on the company’s work. “I have endeavoured to ascertain if Mr Smith’s (superintendent) time and attentions are given exclusively to the service of the company … and I learnt that he has several gardens of his own in different places, contiguous to our gardens … his own personal interests are in direct opposition to the interests of the company.”464

Efforts were made to reduce the malfeasant behaviour of both directors and managers. Employment contracts were widely used from the 1860s, with clauses specifically aimed at restricting the activities of managers.465 Salaries were increased and gradated based on length and type of service, whilst incentives were introduced such as bonus payments based on annual profits. The hierarchy and reporting structure in India were also reformed. Greater decision-making powers were invested in the superintendents, whilst the content and distribution of reports were restructured in an attempt to better monitor both managers and directors.

Despite these reforms the company’s performance declined significantly. Production slumped, falling by 50 per cent between 1864 and 1866 and profits also plunged, with the firm losing money between 1865 and 1867.466 The source of these problems was attributed to organizational and managerial faults. The London board sought to improve performance by abolishing the Calcutta board, and in its place appointing a managing agency. In May 1867 Schoene, Kilburn and Co were contracted with an annual fee of £2,000, and a fee for every chest of tea they received and shipped and on the sale of bills. The agency initially managed the flow of goods, funds and resources between Assam, Calcutta and London. The London

462 Original Act XIX, LMA MA08796.
463 Reprinted letters from Mr Judge, Deputy Chairman of the Calcutta board 26th May 1862, LMA MS9935.
464 Letter from Theobald to Kemshed, 10th Sept 1866, LMA MS8803/1.
465 Articles of agreement between James Easson and the Assam Company, undated but from the early 1860s, LMA MS8803/1. The manager, ‘shall not take up lands, open out gardens, or directly or indirectly be engaged in any other service, business, or speculation whatever’.
Board retained ultimate authority but decision-making in India was increasingly vested in the managing agent’s hands. This arrangement proved successful and in 1868 the firm returned to profit.

The costs of aligning the interests of both principals and agents, and subsequently monitoring performance and enforcing contracts were high. Exacerbated by distance and the weakness of the incentives, the managers and directors in India vigorously pursued their own interests. The weakness of monitoring and enforcement may also have created a market for lemons in recruiting managers, with poor quality individuals gravitating to the tea firms. The managing agents, using the partnership form, which required investment from all partners into the firm, and in return offered a percentage of profits, provided stronger incentives and alignment particularly for agents acting at distance. The partnerships stronger incentives were able to attract better-qualified individuals and subsequently provide more effective management capabilities.

Conclusion
The expansion in the joint-stock form, particularly in the tea industry was a response to increased capital requirements in setting up and expanding a nascent industry, whilst integrating activities to lower transaction costs. The governance structure of the joint stock form, however, significantly increased principal agent costs. This incentivized owners to modify the joint stock form when the increasing principal agent costs caused an excessive decline in performance. The corporation’s underpowered incentives and governance were unable to lower these costs, and so a hybrid solution was adopted through the appointment of a managing agency. The integrated corporate firm can be seen as only one amongst many forms of business organization that could compete and successfully grow global industries such as tea. This paper has shown how analysis of the dynamic relationship between external and internal transaction costs can explain the decisions taken by entrepreneurs regarding the choice of firm ownership and organization.

467 In Griffiths, history of Indian Tea, p.97, Edward Money writing in 1870 noted that tea gardens were run by, ‘managers who not only did not know a tea plant from a cabbage, but who were equally ignorant of the commonest rules of agriculture’.

468 Reports of the local board in Calcutta 1840, LMA MS27047, an assistant’s annual salaries ranged from £100-£300 pa. in 1840, whereas a junior partner in a trading house could earn in the region of £2,000 pa. before bonus.
Fiscal sustainability and the value of money: lessons from the British paper pound, 1797-1821

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1. Introduction
The first suspension of the gold standard in Britain from 1797 to 1821 – an episode known as the Restriction Period – is at the origin of monetary economics. Over the Restriction Period, Britain suspended the convertibility of Bank of England notes into gold in order to finance the Napoleonic Wars. The ensuing inflationary outburst gave birth to the Bullion Report, among the first formal expressions of the quantity theory of money. In the following, I will argue that the same events also underline the impact of fiscal determinants on the evolution of the price level. In particular, I will show that expectations regarding fiscal sustainability shaped the observed evolution of the price level.

The argument that inflation is always and everywhere a monetary phenomenon relies on the assumption that the fiscal authority will adjust the primary surplus in order to stabilize debt. However, the existence of a threshold beyond which a government’s possibilities of financing its expenditures are constrained for political or economic reasons, is equivalent to relaxing this postulate (Sargent and Wallace 1981).

In addition, rather than being a fixed point, the upper bound on a government’s taxing power is a distribution that can be affected by various factors, including those beyond a government’s influence (Bi 2012). A factor of particular importance in that respect is war: it is a costly endeavour and, if lost, can strip a country of its tax base, rendering otherwise solid public finances unsustainable. As the outcome of a war can be assumed to be exogenous to the government’s will, a credible commitment to contingently sustainable public finances becomes even more difficult.

Therefore, I assume that the public – and notably agents who have invested in government bonds – constantly assess the probability of an unfavourable outcome of war and its implications for the sustainability of public finances. This assessment will then affect their spending and pricing decisions, which in turn shape asset prices and the general price level.

I demonstrate this nexus by identifying structural breaks in the price level. I find that significant changes in the price level coincided with events that commanded a reassessment of Britain’s expected military fate. In particular, unfavourable news – concerning a battle lost by the British, for example – had an inflationary impact. On the contrary, favourable news caused inflation to recede. These results are relevant in that they corroborate the effects of mounting fiscal pressure on prices in a fiat currency regime with flexible exchange rates, the mode of economic organization chosen by most industrialized economies today.

The remainder of the article is organized as follows. Section three briefly recalls the events surrounding the suspension of the gold standard, while section four details the econometric procedure. Sections five and six comment on the results and offer some brief discussion.

2. Course of events
The collapse of France’s paper currency the assignats in 1795 caused capital to flow out of Britain, exerting deflationary pressure (Kindleberger 1984). Under these circumstances, minor French military actions triggered a bank run aiming at converting bank notes into gold specie (Feavearyear 1964). Following these events, the Bank of England (BoE henceforth) was given

\[469\] The views expressed herein are those of the author and do not necessarily reflect those of the Banque de France.
permission on 27 February 1797 to cease payment of its notes in gold, before running out of reserves. The 1797 suspension shifted Britain’s monetary system from a commodity standard towards a flexible exchange rate.

The internal and external value of the paper pound started decreasing around 1809 (figures 1 and 2). These evolutions induced government to appoint an investigating committee that published its work in 1810 as the Bullion Report. According to it, rising prices and falling exchange rates had a common source in the over-issue of BoE notes. The latter was undertaken to buy government debt – used to finance the Napoleonic Wars – which would have been impossible had the BoE still the obligation to convert its liabilities into bullion. The BoE had indeed expanded its note issue. However, at least part of it could be accounted for as its normal function as a lender of last resort as it provided liquidity when the burst of the South America bubble had induced wide spread panic and business failures (Feavearyear 1964; O’Brien 2010).

Fiscal pressure further delayed resumption (Cannan 1919; Clapham 1945). The Bank Restriction Act of 1797 had initially determined that specie payments would have been resumed six months after the end of the war. Yet, between the end of the Napoleonic wars in June 1815 and the resumption of the gold standard, the legal limit had to be extended several times, due to the Bank’s lending to the Treasury. In total, the Bank’s holdings of public securities had increased by 40 per cent between February of 1816 and August of 1818.

These evolutions reflected the sizable increase of public debt: by 1815, the debt to GDP ratio had reached 226 per cent, from 120 per cent in 1793. This increase was of the same order of magnitude as the one caused by World War One (figure 3). Finally, Peel’s Act, enacted 2 July 1819, imposed the repayment of £10 million of government debt and, therefore, paved the way for resumption. The full resumption of cash payments was undertaken by 1 May, 1821.

3. Econometric methodology

a) Data

In order to capture the nexus between expectations regarding the sustainability of public finance and evolutions in prices, I focus here on the series that contemporaries used to assess inflationary tensions. The data paid attention to were prices of specific goods, such as wheat, gold bullion and sterling bills of exchange (Laidler 2000). Wheat prices and the exchange rate
were affected by factors that had no direct relevance for the internal valuation of the currency (see Tooke 1824; Crouzet 1964; Newby 2008). In addition, as the supply of precious metals was stable during the Restriction Period (Barro 1987) and melting down and export of British coin was prohibited, I will concentrate on the difference between the market and the mint price of gold bullion, the agio.

A rise in the sterling price of gold bullion, and, hence, an increase in the difference between the mint and the market price of gold was perceived as evidence for inflation (Ricardo, 1817).

The dataset spans the years 1718-1873 and is based on Castaing’s Course of the Exchange, published twice a week (reproduced in Neal, 1993 and Boyer-Xambeu et al. 1994) (figure four).

b) Estimation procedure

I presume that certain events allow forming anticipations regarding the outcome of the Napoleonic Wars. Thus, these events convey real time information on the future path of public finances. Important enough changes in expectations regarding the sustainability of public debt should then affect the internal value of the currency and, hence, on the agio. Therefore, I should be able to identify these events as structural breaks in the agio.

The procedure used to estimate the break dates is based on Bai and Perron (1998 and 2003). I define a break in the series as a change in the conditional mean of the series, i.e. I specify that the intercept can change. I focus here on abrupt changes in the mean that reflect the advent of unexpected news affecting Britain’s war fate and, hence, public finances. For that reason, I exclude past values of the endogenous.

In the following, I first run the break point procedure on monthly data for the 1795-1823 period. This dataset contains 340 observations. I then use the daily data in order to detect more precise break dates. Due to data availability issues, I only estimate daily break dates for the 1811-23 period (1,350 observations).

(c) Results

(i) Daily data

The monthly break dates are displayed in figure 5. The coinciding events are outlined below:

**January 1800**: Britain declined Napoleon’s offers to begin peace negotiations – as announced in the *London Times* on 6 January 1800 – and the agio increased.

**April 1802**: The Treaty of Amiens ended hostilities between the French Republic and the United Kingdom. At this occasion the agio decreased.

**February 1811**: An outnumbered French force nearly destroyed the Spanish Army of Extremadura at the battle of Gebora. At this occasion, agio increased.
July 1815: On 3 July, the French lost Paris to the Prussians at the Battle of Issy. On 15 July, Napoleon surrendered himself to the British.

May 1819: Peel’s Act fixes the details for the resumption of the gold standard (see daily data).

(ii) Daily data

The results of the break date estimation on the daily data are presented in figure 6; coinciding events are:

8 February 1811: (see monthly results).

25 August 1812: On 17 August, French forces won a major battle by seizing the city of Smolensk. In addition, the American declaration of war reaches London by mid-August, given transmission speed of news at the time. At this occasion the agio rises.

20 July 1813: While the armistice of Pläswitz was to last until 20 July, both sides used it primarily to rebuild their armies. Furthermore, in order to permit Austria’s complete mobilization against France – Britain had offered sizable financial support for the undertaking – the armistice was extended to 16 August. These events caused the agio to rise.

17 June 1814: The Treaty of Paris, signed on 30 May 1814, ends the War of the Sixth Coalition. The ratification of the peace treaty was published in the London Gazette, the official government journal, on 18 June. At this occasion, the agio fell by 60%.

17 March 1815: After having escaped his exile on Elba, Napoleon enters Paris on 20 March, commencing his Hundred Days of reign. At the prospect of a new war against Napoleon the agio doubles (see also Viner 1937).

17 June 1815: Napoleon suffered his decisive defeat at Waterloo on 18 June, causing a decline in the agio.

15 September 1815: The Treaty of the Holy Alliance was signed in Paris, 14-26 September. It complemented the Treaty of Vienna, resettling European political boundaries. The treaties’ conclusion marked the end of nearly 25 years of warfare. In line with these events, the agio decreased.

16 April 1816: While the Restriction Period was due to end on 5 July 1816, government postponed the resumption for another two years. The public still remained sanguine regarding resumption for two reasons. Government’s prior currency reform was a necessary step towards its stabilization (Clapham 1944; Sargent and Velde 2002). The BoE experimented with partial resumption, signalling a strong commitment to returning to the prewar parity in the near future (Newby 2008). The agio on gold declined.

28 November 1817: The political status quo was called into question by riots claiming electoral reform and universal suffrage. A prerequisite for becoming a Member of Parliament were property qualifications that guaranteed an important intersection between Members of Parliament and creditors of public debt (Johnston 2013). Universal suffrage could have seriously challenged this. At this occasion the agio rose.

25 May 1819: Parliamentary debates regarding the resumption of convertibility started on 21 May and were concluded unanimously on 26 May, stating the exact resolutions governing the resumption of specie payments. Clapham (1944) emphasizes the immediate impact the new regulations had on the Paris exchange and the agio, which fell to zero.
4. Discussion ‘Unpleasant monetarist arithmetic’ versus the Fiscal Theory of the Price Level (FTPL)

The evidence provided here emphasizes that expectations regarding the future sustainability of public finances affect the price level. This nexus can be brought about in frameworks related to either the ‘unpleasant monetarist arithmetic’ (Sargent and Wallace 1981) or the FTPL (Leeper 1991). My results and the broader institutional settings seem to favour the latter:

- Monetary policy decisions in eighteenth century Britain were subordinate to fiscal needs (Homer and Sylla 1991; O’Brien 2010).
- Outright default on public debt became absent after the Glorious Revolution (North and Weingast 1987; Sussman and Yafeh 2006), leaving unanticipated inflation as the only option for debt relief.
- Seigniorage accounted for less than 5 per cent of war revenues (Bordo and White 1991).
- The BoE’s monetary policies are thought to have been expansionary around the 1813-14 price peak (Duffy 1981). In Sargent and Wallace’s framework this should induce a decline in inflation, as accommodative monetary policy reduces the need for future money growth and, hence, seigniorage.
- As predicted by the FTPL, discrete jumps in the price level adjusted the real value of outstanding debt (Leeper 2013).

References

The Lyon stock exchange: the struggle for survival, 1866-1914

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The European Markets in Financial Instruments Directive (MiFID), which came into force in November 2007, made competition among trading platforms the principle governing the European stock exchange industry and achieved the creation of a ‘market for markets’ in Europe. This process started with the measures undertaken to foster integration among national financial systems. These measures lowered the barriers to competition among trading platforms in Europe. Four years after the MiFID implementation, a simple observation of the European financial market shows that competition led to the fragmentation of European trading. At the same time, competition focused the attention of trading venues on both the most liquid stocks and bigger investors. According to many market participants and regulators, competition among stock exchanges harmed the financial markets’ contribution to small and medium businesses (SMEs). This is why private and public bodies across Europe are putting in place actions and policies to develop the support financial markets can give to SME’s developments. In Lyon, for instance, a local exchange re-opened in autumn 2013 to list and to trade the stocks of SMEs.

According to standard models, competition among trading platforms would lead to the emergence of a single market due to externalities of liquidity and the reduction in information asymmetries resulting from the consolidation of the price discovery process. Therefore, consolidation would be the natural and desirable output of competition. More recent literature in market microstructure show that well differentiated exchanges can co-exist if investors’ and issuers’ preferences are heterogeneous. The exchanges’ various settings would match the preferences of all the potential participants and bring them into the markets. Nevertheless, the actual output of the competition among stock exchanges and its welfare implications are still an open empirical question. Does competition lead naturally to a single market? Is there still scope for peripheral exchanges? What are the relationships between core and peripheral venues? What are the implications of the stock exchanges’ competitive framework for SMEs?

In this paper, we look back at the nineteenth century France to shed light on these questions. During the nineteenth century the Paris financial centre plays a central role in the French financial markets. Nevertheless, six organized regional exchanges do exist during the second half of the century, Lyon being the most important.

The steep way to the boom, 1866-81

During the early years following the setting up of the parquet and the implementation of specific rules of trading in 1845, the Lyon stock exchange grew up in the shadow of the Paris Bourse.

1866 is a crucial point in the history of the Lyon stock exchange and thus the starting point of our narrative. Events, that happen this year, influence the next 15 years in the history of the Lyon stock exchange. In 1866 alone, four brokers over 27 are forced to resign. To avoid a domino effect and to calm public opinion, a new rule is adopted: one decides to ‘support through the profit and loss account, the losses that result from brokers who remained debtors to their fellow brokers’. The idea is to introduce, only to some extent, solidarity

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470 This paper is a joint work with Angelo Riva (EBS Paris).
471 See the review by Ramos et al. (2008).
472 See the review by Biais et al. (2005).
473 That is a specific floor were the official stockbrokers could trade.
among brokers, which is said to be ‘voluntary and limited’ (limited to the amount of the common fund). Indeed the brokers strongly reject the idea that solidarity could be enshrined in internal rules.

While the Lyon stock exchange tries to recover from the disasters of 1866, two new failures occur in the course of the Franco-Prussian war of 1870. Between 1866 and 1873, three seats are systematically vacant. The exchange committee worries about it, as it also reflects how unattractive the profession of stockbroker is in Lyon at that time.

The late 1870s are more favourable to the Lyon stock exchange. On the one hand, it is able to recover part of the debts left by failed brokers. On the other hand, it managed to create a substantial common fund. As a consequence, no seat is vacant and seat prices systematically increase from 1874 on (see figure 1). The late 1870s are characterized by a boom.

The years 1881 and 1882 deeply mark French financial history and especially the history of the city of Lyon. Indeed, the boom and the bust which follows were mainly concentrated on the shares of two companies thoroughly established and actively traded in Lyon: the *Banque de Lyon et de la Loire*, and the *Union Générale* (Bouvier 1960).

Using the ‘commissions’, i.e. fees earned by the official stockbrokers, as proxy for the volume of transactions in a stock exchange, we find that 1881 corresponds to the Golden Age of the Lyon stock exchange. The amount of commissions is multiplied by three between 1879 and 1881 (figure 2). 1881 is the first time that the Lyon market share (compared to Paris) exceeds 10 per cent (figure 3).
The crash starts in early January 1882. The day of 19 January is decisive: the 500 francs shares of the Union Générale starts at 2,000 francs and ends at 1,460 francs that is a 27 per cent decrease in less than 3 hours. The exchange cannot support payments: the Stock Exchange closes on 19 at night. After the crash, one estimates that only for Lyon, the inter-brokers debt amounts to 63.7 millions and the total debt caused by the financial crash reaches 191 millions!

The hard recovery after the crash, 1882-95
The crash of 1882 hit the Paris Bourse, the Lyon Stock Exchange and the Coulisse, but the fate of the three exchanges is different: the Paris Bourse is bailed out by the Bank of France and goes through the liquidity crisis, the Coulisse leaves debts to its clients while the Lyon Stock Exchange collapses and is re-founded. Nevertheless, the Coulisse, as a financial phoenix, arises from its ashes and competes successfully during the 1880s with the Paris Bourse, which is experiencing a deep institutional crisis. At the very beginning of the 1890s the Coulisse already handled two-thirds of the Parisian trading volumes. The Lyon Stock Exchange profits from the Coulisse’s activity and starts a hard recovery. The organization of the trading sessions at the Lyon stock exchange has indeed been built to be the ideal complement to the Paris Bourse. The Coulissiers largely used Lyon as counterparty for their operations of arbitrage on highly liquid securities like the mines and not only of gold as well as the main international publcs bonds. The Lyon stock exchange opens at 11:00 and closes at 12:30, when the Paris Bourse starts the trading. The overlap between the Lyon stock exchange morning session and the opening of the Coulisse allows the latter to send orders to Lyon and receive the confirmation of execution before the beginning the Paris Bourse. This arrangement gives the Coulissiers opportunities to shunt cross-listed securities and, at least according the Parisian official stockbrokers, to affect the opening prices of the Paris Bourse via Lyon: the Lyon closing prices for securities officially cross-listed between Lyon and the Paris Bourse are indeed ‘official’ and reported on the Lyon official lists.

This arbitrage was facilitated by several factors. First, all the securities officially listed at the Paris Bourse, like the main international bonds that are the object of a fierce
competition between the Parquet and the Coulisse, are tradable at the Lyon stock exchange. Second, the Lyon stock exchange takes control in 1881 of the OTC market in Lyon to avoid the setting up of a Coulisse in the financial centre. From then onwards, this OTC market run by the official stock brokers is an important source of business for them thanks to the trading of securities only listed at the Coulisse, mainly mine stocks. Third, the improvement of the information technologies linking Paris and Lyon: the success of Lyon is so important in the late 1880s that often the transmissions of telegrams through the two wires the Stock Exchange financed in 1880 were delayed because of overcrowding. In 1889, the need for more effective communications between Paris and Lyon pushes the Lyon Stock Exchange to ask for and attain the installation of a telephone in the exchange building.

Moreover, in order to profit from the closing prices of the Paris Bourse and trading on the basis of its prices with the Coulissiers, the Lyon stock exchange organizes from the early 1880s an evening session at 5.00 p.m. This session allows traders to take positions to be hedged in the Coulisse’s evening session.

Nevertheless, a regulatory change at the very beginning the 1890s reduces the positive influence that the Coulisse’s activity has on the Lyon stock exchange. New regulations passed between 1890 and 1892 harm the Paris Bourse vis-à-vis the Coulisse, but at the same time the Lyon stock exchange vis-à-vis the Paris Bourse: if the negative effect on Lyon is noticeable, the positive effect on the Paris Bourse is overwhelmed by the loss of some competitive hedges vis-à-vis la Coulisse. For this reason, the triumph of the Coulisse is not the triumph of the Lyon stock exchange: a new fiscal law in practice abolishes in 1893 the monopoly of the official stockbrokers on the officially listed securities. The activity in the Coulisse spikes between 1894 and 1895, without driving the activity of Lyon at the same pace.

**The (not so) ‘Belle Époque’ for Lyon, 1895-1913**

The Belle Époque is not as beautiful for the Lyon Stock Exchange. First, the Lyon Stock Exchange is experiencing the setbacks of his ‘best customer’, the Coulisse, hit by the crisis of gold mines (1895) and mainly by the reorganization of the market in 1898.
Then, the position of regulator of the national market the reform of 1898 has awarded the Paris Bourse encourages other exchanges to align their microstructures to that of the capital. This alignment in turn promotes the externalities and the centralization of the activity in the most liquid market: Paris. Not only from 1898 onwards the commissions cashed by the Lyon brokers and their market share are experiencing a downward trend, but also the composition of the trading volumes changes with an adverse effect on the profitability of operators in Lyon (figure 3).

Finally, the Bourse de Lyon is exposed, like other French exchanges, to the increasing competition of banks on the primary market. On the other hand, banks centralize in the Paris Bourse their trading activity to benefit from externalities, reinforced by the specific benefits Paris stockbrokers granted them in 1898.

The Lyon Exchange, however, does survive by maintaining the OTC market it controls from the beginning of the 1880s, managed directly by the official brokers, where they trade French and foreign more speculative securities as mines. Moreover it develops a niche it can operate away from its Parisian rival thanks to a new listing policy allowing it to list several local stocks, mainly to the ‘Second part of the official list’, a kind of special settlement. This move allows Lyon to assert itself as the national market for local stocks and bonds. Organizational specificities of these two markets and the kind of securities traded give the Lyon stock exchange a niche the Paris Bourse is not interested in. Indeed these securities, especially the ‘local’ one, are not subject to competition from Paris. Because of the distance, it is tough for Paris’ investors to get information on them. In addition, these securities are often too small to interest the Paris official market. Second, some local securities may become very successful. By admitting them early to the official list, the stock exchange committee contributes to the spread of these securities especially among local investors. Once established, these securities, although few in number, could then provide additional trading opportunities for the Lyon stock exchange.

The listing policy allowing the admission of this pleiad of local securities has greatly benefited from the views of Abel Waldmann, a stockbroker who holds a PhD in Law. According to Waldmann, to admit a security to the official list or not is the prerogative of the stockbroker as an individual. It is mistaken that the stock exchange committees of Lyon and Paris had taken over in their internal rules the right to allow or not the trading of a given security. With this election of Waldmann to the Stock Exchange Committee in 1899, the Lyon’s stockbrokers give him the possibility to implement this new listing policy.

In order to access the role played by local securities in the Lyon stock exchange, we collected data on all admissions of securities in French regional exchanges between 1898 and 1909. It excludes securities already admitted to the Paris official list, that’s why we are able to define them as ‘local’ securities. Over the period 1898-1909, 684 securities were admitted to the Lyon official list, which is nearly 60 per cent of all admissions to provincial exchanges. Lyon’s dominance in this area becomes overwhelming after 1900 (figure 4).

In a second step, we seek to evaluate the securities of the Lyon region among all local securities admitted to the Lyon stock exchange during the period 1898-1914. Even if this method is imperfect, we chose to consider a security as ‘regional’ if the headquarters of the company that issued is, according to the yearbooks devoted to the Lyon Stock Exchange, in the nowadays Rhône-Alpes region. It is then possible to assess the role played by regional securities in the admissions of local securities. On average, two-thirds of the securities admitted to the Lyon stock exchange are from the Rhône-Alpes region (figure 5). One third of the admissions are thus related to local (but not regional) securities. To the extent that the Lyon stock exchange admits a significant share of local securities to its list, it can be considered to some extent as a national market for local securities.
In this paper, we look back at nineteenth-century France to shed light on the effects of competition in the stock exchange industry. By studying the interactions between Paris and Lyon, we find that, after the 1881-82 boom and burst, the Lyon stock exchange has to struggle for surviving facing fierce competition from the Paris Bourse and main national banks particularly after the 1898 reorganization of the Paris financial centre. On the contrary, the strong activity of the Coulisse before the 1895 gold mines crash had a positive effect on the Lyon one. After the 1898 reorganization, the Lyon stock exchange survived thanks to a
new listing policy favourable to SMEs and the development of second-tier market for both these unofficially traded SMEs and unlisted risky stocks. On the other hand, the progressive homogenization of the official market imposed by regulators to enhance their control over the French securities market acted as a force driving trading to Paris: only the facilities the Lyon exchange gave to the main banks of the financial centre maintained some activity.

The analysis of this natural experiment shows that without a pronounced heterogeneity stock trading consolidate because of externalities. Nevertheless, the central exchange does not get all the market because stock exchange members’ rent-maximization behaviour creates capacity constraints. These capacity constraints create scope for peripheral exchanges if they find a niche away from the central exchange’s interests. Within this framework, (small) size and (distant) localization of the issuers from the centre can create barriers to information flows that lock up the niche. On the other hand, heterogeneity between market microstructure can explain the co-existence of competing exchanges. Within this context, the effect of the main exchanges’ activity over the peripheral ones is ambiguous: peripheral exchanges can profit from the activity of the one and lose from the activity of the other, according to the relative competitive hedges.

References
Is art really a safe haven? Evidence from the French art market during the Second World War

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Introduction
The last financial crisis aroused the interest for art as an investment. Among the numerous newspapers articles, the ftadviser (9th Sept. 2012) describes a very bullish art market since the last financial crisis and writes that “fine art investments have not only survived the recent global economic crisis, but have gained impetus from various disappointments in financial assets.”\(^{474}\) Art is definitely not perfectly similar to other more traditional asset classes being a real asset, a hedge against inflation and a physical value that can provide the owner with an aesthetic dividend. The literature that deals with art markets also reports a massive boom encountered by the art market during the Second World War. At this time, among occupied countries, the demand for art increased tremendously and lead to an outstanding rise in prices of art. Moulin (1967) reports that « à côté de l’or, des devises étrangères, des valeurs boursières, des autres catégories d’objets rares, la peinture a servi à placer un avoir qu’il fallait protéger contre l’inflation et dérober au contrôle de l’Etat ». Oosterlinck (2011) builds a price index for the WWII French art market and reports an increase of 300% of the price levels in 1943 compared to their prewar levels. Eeuwe (2007) reports the same situation in the Netherlands, where even from the beginning of the German occupation, the art market prices rose substantially.

As art is often considered as a safe-haven investment during crisis times, this paper challenges and refines this vision of art by studying the price reactions during another troubled time, namely the First World War and the postwar period (1911-25). At that time, the art market experienced an important crash, both in volumes and in prices. The situation was very different from the WWII situation as art was not considered at all as a safe-haven for almost the entire war period. The last year of war, 1918, saw the art market prices rise again before meeting the lowest levels for the remainder of the years of our sample (1919-25).

Wars are indubitably periods during which the functioning of stock markets, monetary policies or real-estate are markedly modified. These periods, studied from an ex-post perspective, provide us with interesting but different situations from regular periods. Investments during war time have long been neglected among financial studies. Lerner (1954) already pointed out that economists have left out these war periods because they considered them as abnormal. During war periods, prices, wages and the stock of money are considerably modified. Among others, these factors encourage investors to diversify or rebalance their portfolios as additional risks, such as political risk, play a role in investment decisions.

If the prices of art boomed during the Second World War, no study has focused on the First World War. This paper fills the gap in the literature by providing an empirical study on the French art market during WWI and the postwar period. At that time, France was a warring country but Paris was not occupied. To set these results into perspective, the movements on the art markets are compared with other investments. The situation is very different during the First World War. During the First World War, art is not the most demanded real asset. It underperformed all other assets types both in terms of returns. Except at the end of the war, the art market was not seen as a safe-haven as confirmed by the major drop in volumes sold and prices.

\(^{474}\)http://www.ftadviser.com/2012/09/10/our-publications/special-reports/investing-in-fine-art-september-uDSYtMSFQOgHZITZLYovLO/article.html
This paper also tracks the reaction of the art market during the postwar period. France did not recover its prewar GDP rate before 1922. The period from 1919 until 1925 is characterized by a strong political and monetary crisis. Despite the latest, art did not outperform other assets. This goes again against the hedging role attributed to art.

**Price index**
Our data come from the *Gazette de l’Hotel Drouot*. The Hotel Drouot was, at the time, the most important auction house in France.

**Model**
In this paper, we focus on the hedonic regression method (HR). A HR model takes the following form:

\[
\ln p_i = \alpha_0 + \sum_{k=1}^{K} \alpha_k X_{ik} + \sum_{t=1}^{T} \beta_t \delta_{it} + \epsilon_i
\]

where \( p_i \) is the price of good \( i \), \( X_{ik} \) is the value characteristic \( k \) of artwork \( i \) (such as artist, medium, attribution, size) and \( \delta_i \) is a time dummy variable which takes one if the artwork is sold on \( t \) and zero otherwise. The antilogs of the \( \beta_t \) coefficients are then used to construct the hedonic price index:

\[
\text{Index}_t = 100 \cdot \exp(\beta_{t})
\]

**The art price index**
Figure 1 displays the art price index. Appendix IV displays the results of our baseline hedonic model and appendix V displays the index values, standard deviations, t and p values.

**Figure 1: Art price index (normalized at 100 for the first semester of 1911 (Jun-1911))**

As expected the price index exhibits very high prices levels during the prewar period. Nothing happened on the market between August 1914 (the outbreak of the war) and June 1916. At that point in time, the market reopened and prices exhibited a discount compared to the prewar value. The very high prices levels shown by the price index in June and December 1918 were also expected due to the very high average and median price per artwork. After the
war, the prices dropped to their lowest level among the whole period and remained fluctuating around this level, without reaching the 1918 level again. It is only during the first semester of 1924 that art prices reached similar levels to the prewar period. During the whole period, art prices exhibit a decrease in value.

Risk-return characteristics of artworks

Table 1 displays the risk-return characteristics of our main index, of the quantiles-based indices and of the Old Masters vs. Moderns indices. Art exhibited a negative return for a very high standard deviation, and hence a negative Sharpe ratio. As can be seen, all indices exhibit a very high volatility (between 32.12% and 67.16%). The only indices that display a positive Sharpe ratio are the indices based on the Old Masters/Moderns distinction.

Table 1: Returns, standard deviations and Sharpe ratio for the computed indices

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Return</th>
<th>S.D.</th>
<th>Sharpe ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hedonic Index</td>
<td>22,074</td>
<td>-0.40%</td>
<td>39.67%</td>
<td>-0.0012</td>
</tr>
<tr>
<td>Quantile</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q05</td>
<td>18,408</td>
<td>-8.13%</td>
<td>32.12%</td>
<td>-0.24199</td>
</tr>
<tr>
<td>Q25</td>
<td>18,408</td>
<td>-10.50%</td>
<td>40.72%</td>
<td>-0.24914</td>
</tr>
<tr>
<td>Q50</td>
<td>18,408</td>
<td>-6.98%</td>
<td>34.65%</td>
<td>-0.19138</td>
</tr>
<tr>
<td>Q75</td>
<td>18,408</td>
<td>-3.83%</td>
<td>36.18%</td>
<td>-0.09619</td>
</tr>
<tr>
<td>Q95</td>
<td>18,408</td>
<td>-12.32%</td>
<td>63.08%</td>
<td>-0.18975</td>
</tr>
<tr>
<td>Old Masters vs. Moderns</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Old Masters</td>
<td>8,953</td>
<td>2.79%</td>
<td>67.16%</td>
<td>0.046818</td>
</tr>
<tr>
<td>Moderns</td>
<td>12,080</td>
<td>0.83%</td>
<td>44.64%</td>
<td>0.026504</td>
</tr>
</tbody>
</table>

Note: the risk-free asset considered to compute the Sharpe ratio is the Rente 3% (see infra); the Old Masters sample is composed by the artworks painted by artists that died before 1850; the Moderns sample is the remainder. The difference in N between the Hedonic Index and the Old Masters vs. Moderns Indices is due to artists for which the date of death could not be found.

Figure 2 exhibits the art index compared to potential investments: stocks (‘CAC 40’), bonds (‘Rente’ which is a perpetuity from the French state), real-estate, gold and art.

As expected, art really compares differently before and after the war. The very high prices of the prewar period outperformed all the other assets. The situation is similar for 1918. Despite these really high performances, the risk return characteristics of art are not attractive at all. Table 2 presents the risk returns characteristics and the Sharpe ratio for all the investments presented in figure 2. The Sharpe ratio analysis suggest that real estate was the most profitable investment during this period.

Table 2 Risk-return characteristics for stocks, bonds, gold, real estate and art 1911-25 (Rente is considered as being the risk-free asset; the gold return is computed from 1919 to 1925)

<table>
<thead>
<tr>
<th></th>
<th>Annualized return</th>
<th>Standard Deviation</th>
<th>Sharpe ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>ART</td>
<td>-0.401%</td>
<td>39.671%</td>
<td>-0.00122</td>
</tr>
<tr>
<td>CAC40</td>
<td>1.289%</td>
<td>7.749%</td>
<td>0.2119403</td>
</tr>
<tr>
<td>RENTE</td>
<td>-0.353%</td>
<td>4.221%</td>
<td>0</td>
</tr>
<tr>
<td>GOLD</td>
<td>18.180%</td>
<td>25.776%</td>
<td>0.7189783</td>
</tr>
<tr>
<td>REAL ESTATE</td>
<td>4.578%</td>
<td>4.847%</td>
<td>1.0172807</td>
</tr>
</tbody>
</table>

During the war, the real-estate price levels compared positively with the other investments of our analysis. The price of gold remained fixed during the whole war period as the exchange rate ‘francs-or’ was fixed and controlled by the government. The postwar period saw a real outperformance of real assets such as gold and real estate but no outperformance of art. On the contrary, the performance of art during this period is rather bad.
Stocks and bonds did not compare favourably to the other types of investments. Even if the stock markets react to war events, Le Bris and Hautcoeur (2012) argue that the key factor to influence them is the way of financing the war. WWI marked the beginning of modern monetary inflation in France. Just before the First World War, the new public debt did not exist in France as the budget was in surplus. The conviction at the beginning of the war that it would not last long lead to a financing through short-term debt through Bons du Trésor and through money creation (“avances de la Banque de France”) (Hautcoeur 2009). The Paris Stock market closed on 31 July 1914 and reopened its doors in December 1914.

Figure 2: Art compared to other sources of investments (Stocks, Gov. Bonds, Real-estate and Gold)

Comparison with the Second World War

The performance of all investments during the First World War is very different from the situation of the markets during the Second World War. Figure 6 displays the situation of both art markets during WWI and WWII. At this time, the art market experienced a massive boom during the whole war period.
In terms of supply and demand the situation is counterintuitive. As mentioned by Le Bris and Hautcoeur (2010), none of the warring countries expected at the beginning of WWI the war to last so long. As a consequence of this, the people did not modify their consumption habits at the outbreak of the war and shortly after. We would expect the art market to continue working (or to reopen shortly after the outbreak of the war) or even to encounter an increasing of prices since the supply of artworks was decreasing because of the destruction caused by the German armies (Kott 2002). During the Second World War, the occupation had a positive effect on the demand side as the Germans were provided with almost infinite means and were major new players on the art market. The looted art from the Jews could have also increased the supply side of the market. All in all, a decrease was expected on the art market during WWII. The situations of the art markets were very different from these expectations. The differences in the level of capital controls, the monetary regimes, the ways of financing the war and the occupation between both wars are used to explain these differences in situation on the art market.

**Conclusion**

On the basis of an original database of close to 22,000 artworks, this paper analyses the reactions of the art market during WWI in France. The market disappeared at the beginning of the war and reappeared at a loss. The safe haven character of art as an investment did not exist during WWI, whereas during WWII art was clearly a safe investment. Several structural differences can explain the divergence: the issue of the war, the freedom of the capital markets and the occupation. The safe investment character of art can be attributed to these WWII events rather than to the art itself. Art is thus the investment of last resort: if no other investment is available, investors tend to see it as a safe haven. Further findings characterize the WWI art market: Old masters tend to perform better than Moderns. During the war, the lowest price quantile proportion of artworks performed better than all other price ranges.

**References**


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Household consumption in prewar Nazi Germany: the effects of liquidity constraints, myopia, and loss aversion

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Supervisors: Dr Oliver Grant & Mr Nicholas Dimsdale

Introduction
Many postwar economic historians attributed Germany’s rapid recovery from the Great Depression to successful proto-Keynesian macroeconomic policy (Abelshauser 1999; Barkai 1990; Cohn 1992; Overy 1982). A number of quantitative studies, however, found that the marginal propensity to consume (MPC) and the multiplier were too low to explain the German recovery as a truly Keynesian mechanism (Erbe 1958; Borchardt and Ritschl 1992; Ritschl 2003; Ritschl 2002; Stone and Stone 1938). Ritschl demonstrated most conclusively that a Keynesian framework fails to explain German household consumption in the interwar period. For the period 1933-8, Ritschl estimated an MPC of -7.13, thus rendering ‘ad absurdum’ the proposition that the recovery was driven by a Keynesian consumption mechanism (Ritschl 2002).

The refutation of the Keynesian interpretation has left an unsatisfactory explanatory gap. Ritschl refrained from analysing the broader determinants of household consumption, merely pointing out the presence of credit constraints, ‘wildly oscillating incomes’, and uncertain expectations. This paper attempts to develop a more general model of German consumption behaviour in the 1930s to capture the partial effects of these factors. The model expands the general theoretical framework of the permanent income hypothesis (PIH) by identifying latent liquidity and credit constraints through a switching regression. The paper uses new monthly panel data of 155 German working-class households that participated in a year-long budget survey conducted by the Statistisches Reichsamt in 1937. PIH is not expected to describe perfectly these households’ behaviour. The vast empirical literature testing PIH almost unanimously rejects it (Attanasio and Weber 2010; Jappelli and Pistaferri 2010). Moreover, studies of British working-class households in the interwar period suggest that household consumption was highly sensitive to fluctuations in current income (Johnson 1985; Scott and Walker 2012). Nevertheless, the model permits an empirical separation of purely ‘irrational’ behaviour from the distortionary effects of liquidity constraints. Moreover, the model is useful in diagnosing households’ ‘irrational’ behaviour as loss aversion.

Data
In 1937, the Statistisches Reichsamt conducted a budget survey among 1,509 German households. Covering a period of twelve months, disaggregating seven income sources and expenditures on more than 200 different categories, and recording a wealth of socio-economic and demographic information, this was the most extensive survey carried out in interwar Europe. The annual budgets of individual households were published in 1960 by the Statistisches Bundesamt. While these published data can be compared with a similar survey of 1927, their cross-sectional nature limits their usefulness. This paper resolves the lack of dynamic income and consumption data by having recourse to the unpublished raw data gathered by the Reichsamt over the course of 1937, which are kept in the Bundesarchiv in Berlin-Lichterfelde. A sub-sample of 155 households was selected randomly from the 1,509 individual files in the archive. The original survey data permits the reconstruction of continuous monthly income and consumption variables. The sample thus contains 1,860 observations.

Disposable income is defined as current income net of taxes and mandatory contributions to social insurance and the Deutsche Arbeitsfront. Capital income, mainly interest earned on saving deposits and insurance payments, is included in disposable income.
The consumption of savings, credit-financed consumption and other borrowing are excluded from disposable income to allow for net dissaving in cases where capital consumption and borrowing enabled households to consume in excess of their current disposable income. Consumption is calculated by subtracting from disposable income voluntary insurance premiums, comprised mostly of life insurance, and other forms of saving. These include gross additions to cash stocks and deposits as well as debt reduction excluding interest payments. I thus use total consumption as the dependent variable. More than fifty expenditure categories could be classified as durables, but collecting the corresponding monthly data for each household would be prohibitively time-consuming.

Since most households in the sample earned weekly wages, the incidence of five Fridays, i.e. weekly paydays, in the months of April, July, October, and December arbitrarily introduces considerable volatility in the monthly income data. This volatility is not necessarily reflected in weekly pay checks. Since the effect is uniform for all working-class households in the sample, this noise in the data should be captured by monthly dummy variables, along with other seasonal effects and common macroeconomic shocks.

Model
This short version of the paper only tests for excess sensitivity of consumption to anticipated changes in current income, with PIH predicting consumption to follow a random walk as described by an Euler equation. An alternative PIH model separating stochastically unanticipated permanent and transitory income shocks yields consistent results, which are not reported here. I first specify a suitable Euler equation before incorporating liquidity constraints into the model.

The excess sensitivity test measures the response of household consumption to anticipated changes in current income. PIH predicts that consumption is entirely insensitive to such changes, since once a change in the net present value of future income streams is predicted by a forward-looking agent, consumption is adjusted immediately. Consumption thus follows a random walk, or martingale; consumption in the current period equals past consumption, subject only to an error term capturing new information in the current period (Hall 1978; Flavin 1984):

$$\ln(c_{t+1}) = \ln(c_t) + \alpha_{\Delta t}$$

(1)

Available information on any income changes in the next period is already captured by the current level of consumption and should therefore be uncorrelated with any change in the level of consumption in the next period. Put formally, in the equation:

$$\Delta \ln(c_{t+1}) = \beta E_t[\Delta \ln(c_{t+1})] + \epsilon_{t+1}$$

(2)

PIH requires that $\beta = 0$. The empirical specification modifies equation 2 in two ways. First, to control for shifts in household tastes over the course of the year, I control for changes in the household size, $S$. All other household-specific preference-shifting parameters are assumed to be constant over the year, while common macroeconomic and seasonal shocks are captured by a vector monthly dummy variables, $M'$. In particular, consumption behaviour is expected to deviate from its general course in December due to Christmas. Second, I estimate the expected income change by assuming that households predict current income in a Bayesian AR(n)-process. This method has been used in much of the literature testing PIH (Altonji and Siow 1987; Filer and Fisher 2007; Shea 1995). Monthly dummy variables are used to capture any autocorrelation. This yields the first-differenced equation:

$$\Delta \ln(c_{t+1}) = \rho_1 \Delta \ln(c_t) + \cdots + \rho_n \Delta \ln(c_{t-n}) + M' \alpha + \epsilon_t$$

(3)
This equation is estimated by GMM for consistency. The predicted values from this equation, depending on whether they are positive or negative, represent expected income rises or falls:

\[ \text{Eq}(\text{ln}(y_{t+2})) = \Delta \text{ln}(\text{ln}(y_{t+1})), \quad \text{if } \Delta \text{ln}(\text{ln}(y_{t+1})) \geq 0 \]
\[ \text{Eq}(\text{ln}(y_{t+2})) = \Delta \text{ln}(\text{ln}(y_{t+1})), \quad \text{if } \Delta \text{ln}(\text{ln}(y_{t+1})) < 0 \]

These two variables are substituted into equation 2 to obtain the equation:

\[ \Delta \text{ln}(y_{t+1}) = \delta_1 E_{t+1}[\Delta \text{ln}(y_{t+1})] + \delta_2 E_{t+1}[\Delta \text{ln}(y_{t+1})]^{-} + M'u + \epsilon_{t+1} \]

Credit and liquidity constraints are expected to hamper households’ ability to raise consumption in anticipation of income rises, i.e. bias \( \delta_1 \) upwards. Testing for the presence of this effect is difficult due to the impossibility of directly observing such constraints. A traditional method of solving this problem is to split the sample into low- and high-wealth groups using available proxies (Zeldes 1989). The thresholds used, however, tend to be arbitrary, and results have been highly sensitive to sample separation. Garcia, Lusardi, and Ng (1997) use a switching regression to separate their sample into a constrained and an unconstrained regime. While available correlates of liquidity constraints are used to provide an initial sample separation, the model updates the normal density functions of each regime equation in an iterative process. Zimmerman (1998) provided a user-written STATA programme. This differs from the likelihood function used by Garcia, Lusardi, and Ng (1997) but has recently been used in the literature (Beznoska and Ochmann 2012). The implied 3-equation model in the present context is written as follows:

\[ \Delta \text{ln}(y_{t+2}) = \sigma_1 E_{t+2}[\Delta \text{ln}(y_{t+2})] + \sigma_2 E_{t+2}[\Delta \text{ln}(y_{t+2})]^{-} + M' + \epsilon_{t+2} \]

Results

For the sake of brevity, I only present here the estimated coefficients from equations 5 and 6. Current income is predicted in an AR(2)-process, with the first-difference-transformed GMM model yielding plausible coefficients and passing Sargan and Hansen tests. The switching equation for this model similarly yields plausible results. While the almost perfect fit of the switching equation is an artefact of the iterative estimation technique, the signs of the coefficients are jointly consistent. Observed liquidity and borrowing, the closest correlates of latent liquidity and credit constraints, exhibit the expected negative correlation with the estimated latent variable. The occupational dummies are plausible, with skilled workers being less likely to be liquidity constrained than unskilled ones. Table 1 provides an overview of the average monthly financial flows of observations identified as constrained or unconstrained. The difference between the regimes is evident, with unconstrained households engaging in significantly higher gross dissaving.
Table 1: Financial flows of constrained and unconstrained households

<table>
<thead>
<tr>
<th></th>
<th>Unconstrained</th>
<th>Constrained</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Gross dissaving</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital consumption</td>
<td>1.03</td>
<td>0.15</td>
</tr>
<tr>
<td>Credit-financed</td>
<td>8.80</td>
<td>0.38</td>
</tr>
<tr>
<td>Consumption</td>
<td>2.10</td>
<td>0.56</td>
</tr>
<tr>
<td><strong>Gross saving</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash saving</td>
<td>-5.45</td>
<td>1.57</td>
</tr>
<tr>
<td>Voluntary insurance</td>
<td>1.90</td>
<td>1.82</td>
</tr>
<tr>
<td>Deposit saving &amp; debt</td>
<td>6.20</td>
<td>4.34</td>
</tr>
<tr>
<td>reduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Net saving rate</strong></td>
<td>-9.26</td>
<td>6.64</td>
</tr>
<tr>
<td><strong>Observations</strong></td>
<td>474</td>
<td>1,342</td>
</tr>
</tbody>
</table>

A household can be identified as constrained or unconstrained in different months.

The results from the Euler equations, summarized in table 2, demonstrate the presence of both liquidity constraints and myopia. The positive coefficients \( \hat{\alpha}_L \) and \( \hat{\alpha}_u \), estimated by OLS in column (1), imply excess sensitivity to anticipated income changes. Regime 2 in column (3) weighs observations according to their probability of being unconstrained. Both coefficients are smaller in the unconstrained regime, and the equation has a better fit. Households in the unconstrained regime exhibit no significant excess sensitivity to expected income rises. As predicted by PIH, households raise consumption in anticipation of income rises if they have the requisite financial means to do so, that is, if they can are able to dissave in the short run. However, their failure fully to adjust consumption in anticipation of income falls cannot be explained on the grounds of liquidity constraints. There is no satisfactory explanation for the small changes of \( \hat{\alpha}_L \) across the models other than imperfect estimation. Since any household can save at any time, theory would predict \( \hat{\alpha}_L \) to be the same under OLS and the two regimes. That said, the effect of separating regimes on \( \hat{\alpha}_L \) is much smaller than on \( \hat{\alpha}_u \).

Importantly, \( \hat{\alpha}_L \) is significantly smaller than \( \hat{\alpha}_u \) regardless of the model used. Far from being myopic in an indiscriminate, rule-of-thumb fashion, therefore, households exhibit asymmetric preferences. This asymmetry is consistent with a phenomenon that Shea (1995) describes as ‘loss aversion’. This tendency of consumers to be more risk-taking in dealing with projected losses than with expected gains has been theorized by, among others, Tversky and Kahneman (1991) and has been corroborated by number of empirical studies (Bowman, Minehart and Rabin 1999; Filer and Fisher 2007; Shea 1995). Agents labour under the illusion that a projected income loss may be averted at the last moment and are therefore willing to take the risk of a sudden income drop at a higher expected utility loss.
### Table 2: Responsiveness of consumption to anticipated changes in income

<table>
<thead>
<tr>
<th></th>
<th>(1) OLS Pooled sample</th>
<th>(2) Switching regression Regime 1 (constrained)</th>
<th>(3) Regime 2 (unconstrained)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Δ Consumption</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expected income rise (δ₁)</td>
<td>0.229**</td>
<td>0.420***</td>
<td>-0.049</td>
</tr>
<tr>
<td></td>
<td>(0.069)</td>
<td>(0.117)</td>
<td>(0.043)</td>
</tr>
<tr>
<td>Expected income fall (δ₂)</td>
<td>0.539***</td>
<td>0.658***</td>
<td>0.411***</td>
</tr>
<tr>
<td></td>
<td>(0.074)</td>
<td>(0.149)</td>
<td>(0.047)</td>
</tr>
<tr>
<td>Δ Household size</td>
<td>0.028</td>
<td>-0.131</td>
<td>-0.080**</td>
</tr>
<tr>
<td></td>
<td>(0.074)</td>
<td>(0.111)</td>
<td>(0.027)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.092***</td>
<td>-0.027***</td>
<td>0.414***</td>
</tr>
<tr>
<td></td>
<td>(0.023)</td>
<td>(0.038)</td>
<td>(0.015)</td>
</tr>
<tr>
<td>Monthly dummies</td>
<td>yes</td>
<td>yes</td>
<td>yes</td>
</tr>
<tr>
<td>Probability of being in regime 1</td>
<td>-</td>
<td>0.466</td>
<td>0.466</td>
</tr>
<tr>
<td>Observations</td>
<td>1,636</td>
<td>1,285</td>
<td>1,281</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.30</td>
<td>0.24</td>
<td>0.58</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses

* p < 0.05, ** p < 0.01, *** p < 0.001

The finding of asymmetric preferences, in general, is inconsistent with rational expectations only if one assumes a rather old-fashioned notion of economic rationality. It is very likely, however, that the very pronounced asymmetry in the present context is driven by the idiosyncratic circumstances of the German economy in 1937. Against a background of shortages but stable employment, households may have believed that uncertainty over the future supply of consumption goods outweighed income risks. The prospect of having to cut consumption drastically once an expected income fall came into effect was likely less threatening in an economy in which decisions over future consumption levels were effectively subject to unpredictable and volatile supply. It was an understandable mentality of stockpiling that made it psychologically difficult for households to adjust consumption levels downwards. The ‘gamble for resurrection’, as Kahnemann labels the phenomenon of loss aversion, may also have been facilitated by the newly gained trust in the regime’s promise of full employment.

**Conclusion**

This paper has used new monthly panel data of 155 German working-class households in 1937 to examine the dynamic determinants of household consumption in the prewar Nazi economy. The results confirm the hypothesis that liquidity and credit constraints strongly hampered consumption smoothing. Even in the absence of such constraints, however, households did not smooth consumption perfectly. This result is consistent with a high degree of loss aversion, which I attribute to the combination of stable employment and volatile supply of consumption goods that was so peculiar to the prewar Nazi economy.

**References**


Women voters and party preference in Weimar Germany475

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On 12 November 1918, one day after the last shots of the Great War were fired, the revolutionary Council of People’s Deputies issued a decree granting all German women over the age of 20 the right to vote on an equal footing to men. A section of this decree also allowed, but did not make compulsory, the separate counting of the votes of men and women. Despite the extra effort and expense of separating ballots by gender many districts did indeed do so, resulting in a unique record of women’s voting in the nascent democracy that emerged following the Great War. This paper explores the differences between how men and women voted in Weimar Germany, with a specific focus on the National elections of 1928 and 1930. These years’ election results provide the most complete record of women’s voting across Germany and as such represent the best opportunity to gain an insight into the voting preferences of women in Weimar Germany. Significantly, they also capture the dramatic breakthrough of the Nazi party, whose support increased from less than 3 per cent of the vote in 1928 to more than 18 per cent in 1930. Following the approach of King et al. (2008), election results are combined with census data to make ecological inferences about the particular voting preferences of women voters with regard to key electoral factors such as class and religion.

The dataset consists of election results for 79 voting districts of Weimar Germany for the Reichstag elections of 1928 and 1930. In each electoral district, the number of votes cast for each party, as well as the total votes cast and the number entitled to vote, is tabulated. The unique characteristic of these voting statistics is that in these particular districts, the votes of male and female voters were counted separately. These figures are then combined with census data giving information on occupation for the year 1933 and with data on religious orientation taken from the 1925 census so as to give a picture of the votes cast and the socio-economic composition of each district. The sample is then separated into votes cast by men and those by women with the overall votes by party for all districts given in table 1. These voting figures indicate that support for the Nazis (NSDAP) and the Communists (KPD) was greater among men than among women, and that women’s votes for the DNVP and the Zentrum exceeded those of men’s. This is true for both the 1928 and 1930 elections and is consistent with the findings of the majority of the literature (inter alia Boak, 1989).

The linking of census data to the electoral results allows for the examination of one of the main electoral cleavages held to be important in determining votes for the Nazi party; religion. The differences between Catholic and Protestant regions is therefore an important distinction to make, even more important when one considers the disproportionate influence that religion is suggested to have wielded over women (inter alia Evans 1976; Boak 1989). Class division, in this case proxied by occupation, is another fundamental consideration when assessing the economic motives for voting. Class, or group-based, voting theory is indeed one of the principal explanations of voting outcomes in Weimar Germany proposed in the literature (inter alia King et al. 2008; Hamilton 1982; Lipset 1960). For these reasons, information on occupation structure is also included in the dataset. The total number of people in the workforce is divided between five occupational groups (that are considered as proxies of class groupings); the unemployed, domestic workers (including agricultural labourers and peasant workers), blue-collar workers, white-collar workers and the self-employed.

475 Full paper: https://sites.google.com/site/alanedebromhead
In order to uncover the proportions of each group that supported a particular party, the method of ecological inference is employed. This involves making inferences about individual level behaviour when only information at the aggregate level is available. In this instance, it amounts to filling in the cells marked with a question mark in table 2. The information that is available is given in the margins of the table. The bottom row indicates the proportions of people who vote for each of the party groups and the right-most column gives the proportion of people in each class group.

**Table 1.**

<table>
<thead>
<tr>
<th>Reichstag Election Results for Separated Sample (Men and Women)</th>
<th>1928 (%)</th>
<th>1930 (%)</th>
<th>1928 (%)</th>
<th>1930 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>KPD</td>
<td>16.26</td>
<td>19.60</td>
<td>10.80</td>
<td>13.34</td>
</tr>
<tr>
<td>SPD</td>
<td>27.58</td>
<td>23.82</td>
<td>23.31</td>
<td>21.85</td>
</tr>
<tr>
<td>Zentrum/BVP</td>
<td>4.79</td>
<td>4.98</td>
<td>6.34</td>
<td>7.13</td>
</tr>
<tr>
<td>DNVP</td>
<td>7.73</td>
<td>4.55</td>
<td>8.80</td>
<td>5.91</td>
</tr>
<tr>
<td>Nazi</td>
<td>2.30</td>
<td>15.33</td>
<td>1.45</td>
<td>12.34</td>
</tr>
<tr>
<td>Non-Voters</td>
<td>19.20</td>
<td>15.31</td>
<td>29.42</td>
<td>22.38</td>
</tr>
<tr>
<td>Rest</td>
<td>22.13</td>
<td>16.41</td>
<td>19.89</td>
<td>17.05</td>
</tr>
<tr>
<td><strong>Sum</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

*Source: See text*

Essentially, King’s Ecological Inference method uses the deterministic information (the upper and lower bounds for the proportions of interest which are known with certainty for each district) to limit the sample space and then employs regression techniques to extract the required information from within these bounds. It is this multinomial-Dirichlet hierarchical model used by King et al. (2008) and King, Rosen and Tanner (2004) that is employed in this paper and the interested reader is directed to these studies and the full version of this paper for a more detailed explanation of the statistical method.

To begin the analysis the sample is divided into two religious groups: Catholic and Protestant. A region was considered ‘Protestant’ if over 50 per cent of the population gave this as their religion in the 1925 census otherwise the region was considered ‘Catholic’. These two regions will be analysed separately, in recognition of the importance of religion on voter preferences. Within the two regions defined by religion the proportion of people in each of the
five occupational/class groups (Domestic, Blue-Collar, White-Collar, Self Employed and Unemployed) is calculated, generating a total of ten groups.

The results of the King et al. (2008) analysis of the total votes cast in the 1928 election showed that disproportionate support for the Nazis was not marked, with perhaps only the self-employed class in Protestant areas showing a disproportionate preference for the party. This pattern becomes more distinct for the 1930 election with the Nazis making gains among self-employed Protestants in particular. Also apparent is that support for the Communists was drawn mainly from blue-collar voters and the unemployed in both 1928 and 1930. The main goal of this paper is, however, to gain an insight into the differences between how women and men voted in the 1928 and 1930 elections. To do this the method of analysis outlined above is employed using firstly the votes cast just by women and then using votes cast by men. The point estimates of the vote shares, calculated from the sample of men’s votes, were then subtracted from the equivalent results calculated from women’s votes. In this way the disproportionate support of men and women for the various parties among the ten groups can be assessed.

The results of the comparison of men and women’s votes are presented in table 3 and table 4. The tables show the difference between the point estimates of the vote shares of men and women by party and occupation in both Protestant and Catholic districts. As the male vote share is subtracted from the female vote share, a negative figure indicates that women gave less support to a party than men and a positive figure indicates that women gave more support. Statistically significant differences are italicized and in bold. First off, if we take for example the Nazi vote in the election of 1930 shown in table 4, it is clear that among many of the groups the differences between the sexes was very close to zero, as they were in most groups in 1928. However one result that is apparent is that ‘self-employed’ women in Protestant districts were less inclined to support the Nazis in 1930 than self-employed men. In fact the point estimates indicates a 22 percentage point gender gap between men and women of this socio-economic group, a difference that is statistically significant. What this result may suggest is that the observed relationship between the self-employed and a higher Nazi vote in Protestant areas, as observed by King et al. (2008), is being driven by the votes of men. What then might account for such a gender gap within this group? A clue as to what ‘self-employed’ women did with their vote in 1930 can be seen in the last row of table 4. The gap between the proportion of self-employed men and women in Protestant areas who did not vote is 25 per cent, indicating that a higher Nazi vote among self-employed Protestant men is mirrored by a lower turnout among women of the same socio-economic group. A similar gender gap in non-voting is also apparent among the other Protestant group in which men appear to give greater support to the Nazis, namely the domestic group, although the latter gap is not statistically significant. Also of interest is a comparison with the gender gap in non-voting in 1928. While the gender gap between men and women narrows across all Protestant groups between 1928 and 1930, the gap decreases the least among the self-employed group. In fact the gap remains remarkably consistent, indicating that the increase in women’s participation in 1930 was driven largely by increases in voting among social groups other than the self-employed.

In Catholic areas, support for the Nazi party is greater among men than among women across all social groups in 1930; however these results are not statistically significant. The groups in which men appear to give the greater disproportionate support are the white-collar and self-employed groups. An examination of the last row of table 4 reveals that although there are some differences between Catholic men and women non-voters in 1930 in these groups, the picture is less stark than for the Protestant groups identified above. However a more convincing explanation is offered by the differences between men and women’s votes for the Zentrum party in 1930. The lower Nazi vote among women in these groups corresponds to a higher Zentrum vote among women in Catholic areas. This lends support to the argument that the influence of the Catholic Church created a significant pull among
women voters away from the Nazis. These results are particularly pronounced in the election of 1930 but can also be seen in 1928.

Differences between men and women’s votes for the Communists are also evident. King’s (2008) analysis of total votes cast indicated that disproportionate support for the Communists came from the blue-collar and the unemployed groups in both 1928 and 1930, particularly in Protestant areas. However the separated voting analysis reveals that this difference is being driven mainly by the votes of men. The same groups that appear to be driving the total vote for the Communists are also the groups where the men’s vote for the Communists is greater than the women’s vote. What this implies is that ‘blue-collar’ and ‘unemployed’ women are not voting the same way as men. Once again an indication of the likely voting behaviour of women in these groups is suggested by the composition of non-voters. As with the groups where men’s voting outnumbers that of women for the Nazi party, much of the difference between support of men and women for the Communist party in Protestant areas appears to be explained by a difference in non-voters, with women in the unemployed and blue-collar groups more likely to be non-voters than men particularly in 1928 but also to a lesser extent in 1930. The same argument can also be made with respect to the unemployed and blue-collar groups in Catholic areas. Although women are more likely to be non-voters than men in blue-collar and unemployed groups in Catholic areas they are also more likely to be supporters of the Zentrum party than men, especially in 1930. Once more this highlights the apparent disproportionate influence of Catholicism, in the form of support for the Zentrum party, on the voting preferences of women.

Table 3

<table>
<thead>
<tr>
<th></th>
<th>Protestant</th>
<th>Catholic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Difference (W-M)</td>
<td>90% CI</td>
</tr>
<tr>
<td>Nazi Unemployed</td>
<td>-0.2</td>
<td>3.7 -4.1</td>
</tr>
<tr>
<td>Nazi Blue-Collar</td>
<td>0.0</td>
<td>4.1 -4.1</td>
</tr>
<tr>
<td>Nazi White-Collar</td>
<td>0.1</td>
<td>5.2 -5.9</td>
</tr>
<tr>
<td>Nazi Self Employed</td>
<td>-1.4</td>
<td>6.1 -9.0</td>
</tr>
<tr>
<td>Nazi Domestic</td>
<td>-9.2</td>
<td>1.2 -17.2</td>
</tr>
<tr>
<td>ZENTRUM Unemployed</td>
<td>0.1</td>
<td>3.8 -3.7</td>
</tr>
<tr>
<td>ZENTRUM Blue-Collar</td>
<td>0.4</td>
<td>4.7 -3.9</td>
</tr>
<tr>
<td>ZENTRUM White-Collar</td>
<td>1.1</td>
<td>6.5 -4.4</td>
</tr>
<tr>
<td>ZENTRUM Self Employed</td>
<td>0.5</td>
<td>6.4 -5.3</td>
</tr>
<tr>
<td>ZENTRUM Domestic</td>
<td>-1.6</td>
<td>7.3 -7.5</td>
</tr>
<tr>
<td>KPD Unemployed</td>
<td>-11.7</td>
<td>1.7 -25.1</td>
</tr>
<tr>
<td>KPD Blue-Collar</td>
<td>-5.8</td>
<td>4.0 -15.6</td>
</tr>
<tr>
<td>KPD White-Collar</td>
<td>1.3</td>
<td>8.8 -4.2</td>
</tr>
<tr>
<td>KPD Self Employed</td>
<td>-0.2</td>
<td>4.8 -5.2</td>
</tr>
<tr>
<td>KPD Domestic</td>
<td>-1.6</td>
<td>2.9 -6.0</td>
</tr>
<tr>
<td>None Unemployed</td>
<td>18.2</td>
<td>27.0 -2.6</td>
</tr>
<tr>
<td>None Blue-Collar</td>
<td>9.4</td>
<td>17.2 -1.5</td>
</tr>
<tr>
<td>None White-Collar</td>
<td>-13.2</td>
<td>7.5 -28.9</td>
</tr>
<tr>
<td>None Self Employed</td>
<td>26.1</td>
<td>39.6 -12.7</td>
</tr>
<tr>
<td>None Domestic</td>
<td>38.6</td>
<td>52.0 -25.2</td>
</tr>
</tbody>
</table>
Using techniques of ecological inference it has been possible to untangle some of the most important elements of the debate about how women voted during the final years of the Weimar Republic. Religion, especially Catholicism, appears to have been an important factor in stifling the women’s vote for the Nazis and Communists. Perhaps most significantly, the analysis also suggests that the groups within which the Nazi party enjoyed disproportionate support among men, were also groups in which women were less likely to vote in 1928 and 1930. This makes for an interesting interpretation of the King et al. (2008) findings that the votes of the self-employed were key to the electoral success of the Nazi party. The results presented here suggest that turnout among self-employed women in Protestant areas did not increase significantly, even while overall turnout among women overall was increasing. Meanwhile self-employed men were beginning to position themselves as the group that most favoured the Nazis. As women’s turnout increased in the subsequent elections of the 1930s, it is likely that these previously non-voting women would have voted disproportionately for the Nazis, particularly in Protestant areas. Indeed the separated voting evidence that does exist suggests that votes for the Nazi party from women had caught up with those of men in Protestant areas by July 1932 and may have even overtaken men in some areas. Although this cannot entirely explain the increase in the Nazi vote in these elections, it is probable that the increase in turnout among women benefited the Nazis. The radicalization of women in Weimar Germany may have lagged behind that of men in the initial stages of the economic and political crisis but it would appear that women made up much, if not all, of the ground lost to men before the final demise of democracy.

Table 4:

<table>
<thead>
<tr>
<th></th>
<th>Protestant Difference (W-M)</th>
<th>90% CI</th>
<th>Catholic Difference (W-M)</th>
<th>90% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nazi</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>-0.6</td>
<td>8.5</td>
<td>-1.6</td>
<td>10.2</td>
</tr>
<tr>
<td>Blue-Collar</td>
<td>-0.5</td>
<td>6.9</td>
<td>-1.5</td>
<td>7.5</td>
</tr>
<tr>
<td>White-Collar</td>
<td>3.2</td>
<td>16.5</td>
<td>-1.0</td>
<td>6.2</td>
</tr>
<tr>
<td>Self Employed</td>
<td>-22.2</td>
<td>-7.9</td>
<td>-7.3</td>
<td>9.9</td>
</tr>
<tr>
<td>Domestic</td>
<td>-4.5</td>
<td>1.0</td>
<td>-2.3</td>
<td>6.8</td>
</tr>
<tr>
<td><strong>ZENTRUM</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>0.5</td>
<td>4.4</td>
<td>7.7</td>
<td>27.4</td>
</tr>
<tr>
<td>Blue-Collar</td>
<td>0.7</td>
<td>5.4</td>
<td>11.2</td>
<td>29.3</td>
</tr>
<tr>
<td>White-Collar</td>
<td>1.2</td>
<td>7.0</td>
<td>-2.4</td>
<td>45.3</td>
</tr>
<tr>
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<td>0.8</td>
<td>0.6</td>
<td>2.9</td>
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</tr>
<tr>
<td>Domestic</td>
<td>-1.6</td>
<td>2.8</td>
<td>13.4</td>
<td>35.8</td>
</tr>
<tr>
<td><strong>KPD</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
<td>-2.9</td>
<td>4.4</td>
<td>-1.2</td>
<td>6.7</td>
</tr>
<tr>
<td>Blue-Collar</td>
<td>-7.5</td>
<td>2.9</td>
<td>-1.8</td>
<td>13.2</td>
</tr>
<tr>
<td>White-Collar</td>
<td>-0.3</td>
<td>5.0</td>
<td>-0.4</td>
<td>7.1</td>
</tr>
<tr>
<td>Self Employed</td>
<td>0.1</td>
<td>4.1</td>
<td>-0.3</td>
<td>7.5</td>
</tr>
<tr>
<td>Domestic</td>
<td>-0.8</td>
<td>2.5</td>
<td>-1.4</td>
<td>6.6</td>
</tr>
<tr>
<td><strong>None</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unemployed</td>
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<td>9.7</td>
<td>9.4</td>
<td>26.2</td>
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<tr>
<td>Blue-Collar</td>
<td>8.4</td>
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<td>33.3</td>
</tr>
<tr>
<td>White-Collar</td>
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<td>0.5</td>
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<tr>
<td>Self Employed</td>
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<td>36.7</td>
<td>7.0</td>
<td>31.2</td>
</tr>
<tr>
<td>Domestic</td>
<td>18.5</td>
<td>29.7</td>
<td>-1.4</td>
<td>14.2</td>
</tr>
</tbody>
</table>
No longer top of the class: professorial salaries in twentieth-century Germany

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Supervisor: Professor Jan-Otmar Hesse

Introduction
The twentieth century is often acclaimed to be the ‘century of human capital’ (Goldin 2001, p.256). However, very few comprehensive long-run empirical studies concerning the remuneration of a vital contributor to the formation of human capital, the professor, have been undertaken for Germany (Scitovsky 1966 and Maus 2013). Our study tries to both broaden and deepen the analysis of professorial salaries over the duration of the twentieth century.

Using individual income data from university archives, we are able to shed some light on the income distribution of professors at various points in time. Especially we focus on the development of the salaries of full university professors in comparison with the development of top incomes in Germany. This allows us to compare the incomes of highly skilled professionals both within and outside the academic labour market. Our results show a sharp decline in professors’ salaries relative to other incomes over the century, which is even sharper than the decline put forward by Scitovsky (1966).

The database for professorial salaries
For the construction of our database containing these professorial incomes, we have visited 15 university archives. For each of these universities we randomly selected two professors from the staff listing for each of six discipline groups for seven selected time periods spanning nearly the whole century and tried to obtain information about their income. These subject groups are Law, Economics, Engineering, Medicine and Chemistry and a mixture of subjects representing the humanities, including Philosophy, History and Modern Philology and thus abbreviated PHP in the following. Using this procedure we obtained comprehensive information on the income the professor obtained from university, i.e. the basic salary, the allowances as well as revenues from tuition fees (Kolleggelder, abbr. KG), for 234 cases spanning all 15 universities and 5 time periods, ranging from 1908 to 1965. Two shortcomings of our data must be pointed out: the nature of our sources did not allow us to capture professors’ revenues from outside university which could substantially enhance their income (Maus 2013; Hesse 2013); moreover, it must be noted that our observations are not evenly distributed across time, space and faculties leading to estimation problems for some subjects and time periods.

Professorial salaries in Germany
In table 1 we give the weighted arithmetic mean for each subject from 1908-10 to 1963-65 from our sample. Each mean is denoted in the currency of the time and rounded to the nearest 100 units of that currency. In addition, we also provide the relation of the salaries to the average income of an employee (RAY)476 as well as the relation to the threshold to the top 1% of incomes as estimated by Dell (R99).477

476 From Bruttolohn- & Gehaltsumme pro Unselbstständiger Beschäftigter Statistische Jahrbücher für das Deutsche Reich und für die Bundesrepublik. The population was interpolated linearly where necessary.
477 The value for 1978 was obtained by linear interpolation. It should also be noted that (Dell.2007) uses the incomes without capital gains for 1910 and for the time after WWII. For the interwar period they include capital gains, such that especially the upper income brackets are likely to be higher.
Table 1: Discipline-dependent mean salaries

<table>
<thead>
<tr>
<th>Time Period</th>
<th>Chem</th>
<th>Eng</th>
<th>Med</th>
<th>Law</th>
<th>Econ</th>
<th>PHP</th>
</tr>
</thead>
<tbody>
<tr>
<td>1908-1910</td>
<td>9,200 M</td>
<td>7,500 M</td>
<td>8,700 M</td>
<td>13,000 M</td>
<td>N.A.</td>
<td>9,300 M</td>
</tr>
<tr>
<td>RAY</td>
<td>117%</td>
<td>95%</td>
<td>109%</td>
<td>164%</td>
<td>117%</td>
<td></td>
</tr>
<tr>
<td>R99</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1926-1928</td>
<td>18,100 RM</td>
<td>18,900 RM</td>
<td>12,900 RM</td>
<td>24,400 RM</td>
<td>22,300 RM</td>
<td>13,900 RM</td>
</tr>
<tr>
<td>RAY</td>
<td>866%</td>
<td>904%</td>
<td>616%</td>
<td>1169%</td>
<td>1069%</td>
<td>664%</td>
</tr>
<tr>
<td>R99</td>
<td>171%</td>
<td>179%</td>
<td>122%</td>
<td>232%</td>
<td>212%</td>
<td>131%</td>
</tr>
<tr>
<td>1933-1936</td>
<td>14,000 RM</td>
<td>12,600 RM</td>
<td>12,200 RM</td>
<td>13,200 RM</td>
<td>12,900 RM</td>
<td>11,000 RM</td>
</tr>
<tr>
<td>RAY</td>
<td>810%</td>
<td>728%</td>
<td>703%</td>
<td>764%</td>
<td>747%</td>
<td>664%</td>
</tr>
<tr>
<td>R99</td>
<td>154%</td>
<td>139%</td>
<td>134%</td>
<td>145%</td>
<td>142%</td>
<td>121%</td>
</tr>
<tr>
<td>RAY</td>
<td>554%</td>
<td>543%</td>
<td>568%</td>
<td>590%</td>
<td>538%</td>
<td></td>
</tr>
<tr>
<td>R99</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RAY</td>
<td>449%</td>
<td>442%</td>
<td>349%</td>
<td>536%</td>
<td>499%</td>
<td>505%</td>
</tr>
<tr>
<td>R99</td>
<td>75%</td>
<td>74%</td>
<td>59%</td>
<td>90%</td>
<td>84%</td>
<td>72%</td>
</tr>
</tbody>
</table>

Table 1 shows the decline of professors’ salaries with respect to average incomes as well as with respect to their old economic peers. At the beginning of the century the average salary of a professor was normally found in the top 1% of incomes. One professor’s income in our sample reached 16,000 M positioning him well into the top 0.5% of the income distribution.

Somewhat surprisingly the highest relative standing of the professor is found in the years after the Hyperinflation and after Alfred Weber (1923) decried the diminishing income of academia at the annual meeting of the Verein für Socialpolitik. All subject-mean salaries were now well within the top 1% of the income distribution. Top incomes in our sample stand at 29,000 RM which was fourteen fold the average income and within the top 0.2% of the income distribution. Thus professors not only had a high social standing (Ben-David and Zloczower 1961, p.305) they also were among the top earners. Indeed one could argue that the critique by the American economist Laurence Laughlin about his colleagues wishing to “compete with the idle rich” (cf. Stricker 1988) could also apply for Germany, where professors’ salaries were high enough to possibly tempt them into doing just that. Certainly professorial salaries sufficed to put them among the top of their own class, i.e. those people who draw their income mostly from their own labour.

Following the Great Depression the Brüning government imposed deductions on most salaries of state employees of around 20% and were taken over by the Nazis. These reductions also applied to professorial salaries with basic salary and allowances cut. In addition revenues from the KG slumped as the percentage of enrolled students per inhabitant halved (Edding, 1957 p.43) offsetting the ‘positive’ effect by the racially and politically motivated expulsion of many academics at the time (Maus 2013, p.234).

In the first years after WWII, the legislation from 1939 concerning professorial salaries was largely retained. Similarly the numbers of professors hardly moved (cf. Ben-David and Zloczower 1961, p.305). In 1953 new legislation increasing the basic salaries by around 40% in two steps was introduced. The average professorial salaries in our sample surpassed 20,000 DM, such that we can assume that the average professorial income was still found in the top percentile of the income distribution. However, even the top incomes in our sample of nearly 30,000 DM were only close above the 0.5% threshold, which was still easily surpassed 25 years earlier.

Despite the sharply rising student numbers in the early 1960s (Jarausch 1989) and the induced rise of tuition fees, average professorial salaries had now surely fallen out of the top 1%. While the top incomes in our sample between 55,000 DM and 60,000 DM were still...
found in the top 1%, they were now no longer members of the illustrious group of the top 0.5%. Thus as the *Kollegeldreform* ended Professors had already seen a considerable erosion of their salary level. Yet while they had fallen out of the top 0.5%, the KG still allowed some to count themselves among the top 1%.

As pointed out above, we could not find representative information on the remuneration of professors for the 1970s and 1980s, as legal problems severely hindered access to the personal files. In time, when these problems abate, new research will be able to complete of the development of professorial salaries for the twentieth century. For now we will have to confine ourselves to one point of comparison in the year 2000.

At the beginning of the new millennium the threshold of the most well-off percentile stood at 240,000 DM (Alvaredo et al. 2012). By contrast the average income of a professor was 141,000 DM (Hofmann 2001) still putting him in the top 5% of the income distribution but far off the top 1%, let alone the top 0.5%. Even with the highest possible remuneration of 233,000 DM (Hofmann 2001) the professor would no longer surpass the threshold to the top 1%.

Similarly in comparison with average incomes we observe a relative decline in the average income (see below). These findings are in line with the findings of Scitovsky (1966); Maus (2013) and others. In the following we will look for possible reasons for the decline.

**Reasons for the decline**

As pointed out above, the demise of professorial salaries, both with respect to average incomes and top incomes, was a prolonged process. Consequently, it was not one single economic shock or political decision which caused this decline but rather intertwining changes of economic and political circumstances. Thus we will refrain from pointing to single institutional changes as explanations for the long-term development and instead turn to a more abstract general economic explanation of the demise. Naturally, even at an abstract level the underlying economic explanation is in itself highly multicausal. In the following we will discuss three aspects only, which seem to be the most important to us.

The standard economic explanation brought forward by Scitovsky (1966) and Johnson (1966) is that the salaries of professors fell with respect to average incomes as the supply of human capital outstripped demand. While there certainly seems to be some truth to this story, this does not explain why professorial incomes fell with respect to the salaries of other professionals found in the top 1% of the income distribution, most of who like the professor owe most of their income to their human capital (Dell 2007, p.383). In the following we will therefore try to point to the main differences in the developments in demand and supply for professors to that of their old economic peers.

A very popular conception in the current debate on professorial salaries in Germany is that the demise of professorial salaries in Germany goes hand in hand with the abolition of tuition fees. Our research shows that this is not the case. Professorial salaries started their relative decline at the latest after the 1920s in other words, long before the KG were abolished in the 1960s. While this does not mean that a relative decline of the KG, which did occur over the time period under consideration, did not play a part, it does show that the simple narrative connecting pay and the existence of tuition fees falls somewhat short.

The other aspect which we want to highlight is the shift in the nature of the professorial labour market. Against the backdrop of changing demand for and supply of university professors it can be argued that the degree of monopsonistic power in this labour market grew over the period under consideration. Ransom (1993) showed for the case of the US that seniority actually had a negative impact on professorial salaries which he ascribes to higher monopsonistic power in later age. He ascribes this observation to monopsonistic wage

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478 It must be noted that we use a rather undifferentiated concept of human capital here. An attempt to differentiate between academic and non-academic human capital may provide interesting insights into some factor driven pay-differences.
discrimination, as more senior staff are less likely to leave their current institution. Manning (2003) defines the degree of monopsony by the utilization of worker-recruitment and -quit rates. Using this definition we will argue for a rise in monopsonistic power. With graduates already being in an academic environment, their recruitment was and is naturally comparatively simple for academia. In other words, as universities grew, slowly weakening the connection to the circles of the affluent, they became a universe of their own. This detached university had a growing supply of academics who could be recruited at an ever falling relative salary, as they were entrenched in academia with a grown rift to the societal circles of the affluent.

Similarly the very specific nature of academic work (and arguably the very specific nature of academic human capital accrued there) means that quit rates are comparatively low to those one would expect in the private sector. The sole widespread form of economic pressure for higher salaries available for professors was the threat and/or the execution of a change of university.\textsuperscript{479} However, this relative individual power was by and large dwarfed by the power exercised by the state as employer.

So due to the institutional set-up of education the academic labour market in twentieth-century Germany naturally always held a considerable degree of monopsonistic power. Yet, one can argue that in line with the greater centralization of political power and fiscal control Germany from the beginning of the twentieth century onwards (Ullmann 2005) went in line with a lessening competition among the higher education institutions. This culminated in 1965 when the ministers of education of the various states agreed to formally limit the competition for professors among universities (Blomeyer 2007, p.5). This development heightened asymmetries in the professorial labour market drastically and with it the scope for professorial to stay within the proximity of their old peers. Thus in part, the demise of professorial salaries can be explained by the tilting of the asymmetries in negotiation power on the professorial labour against the favour of professors.

Conclusion and outlook

Using individual data we have found that professorial incomes have declined in respect to average income. This echoes the line of argument from Scitovsky (1966), we find that the fall was steeper than his estimates. We also find that professorial incomes have fallen behind those from similarly skilled lines of work in the non-academic sector. While professors were generally still found among the top of the income pyramid at the beginning of the century, this was no longer the case at its end. Thus professors ceased to be among the top of the class of people earning their income from their own work over the course of the century. The cause for this decline is found in a number of reasons: political shifts in Germany, the falling importance of the KG as well as the changing structure of the university system.

With regard to present developments it remains to be seen whether the relative decline of the professorial remuneration continues in the twenty-first century.

References

F. Edding (1957): Die Ausgaben für Schulen und Hochschulen im Wachstum der Wirtschaft -

\textsuperscript{479} Our data indicates that throughout the time periods at our disposal the exercising of this power (measured by the number offers of a professorship) increased the professor’s salary.
Teil II, Institut für Weltwirtschaft, Kiel.
‘Pecunia non olet’, Catholic merchants: a reluctant welcome

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The Catholic Aylwards and their partners traded between all the major Atlantic ports, from Port Royal, to Amsterdam or London. Deeply involved in the transatlantic community, they loaded and unloaded thousands of pounds of tobacco, sugar, indigo, pimento, wool, cotton, fish, and pitch. These commodities were shipped mainly to London, but also to Bristol, the latter being the gateway of England towards its colonies, in North America, the West Indies, and the slave African coasts.480 Recent literature has profoundly argued about the dynamics of the mercantile world, but it has overlooked the connections between the different Catholic groups, during the late seventeenth century.481 Even though politically ostracized, English Catholics played a relevant role in the mercantile world, acting as a well integrated group in which money and interests overcame faith differences. This paper aims perhaps to examine how Catholics moved within the Atlantic scenario and how this community engaged itself within the adverse society. They were able to merge with the wider community and to master political and religious boundaries. The Sussex merchant of Irish origin John Aylward offers an understanding of how Catholicism enabled these businessmen to break through social and political barriers, thus linking the global empires, during decades of warfare, like the years of the Glorious Revolution (1688-89), the Nine Years War (1688-97) or the War of the Spanish Succession (1701-14).

I

John Aylward was a general import-export merchant and banker and one of the key representatives of Catholic involvement in the British Empire during the early eighteenth century. His family was from Waterford, from where he had correspondents, but his business was carried out mainly in England, Spain and France, trading also with the Netherlands, the Flemish provinces and the West Indies. His interests embraced all sorts of commodities such as baize, herrings, stockings, wine and fruit. His business accounts started in the seventeenth century and they were carried out mainly from Malaga. In 1687 he moved from Malaga to St Malo, where he stayed until 1698, except for shorts visits to London. He moved into London in 1698 and he stayed there until his death in 1705. During the 1680s, his business involved Spain and its major port of Cadiz. Through this international port, and the Canary islands the Catholics joined the Spanish transatlantic trade, whilst simultaneously importing and exporting goods in London and the British colonies.482

The trade was dominated by the merchants’ families which for generations could hold control over a route of communication or a certain commodity. The majority of the Catholic

immigrants moved to Spain, France and the Southern Netherlands, where religion facilitated
the settlement.483 Hence, in these territories catholic merchants merged with their
coreligionists, but also with the Protestant society, especially in the Dutch territories where
Catholics were almost half of the entire population and, therefore deeply involved in society
and the economy. Religion played a crucial role within trade and it proved vitally important
even in times of war. During the Glorious Revolution or the Nine Years’ War, English and
Irish Catholics obtained licences and sometimes avoided embargoes, to which the English
fleets were subjected. For instance during the 1650s the king of France, opponent of the
Cromwellian regime, welcomed affluent merchant families, like the Irish Arthurs and
Creaghs, that fled Waterford, due to trading exclusion. This new community settled down
mainly in the North, around the trading centres and after the 1670s, St Malo became the
stronghold of the Jacobite cause, main exporter of wine, and together with Nantes saw the
highest concentration of mercantile population in the whole country. Ties of kinship of these
families allowed economic partnerships between France and the rest of Europe.

II

However, even though in the mercantile community partnerships are based on ties of kinship
or co-religion, one of the main commercial partners of John was Thomas Brailsford, whose
funeral was held at the Church of England parish of St Margaret Lothbury, a church right next
to the most suitable place for a businessman, the Bank of England.484 Despite their different
faiths, Thomas had been one of the main associate of the Aylwards. Their partnerships always
involved William and Francis Hall, Thomas’ nephews and thanks to them the Aylwards were
introduced to the economy of Jamaica, lucrative hub of privateers and smugglers, thanks to its
position and natural resources. On this island, the Aylwards exploited the connections with
the powerful family of the Lynches, which was deeply involved not only in illegal trade, but
also in politics since in 1671 Thomas Lynch became governor of the island.485

Thomas Brailsford and John Aylward interests were varied, ranging from fruit and
sugar to lawns and chests of platilas. In the business accounts they also listed Barbados and
Jamaican men, and wood from Gambia. In the late 1680s beyond their involvement in the
African slave trade they were discussing textiles, precisely calicoes from the East India
Company and a huge exchange that involved Amsterdam, Bristol and Paris. In the account
John mentioned also a deal of casks of silver from Marseilles to Paris. The interests of the
Aylwards were many and various. The goods traded ranged from lawn to Virginia tobacco,
brandy wine and paper. Goods coming from the Americas were shipped to the major
European ports. Alum, pepper, hats, woollen drapery of English manufactures, rice, raisins,
ginger and nutmeg as well as salmon and beeswax, were moved from one continent to another
with transactions that always involved at least three or four participants. There was a never
ending flow of all sorts of commodities from calicoes to gold buttons, gold thread and
socks.486 John’s interests were not confined to the European market and in the 1690s, part of
his profits were yielded by the Indian trade. In 1694 his cargoes were sailing back and forth to
the West Indies, and with the support of Edward Creagh, member of a wealthy Catholic
family of Irish origin, he was closing profitable exchanges in New Spain, where his partners
were selling English and Dutch commodities. These goods were mainly cinnamon, needles,
mask and thimbles.

483 J. Parmentier ‘The Irish connection: Irish merchant community in Ostend and Bruges during the late
484 PRO C110-152. Brailsford’s papers.
485 N. Zahedieh ‘The merchants of Port Royal, Jamaica, and the Spanish Contraband Trade, 1655-1692’, The
486 AY103 Business Accounts, Accounts, Bills for merchandise to Dec. 1689.
All the accounts of John were mainly based at the London firm of Power & Hill.\textsuperscript{487} There is no evidence that the founders of the firm were Catholic or Irish, thus showing that economic networks were not built up exclusively around co-religion. This trustworthy Merchant House followed John’s movements for almost two decades. The 1680s was a decade of Catholic rehabilitation, culminating in the ascension to the English throne of the Catholic James II, in 1685.\textsuperscript{488} Thereby, it was probably the most profitable for the Aylwards business. In 1683 John was dealing, through London with one of his major business partners, Walter Ryan. The business was about a convoy of bales of cloth and men’s silk.\textsuperscript{489} Bristol and London were the main English harbours and the majority of John’s partners were based there. Outward journeys involved a wide range of goods, from French wine to Italian corn, Spanish \textit{raisins solis}, to oil, to \textit{sherrys} oranges. One of the many partners of John was the Londoner, William Grammar. He was based in the Dutch territories, from where he shipped mainly wheat. In one of the many accounts he registered and complained about duty customs, fee entries, freight and \textit{land weighter}.\textsuperscript{490} With Grammar, John had a long-term partnership and their business also involved the Americas.

However, the Aylwards’ trade also involved Italy, stronghold of Catholicism. During the 1690s the Italian market was no longer in its heyday, but was still prominent for corn, wheat and textiles. John dealt mainly with the Italian territories of the Spanish Empire, even though also from the north, mainly Genoa and Livorno, he exported white lemons and wheat. In 1685 from Manfredonia, Apulia, a ship called \textit{Susanna} was insured with her cargo of corn.\textsuperscript{491} From Sicily and Calabria he loaded silk. Catholicism formed associations that overcame nationalities and political boundaries. John was actively involved in economic exchanges with the Spanish Empire, many of his letters had been sent back and forth between central and south America, from Mexico, Cartagena in Venezuela and Lima in Peru. Huge concern was expressed by Robert Butler, John’s nephew, when in 1688 Lima was destroyed by three earthquakes, a catastrophe with detrimental consequences for commerce. Beyond Italian and American interests, during the turbulent late decades of the seventeenth century the Aylwards focused also on the Dutch territories, dealing with Rotterdam or Amsterdam. Contacts with the Flemish territories had always been frequent, thanks to the bustling ports of Ostend and Bruges where a multifaceted group of Catholic merchants was attracted by the social, religious and economic peculiarities of the region, being part of Catholic Spanish rule until 1713.\textsuperscript{492} However, also the ports of the Dutch Empire, in particular Amsterdam and Rotterdam offered splendid opportunities of being involved in trade from the south of Europe, to the north and engagement with transatlantic trade as well. Therefore, even in these hectic docks John’s linens and wheat were loaded and unloaded. His main partner in the Dutch lands was always William Gramar, but business was carried on also through Thomas Brailsford and his associates.

\section*{III}

If Catholicism did not imply exclusiveness in choosing associates, certainly it secured safer strategies in time of war. ‘no ship is going or coming from London, … yet the Hollanders still

\textsuperscript{487} \textit{AY104 Business Accounts}, Accounts, Bills for merchandise to Dec. 1690.


\textsuperscript{489} \textit{AY 97, Business Accounts}, Accounts, receipts, bills of Exchange for merchandise to Dec. 1683.

\textsuperscript{490} \textit{AY 98, Business Accounts}, Accounts, receipts, bills of Exchange for merchandise to Dec. 1684; \textit{AY100, Bills}, receipts for merchandise to December 1686.

\textsuperscript{491} \textit{AY99 Business Accounts}, Accounts for merchandise to December 1685.

had permission to go and come’. During the last decade of the seventeenth century the major European countries found themselves in the throes of frequent battles and conflicts, however the Aylwards continued their business, avoiding the political and economic turmoils, and openly defying the Navigation Laws. 493 During the Glorious Revolution or the Nine Years War, John and his partners resorted to Dutch vessels, deemed secure when it was hazardous to employ French partners or invest in French commodities. 494 In 1692 Daniel Arthur, an Irish merchant writing from Spain, was anxious about his and John’s linens, but he was hoping for peace to come shortly thereafter, even though any news was coming from the French besieged of Namur Castle. 495 His business spanned uninterrupted over two decades. He skillfully adapted himself to the most diverse political settings. As a merchant of Irish origin, he made use of his roots and his Catholicism, to be involved in the Spanish and Atlantic trade through the major port of Cadiz. He avoided English embargoes during the Glorious Revolution and kept dealing with Italy, France, Spain, the Netherlands and the Americas even at times of international conflicts. Through the help of Thomas Brailsford and his firm Peers & Took, at the end of the 1680s he dealt through the harbour of Fuengirola, near Malaga, avoiding accurately French linings or French commodities in general, imported only by Dutch privateers or English men of war. Whereas at the same time recurring to French privateers to ship goods towards the West Indies. In 1691 John Aylward, through his relative in Ostend Andrew Browne, was dealing with a cargo of butter, and Andrew, involved in the civic and political life of the town was also assuring his friends’ interests against French troops. 496 In 1696, in Dunkirk, John, through his cousins the Comerfords, was conducting business between Holland and Ireland. 497 Despite the troublesome period the exchanges were still closed successfully.

Recently much has been written by historians about Catholic marginalization in Protestant society during the eighteenth century. It has been pointed out the consequences of political strategies on this community. During the seventeenth century, in all the English territories, the Catholics faced penal laws in order to keep them out of the political and civic life, namely out of the power. During the second half of the eighteenth century, the emancipation of Catholics was not yet complete. The penal laws were still in force but the fear of persecutions had faded away and public attitudes towards them were less harsh, if not yet tolerant. Formally small concessions had been granted by the last two decades of the century. Integration did not seem a foreign concept even though it had not yet been completely accomplished. Officially they were restrained from engaging in English political and civil life, but these liabilities did not bar Catholic investments in government companies as well as the undertaking of political careers. 498 The community was fundamentally defined through bonds of amity and marriage, but nevertheless this supposedly ‘marginalized community’ did indeed merge with the Protestant group. This evidence calls into question the extent to which the Catholic community was marginalized and highlights the dynamic nature of merchant and financial enterprises within the Empire. The dwindling of the Catholic community and its declining influence nationally remain valid interpretations, yet these processes did not entail sectarianism or social ostracism, but simply led to a rejuvenated role of a community within the modern English society. Catholic merchants whether Irish, French, English or Spanish were able to cooperate and build up connections that created coherent trading zones. Catholicism may have caused civic impairment, nevertheless it allowed these

493 PRO C 110-152. Halls to Brailsford, Nov. 21, 1688, Brailsford Papers.
494 AY 18 Business Correspondence.
495 AY7 Business Correspondence.
496 AY 19 Business Correspondence, Letters to John Aylward from Andrew Browne at Ostend and Bruges, Aug. 1691 - July 1692, Jan-Mar. 1701.
497 AY 9 Business Correspondence, Miscellaneous letters to John Aylward, Mar. 1694 - Nov. 1699.
men to manoeuvre beyond national borders and employ chameleonic strategies in periods of warfare. During certain times, they were able to play with their identities, recurring both at ties of nationality, and ties of co-religion or kinship. The Aylwards were the figureheads of a community that proved resilient and that in their quest for wealth was able to vanquish the borders of the European empires.
The rural community through the eyes of the land-agent on the Marquis of Anglesey’s Dorset and Somerset Estate 1812-54

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This paper will explore the rural community through the estate archive of the Dorset and Somerset estate of the Marquis of Anglesey which includes the diurnal correspondence, the estate vouchers and accounts. It will examine three broad themes which form part of the corpus of a wider body of research. Firstly, it will discuss the tripartite relationship between landowner, agent and tenant and explore this association through tenant indebtedness; repairs and improvements and schemes to alleviate tenant distress. Secondly, this relationship provided tenants with political status and the right to vote. Therefore an assessment will be undertaken of the various social and economic tools invoked to ensure tenant loyalty on polling day. Finally, it will consider the farm labourer for whom economic survival could be precarious. The predicament of this group was often affected by the financial stability of the tenant farmer. When economic conditions deteriorated the labourers often found themselves dismissed and in poverty. In 1830, violence erupted across southern England in the form of the Swing riots. Historians from Hobsbawn and Rudé onwards have argued that the causes were individualistic and local in nature. This paper will investigate how the estate dealt with these riots and their consequences. Surprisingly little research using the land-agents records has been undertaken, therefore, archive provides a substantial body of previously unexplored evidence.

William Castleman began to work for the Earl of Uxbridge (later the Marquis of Anglesey) in 1814 shortly after he inherited his Dorset and Somerset Estate. The correspondence suggests the estate properties were in a poor condition, with many in need of repair.499 Even though Castleman sent repeated notices and resorted to the legal process, by 1817 little had changed. In frustration he wrote to the Marquis, “I am sorry to say that many of the buildings are still in a most ruinous state”.500 In 1818, a detailed survey of the estate was undertaken and a schedule of repairs sent to every tenant. Only one appears to have survived, that of Robert Davis of Yenston farm. It was usual for the cost of building repairs to be shared, the owner providing the materials and the tenant the labour.501 In this illustration of a working partnership between the Marquis of Anglesey and Davis, there is little difference in the types of repair undertaken by either party. The estate expended £41 12s 8d which fulfilled its covenants within the lease.

Improvements like repairs were sometimes jointly funded. Drainage although an old established practice, was, during this period, still classed as a major advancement.502 In the south-west, poorly drained land during warm wet summers witnessed a rapid increase in the small water snail which is host of the liver fluke. The estate vouchers hint at – but considerable research is still needed to quantify – the amount spent on drainage. In 1831 alone some £740 was spent draining land around Stalbridge. A drainage indenture for Bradford Leaze between the Marquis of Anglesey and Ralph Ironside again demonstrates another form of a landowner tenant partnership. Ironside was responsible for supplying the labour being

paid for some and contributing the rest gratis. The Marquis paid for the stone and its carriage to construct the water channels.

F.M.L. Thompson argued that at the end of the Napoleonic Wars there was a series of ‘short crises’ primarily caused by good harvests and consequent low prices. If somewhat more severe, they were in effect little different from similar incidents which had occurred during the war years. The first crises occurred in 1814-15, and the most serious in 1821-23 when the return to the gold standard created a deflationary effect on prices.\textsuperscript{503} Abundant harvests occurred in 1833-36 and a substantial fall in prices caused great hardship for the tenants on the Marquis of Anglesey’s Dorset and Somerset estate. Unlike Thompson’s model between 1814 and 1836, almost yearly there are a number of tenants seeking abatements and allowances on their rent or quitting their farms because of financial ruin. However, the agent was aware that elsewhere the situation was different for he wrote in 1822, “I am happy to find that the Distress which pervades this part of the County does not prevail in other districts where Lord A has property”.\textsuperscript{504} The conditions described by Thompson are illustrated in the improvement or growing indebtedness of the tenant farmers. The easiest way to measure this is by arrears. Between Lady Day 1816 and Lady Day 1817 there appears to have been the beginnings of recovery. Castleman reported that remittances had increased from £5,700 in 1816 to £7,727 10s 3d in 1817 an increase of 26 per cent. At the same time, arrears fell from £12,483 2s 9d to £8,044 18s 10d a decrease of 35 per cent. Data is also available for the crisis of 1821-3 when rent arrears rose (see table 1).\textsuperscript{505}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{increases_in_tenants_arrears.png}
\caption{Increases in Tenant Arrears from 1821 to 1822}
\end{figure}

\textsuperscript{504} D/ANG/B5/31 William Castleman 22 Feb. 1822.
\textsuperscript{505} D/ANG/B5/32.
At the autumn audit of 1828 although some remained in arrears, Castleman reported
that the tenants in general “paid fully to my expectation”.\footnote{D/ANG/B5/40 William Castleman 23 Oct. 1828.} 1829 was a catastrophic year with
an outbreak of liver fluke causing the death of large quantities of livestock. Castleman
assembled a document listing the principal losses among the estate tenants. He named 34
individuals, whose losses ranged from 1 cow valued at £7 to a 1,000 sheep valued at £1200 In
order to counter the immense distress of the tenant farmers rebates on rent were allowed
ranging from 18 to 25 per cent, or, £2 to £300.

The 1832-36 wheat harvests were excellent and consequently the price fell from 58s
had been so low for the last two years that he was convinced the tenants, in general, had not
“produced one sixpence to pay rent”.\footnote{D/ANG/B5/48 William Castleman 21 Jan. 1836.} The close proximitely of this crisis to the Swing Riots
prompted quick action by the estate. They allowed 5 per cent rebate immediately providing
the half year’s rent was paid in full. A further 5 per cent was allowed on improvements
carried out by ‘draining, trenching or other improvements… on the enclosed Meadows and
Pasture land’ on the tenants’ farm. It was believed, that as the scheme became operational it
would employ any surplus labourers, thus mitigating any charge on the parish or further
rioting as poverty and starvation once again loomed.\footnote{Ibid.} This, Castleman hoped, would keep
the “pauper population in this neighbourhood orderly”.\footnote{D/ANG/B5/26 William Castleman 20 Nov. 1820.}

The Marquis of Anglesey held patronage of the nomination Borough of Milborne Port
which until the Great Reform Act of 1832 returned two men to Parliament. Borough politics
was an expensive business, especially when contests occurred. A battle for control of the
borough broke out in 1819, between the Marquis of Anglesey, and Lord Darlington. Both
invested heavily in building new housing stock to attract compliant voters. It has been
estimated that between 1819 and 1825 the Marquis spent around £15,698.\footnote{S. G. Mackay, Milborne Port in Somerset (Milborne Port, 1986), p. 139.} Feaver, the
election agent of Lord Darlington, alleged the opposition had expended more than £40,000.\footnote{D/ANG/B5/40 William Castleman 17 July 1822.} Darlington was finally defeated in 1824 when the Marquis of Anglesey arranged an exchange
of land in Dorset for the rectory of Milborne Port. The following year the Marquis bought
Darlington’s property for the sum of £5,901.

Those who held the franchise usually had two or more votes: the first was expected to
be cast in line with the wishes of their landlord, the second at their own discretion. This meant
the electorate expected to be feted and canvassed. In November 1820 William complained
that friends of Lord Darlington were ‘treating’ the voters at a private house with free drinks,
and was subsequently worried that some of the electorate had already changed sides.\footnote{T. Jenkins, ‘Milborne Port’ in D. R. Fisher, (ed.), The History of Parliament: The House of Commons 1820-
1832 (2009) accessed via www.historyofparliamentonline.org} In response, Castleman ordered the renovation of the ‘long room and cellar’ at Canon Court farm
and stocked the cellar with some £200 worth of alcoholic beverages.\footnote{D/ANG/B5/26 William Castleman 20 Nov. 1820.} On Election Day itself,
the voters anticipated being rewarded with food and beverages for turning out. Castleman’s
vouchers recorded the following monies having been spent on the election dinner of 1831.
Estate Vouchers Dorset and Somerset Estate of the Marquis of Anglesey

<table>
<thead>
<tr>
<th>Description</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>73 Dinners at 2/6 each</td>
<td>£9.2s 6d</td>
</tr>
<tr>
<td>6 Dozen Sherry Wine</td>
<td>£18</td>
</tr>
<tr>
<td>3 Dozen Port Wine</td>
<td>£9</td>
</tr>
<tr>
<td>30 Mugs Punch at 6/- each</td>
<td>£9</td>
</tr>
<tr>
<td>Dinners for 10 musicians</td>
<td>£1.5s</td>
</tr>
<tr>
<td>Beer</td>
<td>£0.12s</td>
</tr>
<tr>
<td>Desert</td>
<td>£0.7s 6d</td>
</tr>
<tr>
<td>Pipes and Tobacco</td>
<td>£0.5s</td>
</tr>
<tr>
<td>Breakage</td>
<td>£1</td>
</tr>
<tr>
<td>Messenger to Horsington and Candle</td>
<td>£0.2s</td>
</tr>
<tr>
<td>Servants</td>
<td>£0.10s</td>
</tr>
<tr>
<td>Paid part of Mr Steel's Fare by Coach</td>
<td>£0.2s</td>
</tr>
<tr>
<td>To Milborne Port</td>
<td>£0.5s</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>£49.9s 0d</td>
</tr>
</tbody>
</table>

By voting with their landlords, they gave credence to his political decisions and endorsed his right to make decisions on their behalf. O’Gorman contends that it was almost impossible for a patron to exert absolute control over the electorate. The Marquis of Anglesey would, and did, evict tenants who voted against him, or as in the case of one tenant, called in his mortgage of £290 and gave him three months to pay it off. While the Marquis conferred on his tenants’ political status, he expected them to vote in his interest and would punish those who did not.

The agricultural labourers were the lowest section of society. During the years of the Napoleonic Wars employment in the rural community had increased as wastes and commons were brought under the plough. At its end, this land passed out of cultivation and resulted in increased agricultural under or un-employment, men returning from the army created further problems, particularly in southern England. Consequently, wages fell in the south but continued to rise in the north as industrialization continued to grow. Trying to provide adequate relief for this group was not always simple. The poor rate was a compulsory charge levied by the parish and the monies raised were used for the upkeep of the poor. Hobsbawn and Rudé argued this tax was unpopular because it was levied on everyone even those who did not employ any labour. The estate tried to keep this rate to a minimum so the tenants did not become dissatisfied. However, in times of financial difficulties, the tenants would simply sack the labourers. In 1821, Castleman issued a memorandum to try and stop this practice, suggesting it was a false economy. By removing the labourers, a heavier burden was bequeathed upon the poor rate. Throughout the 1820s the situation continued to deteriorate culminating in the wet summer of 1829, flooding washed hay crops away and the harvest was dismal. This was followed by a severe winter which saw many labourers laid off as the ground was frozen for weeks. The situation was exacerbated by a general economic downturn. Labourers had, for some years, been complaining that their traditional work had been taken over by the threshing machine. The Hammonds had argued that threshing by hand was one of the few remaining forms of winter work, and sustained the labourers’ standard of living above starvation level. Castleman did not believe that in 1830 unemployment was any higher than

515 D/ANG/B4/54 Estate Vouchers for 1831.
in previous years.\textsuperscript{520} Action against agricultural machinery was not new on the Marquis’s estate. In 1822 at Charlton Horethorne, placards had been erected protesting against the threshing machine in the parish and it had consequently been severely damaged by fire.\textsuperscript{521} Although the Swing Riots are recognized for their destruction of threshing and other agricultural machinery, their usage was not the primary cause. Factors which contributed varied from poor wages, enclosure, grinding poverty, political crisis at home, parliamentary reform and revolution on the continent.

There has been considerable recent research by Griffin and Jones, as to whether the Swing riots constituted a movement. Jones suggests, Swing formed a ‘meta-movement’, a series of fundamentally local events connected by broad association, but were without wider leadership, ambitions or principles.\textsuperscript{522} This pattern fits the riots on the Marquis of Anglesey’s estate. Two main areas of Dorset were affected, the eastern plain stretching eastwards from Dorchester to Wimborne and the north east between Shaftsbury and Stalbridge incorporating Cranborne Chase. At Hanley, almost all the village labourers and those of the neighbouring farms, around 60 in number took part.\textsuperscript{523} The dispute was as much about the changes in their common rights over the Chase, as it was about under- or un-employment and low wages. This was exactly the type of local grievance which gave Swing riots its individuality. A meeting was held, and a level of wage agreed, whilst the labourers consented to return to work. The riot at Stalbridge was less severe, and I. Jones maintains it was little more than a riotous assembly. The machine which had stood in Stalbridge Park for more than 20 years remained untouched.\textsuperscript{524} There is no mention of the number of rioters at Stalbridge and the men prosecuted from both actions remained small.

Attempts were made to quickly get the surplus labourers into employment with their wages covered by the Marquis. An immediate rent allowance was granted to the tenants of 10 per cent. A plan was put forward to build eight or ten cottages at Stalbridge with half an acre of land each for the labourers, the cost of construction was £1,000 10s 3d.\textsuperscript{525} The exercise was repeated at Bradford, Castleman perceived the populations of these two places as orderly and deserving of the estate’s resources. Griffin argues there was no clearly defined end to Swing and Hanley is a case in point, tensions continued, occasionally erupting in violence, suggesting that the local grievances which had culminated in Swing continued to rumble on.\textsuperscript{526}

In conclusion, the correspondence of William Castleman provides myriad minute detail relating to the Dorset and Somerset estate of the Marquis of Anglesey. Although the examination of this archive is still ongoing, it adds depth to the existing economic and social knowledge of the rural community. Despite the extensive work of agricultural historians, our comprehension of the machination of the socio-economic relationships within the rural world remains, relatively, under-researched. Micro-studies such as this can begin to build a base against which other estates might be studied. It is hoped that this will eventually allow historians to compare and contrast socio-economic trends at local, regional and national levels, in a way that has hitherto been impossible. This study provides a rare insight into the extent of the role of the land-agent as part of this community, and the magnitude of the part he played in managing an absentee landlord estate.

\textsuperscript{520} D/ANG/B5/42 William Castleman 4 Dec. 1830.
\textsuperscript{521} D/ANG/B5/31 William Castleman 30 Oct. 1822.
\textsuperscript{522} I. Richardson, “Two steps forward; six steps back’: the dissipated legacy of Captain Swing’ in S. Poole and A. Spicer, (eds.), Captain Swing Reconsidered: Forty Years of Rural History from Below (Great Britain, 2010), p. 90.
\textsuperscript{523} D.H.C. D/ANG/B5/42 William Castleman 25 Nov. 1830.
\textsuperscript{524} I. Jones, The Stalbridge Inheritance 1780-1854 (Dorchester, 1993), p. 75.
\textsuperscript{525} Jones, Stalbridge Inheritance, p. 80.
The effects of police on crime in the Grand Duchy of Baden, 1829-77

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This paper estimates the effect of the strength and efficiency of police forces on the security of property rights in the Grand Duchy of Baden between 1829 and 1877 using information about registered theft rates, the number of Gendarmes and state-controlled local police forces from 67 districts (‘Ämter’) of the Grand Duchy of Baden for the years 1829, 1832, 1837, 1842, 1847, 1852, 1857, 1862, 1867, and 1877.

The effects of police on registered theft rates are not clear a priori. An increase in the efficiency of police or a rise in the number of a district’s police force could lead to higher registered theft rates, because more delinquents were caught and prosecuted. Alternatively, a change in the efficiency or number of the police force could lead to a decline in registered theft rates, because of a reduction in the actual rate of crime. Estimation results could furthermore be biased, if the decision to allocate more or better trained police forces was dependent on the number of registered thefts. In order to solve this problem of endogeneity, I employ an IV strategy.

Police Forces in the Grand Duchy of Baden

During the period under investigation two different police forces operated in the Grand Duchy of Baden: a security police force called ‘Gendarmerie’ financed and controlled by the central state, and local police forces that were run by the communes.

The Gendarmerie was established according to the French blueprint. Its focal mission was the maintenance of law and order in the countryside. This task mainly intended the control of beggars and vagrants and the prevention and prosecution of related crimes like theft and robbery. The Gendarmerie was founded in 1829 by reforming its less efficient preceding organizations (Teufel 1999; Wirsing 1990).

The Gendarmerie was organized like a military force with strict discipline and clear command structures. Gendarmes were mainly former soldiers. The Gendarmerie paid attention to pick young and fit soldiers rather than old veterans. According to the annual statement of account of the Commander of the Gendarmerie there existed a good esprit de corps and patriotic spirit. Together with rewards of good performance through extra pay, promotion and public acclamation, this implies a high motivation within the force.

Gendarmes were garrisoned in groups of two and more officers in different stations in the administrative districts, called ‘Ämter’. Yet, the administrative districts differed in the number of employed gendarmes.

The second police force, the local police, was less homogenous than the Gendarmerie. During the nineteenth century two types of local police existed. In most communes local police forces were controlled by majors but in some towns the central state took away police powers from the commune and assigned responsibilities to the district magistrates (Eibach 1994; Teufel 1999).

In contrast to the state-controlled police forces, communal police forces suffered from organizational and personnel drawbacks. Communal-controlled police forces often consisted of the local poor or day labourers and thus had no adequate training. Indeed, the Gendarmerie and district magistrates complained that local policemen were lousy armed and not seldom old, lame and deaf; some even drank alcohol on duty and would have needed to be supervised.

527 Cf. Accounts of the Commander of the Gendarmerie (Dienstvisitationsberichte der Gendarmerie), Generallandesarchiv Karlsruhe, Section 236, Fascicles 8098-8100, thereafter cited as GLA 236/8098-8100.
by the police rather than being policemen themselves. Because the communes used the police as a possibility to reduce poor relief expenses, local police forces were badly paid and policemen were forced to do several jobs and hence could not fully concentrate on police work. As a consequence, policemen were hardly able to enforce laws, norms and regulations as well as to preserve the peace and prevent citizens from property offences. Especially, enforcement of laws vis-à-vis members of the upper classes was difficult because of economic dependencies and membership in social networks.528

Because of these differences between communal and state-controlled police forces, one would expect that the latter were more efficient. State-controlled police forces were better trained and paid. State-controlled police forces had also higher wages than communal forces allowing policemen to concentrate fully on police work. Moreover, there was a special fund from which outstanding work and effort was rewarded.529 As in the case of gendarmes, this should have increased motivation.530

The Model

It would be an oversimplification to interpret the registered theft rate as a constant share of the actual theft rate.531 The rate of registered thefts depends on several factors including the actual theft rate, the ability of the police to detect criminals and report their crimes to the courts (which is dependent on the strength and efficiency of the police), the efficiency of the district courts itself, the criminal law that defines crimes and, lastly, the society’s propensity to report crimes to the police and the courts.

Although the actual theft rate is not known, we do know the factors that influence the decision to commit a crime. On the one side these are socio-economic variables like the difference between rich and poor, the possibility to reach economic and social aims and the availability of loot. Further factors are the level of fines and the probability of detection and prosecution through police forces. The latter, again, is a function of the strength and efficiency of the police forces.

The discussion of the actual theft rate is based on the economic theory of crime developed by Gary S. Becker who introduced the analysis of human behaviour into economic theory (Becker 1968, 1996; Becker and Landes 1974). According to Becker engaging in criminal activities is a question of economic incentives. Individuals compare expected (monetary) rewards from illegal activities with the secure outcome of a legal activity. In this model, rewards from illegal activities are interpreted as a random variable that is dependent on the probability of detection and the level of fines. If expected rewards from illegal activities are higher than those from legal activities, an individual would engage in criminal behaviour.

Note that the strength and efficiency of the police forces influence the registered theft rate in two ways. First there is a direct effect. Because of more or better police forces more thieves are caught and trialled by the district courts and therefore registered. There is also an indirect effect. Because of more or better police forces more thieves are caught. Theft

528 Staatsarchiv Freiburg, section A 89/1, fascicle 12, thereafter cited as: StAF A 89/1, Nr. 12 (Oberamtmann Böhmer, Bezirksamt Lörach to Regierung des Oberheinkreises, 17 April 1837), GLA 236/8162 (Oberamt Heidelberg to Regierung des Oberheinkreises, 1 January 1836), StAF A 88/1, Nr. 247 (Bezirksamts Schönau to Regierung des Oberheinkreises, 25 April 1838) and several Visitationsberichte der Gendarmerie in the years between 1834 and 1859 (GLA 236/8098 and GLA 236/8099).

529 See GLA 236/8162 (Sitzungsprotokoll des Innenministeriums 22 August 1853).

530 The increase in the quality of state-controlled local police forces is confirmed by the reports of the ‘Landeskommissäre’ during the 1860s’. Cf. e.g. Großherzogtum Baden. Joachim Eibach describes the same development. Cf. Eibach (1994).

531 This view is supported by several studies, which question the usability of criminal statistics as a proxy for the state of crime during the nineteenth century (Cf. Gatrell and Hadden 1972; Tobias 1972; Zehr 1976). These authors come, however, to different conclusions whether or not criminal statistics are a useful proxy for real crime rates.
therefore becomes more costly which reduces actual thefts. As a result fewer thieves are caught by the police and trialled by the district courts and therefore registered.

There is one caveat to these considerations. It is possible that the decision to allocate more or better trained policemen to a certain district is dependent on the district’s reported theft rate. This problem of endogeneity exists in the case of the Gendarmerie while it does not seem to be an issue in the case of the decision to introduce more efficient state-controlled police forces.

In the case of state-controlled local police forces there are two reasons why it seems that the decision to introduce state control was exogenous. First, government was concerned about oppressing revolutionary movements. Because revolutionary circles and propaganda were centred in the bigger cities it was reasonable to increase control over these strategically important towns. The introduction of state-controlled local police forces had thus political reasons (Siemann 1985). Second, during the nineteenth century the fight against crime was not the principal task of local police forces. Police work included duties like enforcing market and fire regulations as well as regulations on public health and morality. Fighting crime and the investigation of criminals was thus only a smaller part of overall police work. This view is sustained by the fact that specialized criminal investigation departments were not created before 1876. A last indicator that the introduction of state-controlled police was exogenous to registered thefts during the nineteenth century is the fact that government planned to realize a fixed ratio of police to inhabitants (Wirsing 1990).

Because of data limitation, not all variables mentioned in the theoretical consideration could be incorporated into the empirical model. There is no good measure available for the efficiency of courts and the propensity to report a crime. The level of fines also could not be measured directly. Yet, there was a change in the criminal code in 1852 concerning, inter alia, the definitions of a crime and the fine level. The change in the fine level can thus be absorbed by the introduction of time fixed effects. As a rough approximation for court efficiency I included the distance to the district court’s supervisory agency. Registered theft rates may be lower if control through the supervisory agency is weaker. This may be the case if the distance between the supervisory agency and the district court is higher. Court efficiency and the propensity to report a crime to the police may also be captured by district specific random effects.

Data availability is better for most socio-economic indicators. The empirical model contains the growth rate of population on district level, the level of urbanization (e.g. share of people living in towns with more than 2,000 inhabitants), and the level of industrialization. The latter is measured as the share of a district’s working capital, as it was assessed by the financial administration, over the total taxable capital.

The variables that measure the effect of the strength and the efficiency of the police force on registered theft rates are described above. The effect of the strength of the police force is estimated by the number of Gendarmes per 1,000 inhabitants. This variable captures the difference in the size of the police force across districts. Because the decision to allocate Gendarmes to a specific district may be dependent on the district’s registered theft rate, I introduce an instrumental variable: the density of population.

In order to measure the efficiency-effect, I introduce a dummy variable that is 1 if the police force is financed and administered by the district. In contrast to the Gendarmerie this variable measures the difference in police efficiency on the local level.

The model also includes random and time fixed effects in order to control for district and time specific characteristics. The number of districts was not stable over time, because some districts were merged and reshaped. This may bias the results of the regression, if inefficient districts (e.g. districts with inefficient courts) were re-organized more often.
Therefore I estimate the random effects and the IV model with a balanced panel of 37 districts and an unbalanced panel with 67 districts.\textsuperscript{535}

**Results**

The results of the regression analysis are depicted in table 1. For the interpretation of the results it is important to remember that the dependent variable measures court activity and not actual theft rates.

The level of industrialization has a positive effect on the number of registered thefts and is significant throughout all specifications. This may have two reasons: first, in more industrialized districts the rewards from a theft could be higher, because industrial goods were more valuable and cash transfers were more common; second, the propensity to report a crime to the police or the district court could be higher than in rural communities where traditional conflict solving mechanisms were more common. The other socio-economic variables are not, or only slightly, significant.

| Table 1: Random Effects and IV Regression of Registered Thefts per Th. Inhabitants |
|-----------------------------------|-------|-------|-------|-------|
| Registered Theft per Th. Inhabitants | (1) random balanced | (2) IV balanced | (3) random unbalanced | (4) IV unbalanced |
| Industrialization | 10.10*** | 12.93*** | 12.42*** | 14.45*** |
| | (2.64) | (3.96) | (3.51) | (4.63) |
| Urbanization | 0.408 | 0.313 | -0.215 | -0.188 |
| | (0.58) | (0.39) | (-0.40) | (-0.34) |
| Growth Rate of Population | -0.0140 | -1.371 | -0.337 | -1.497* |
| | (-0.02) | (-1.25) | (-0.53) | (-1.68) |
| Gendarmes per Th. Inhabitants | 1.475*** | -6.367 | 1.080** | -6.052* |
| | (2.64) | (-1.51) | (2.09) | (-1.69) |
| State Controlled Local Police | 0.896*** | 0.555* | 0.970*** | 0.782*** |
| | (2.99) | (1.71) | (3.80) | (3.10) |
| Distance to Superv. Agency | 0.00685 | 0.00596 | 0.00544 | 0.00539 |
| | (1.19) | (0.97) | (1.25) | (1.21) |
| Constant | 1.587*** | 3.332**** | 1.754*** | 3.252*** |
| | (3.48) | (2.73) | (5.25) | (3.57) |
| Observations | 370 | 370 | 571 | 571 |
| $R^2$ | 0.41 | 0.42 | 0.42 | 0.43 |

\textsuperscript{z} statistics in parentheses
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The effect of state-controlled police on registered theft rates is positive and significant in all specifications. The more efficient state-controlled police forces seem to have been better than their communal-run counterparts in detecting thefts leading to more trials.

The coefficient of the Gendarmerie is positive in the random effect specifications but turns negative in the IV specification. In the case of the unbalanced panel the negative sign is significant.\textsuperscript{536} The decision to allocate Gendarmes to the districts thus seems to have been dependent on the number of registered thefts in the district. After controlling for this effect, the number of Gendarmes per 1,000 inhabitants has a negative effect on registered theft rates.

\textsuperscript{535} In total there were 82 districts.
\textsuperscript{536} In the balanced panel the coefficient is significant at the 15% level.
In terms of magnitudes the effect of the Gendarmerie is far the biggest. In specification (4) a 1 per cent change in the number of Gendarmes per 1,000 inhabitants leads to a 0.77 per cent change in the number of registered thefts per 1,000 inhabitants, compared to a change of 0.2 per cent for the level of industrialization and a 0.29 per cent change for state-controlled police forces.

**Conclusion**

In this paper I test the effects of a better trained and a bigger police force on registered thefts using information from 67 districts in the Grand Duchy of Baden during the period 1829 to 1879. Better trained state-controlled police forces seem to increase the registered theft rate. In this case the direct effect of police on registered crime described above prevails. A bigger police force, after controlling for endogeneity, reduces registered theft rates. In this case the indirect effect prevails. More police increases the detection rate and thus c.p. the costs of criminal activities leading to a lower rate of registered thefts. However, the latter result is less robust than the effect of state-controlled police forces.

**References**


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537 In the case of the police dummy I use semi-elasticities.
What drove economic growth in the nineteenth century? 
The case of Switzerland’s specializations, 1885-1913

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1. Introduction
The question of economic growth is central in economics and a lot has been done to understand the factors that make economic performance a success. As the literature on Swiss economy is still fragmented, we can highlight the role of the “selective protectionism” (David 2009), the role of institutions (David and Mach 2006), the size of the country (Bairoch 1990) or the choice in industrial specialization (Charles 2013), to explain the economic performance.

It seems obvious that Switzerland’s economic growth benefits from all of these facts. Without forgetting other explanations, this article focuses on the role of the de-concentration and the choice of an intra-industry specialization to explain the ‘Swiss miracle’. We base our analysis on a new database, highly disaggregate, that gathered exports and imports flows of more than 1,100 products during the period 1885-1913.

2. Highlights specializations during the nineteenth: Sources and Methods
The first step of an historical analysis is to collect data. This is sometimes hard to complete as historical data might be rare according to the period or the country the analysis targets. That is typically the case of Switzerland. Indeed, few works are made on the Swiss economy during the nineteenth century and especially on its specialization or its economic growth. If we found some data on GDP per capita (Maddison 2001), data on external trade are still missing.

Being confronted with these lacks, we have constructed a new historical database on Swiss external trade. We gathered export and import flows from the Swiss statistical yearbook called ‘Statistiques du commerce de la Suisse avec l’étranger’ held at the External Trade Statistics Office in Bern. The dataset contains the totals of annual exports and imports of Switzerland, without any geographical detail, from 1885 to 1913. Data are all the more raw and pure as they directly come from national sources. Consequently, they constitute an interesting and pioneering base to develop a statistical analysis on Swiss external trade and specialization even if some of them are missing (for example, for the year 1890).

The statistical yearbook of Switzerland offers high disaggregated data. Indeed, we have collected import and export flows (in quantities as well as in value) of more than 1,100 products per year. The statistical yearbooks of Switzerland also offer a classification of the products, thus split into 17 categories (for the period 1885-1905) or 15 categories (for the period 1906-13). We used these classifications when needed for the statistical analysis.

Collected data belong to the ‘Special Trade’, which means that they are evaluated without re-export or transit. They must be considered as ‘net’ flows of exports or imports.

In this paper, we exploit our database in order to have a better view on Swiss economic performance, external trade and specialization. Data on GDP per capita are taken from Maddison (2001). Concerning the view on specialization we construct two indexes to determinate the exports’ concentration. The level of concentration of the Swiss economy, and its evolution, can be viewed as a possible explanation of the ‘Swiss miracle’. As Charles (2013) already determines the industrial branches of specialization for the period 1885-1905, this paper focuses on the concentration to explain the economic performance. Moreover, we construct an index of intra-industry trade in order to determine if this kind of exchange was

538 Database on geographical distribution of Swiss external trade, containing all the pair-trading flows of Switzerland with its partners is still under construction.
dominant in the nineteenth century external trade of Switzerland and if it had a positive impact on growth.

In order to evaluate the degree of Swiss export concentration, we calculate both Gini index and Herfindahl index. This choice refers to the place of these two indexes in the economic literature, in particular, those on the economic development field. In order to calculate the importance of intra-industry trade in Swiss external trade we calculate a Grubel and Lloyd index, which is one of the most popular in the literature.

3. Swiss macroeconomic performance and specialization

Structure of Swiss exports

Concerning the specialization of Switzerland, we calculate two indexes of exports’ concentration to determine if the Swiss economy stays specialized in the export of few products (classic HOS theory) or exports more products over time. Figures 1 and 2 show the evolution of Gini index, figures 3 and 4 the evolution of associated Lorenz curves.

Figure 1: Gini coefficient of Swiss exports and linear regression (1885-1905)

Source: Statistiques du commerce extérieur de la Suisse avec l’étranger, author calculation

Figure 2: Gini coefficient of Swiss exports and linear regression (1906-13)

Source: Statistique du commerce extérieur de la Suisse avec l’étranger, author calculation

\[ H = \frac{\sum X_i^2}{\sum X_i^2} \]

where \( X_i \) represents the share of the products in total exports

\[ GL = \frac{\sum (X_i - M_i)}{\sum (X_i + M_i)} \]

with \( X_i \) the exports of products \( i \), \( M_i \) the imports. We decided to keep only the GL index higher than 0.1.
The evolution of the Gini index reveals that the Swiss economy is highly concentrated. Indeed, Gini index ranges from 0 (total equality which means a de-concentrated structure of exports) to 1 (total inequality which means a concentrated structure where few products take an important share of total exports).

Nevertheless, as the Lorenz curves show, it seems that a move to de-concentration occurs throughout the period. We can see that the curves come up to the line of equality, corresponding to a move to de-concentration.

In order to have a better view on Swiss economy concentration, we calculate Herfindahl index. Figure 5 shows the evolution of the index during the period covered.
The Herfindahl index varies between 100% (high concentration) and 0% (high de-concentration). As we can see in figure 5, the Swiss economy is very de-concentrated at the beginning of the period, and operates a move to a higher level of de-concentration. From 1890 and 1913, the concentration remains globally stable.

It appears that during the nineteenth century, the Swiss economy is far from the Hecksher, Ohlin, Samuelson (HOS) theory of specialization. According to Charles (2013), the Swiss economy is specialized into four main categories of products: an old specialization in textiles and then several new specializations in mechanical objects, metal and chemical species. It seems that the Swiss economy is closer to exports variety theory (Cadot et al. 2010).

To confirm this hypothesis, we calculate a Grubel and Lloyd index (1975) to highlight the intra-industry trade specialization. Figure 6 shows the evolution of the index.

Regarding the evolution of the Grubel and Lloyd index it appears that Swiss external trade is highly influenced by intra-industry trade. Indeed, from 1885 to 1913 intra-industry trade represents almost 45% of the total exchange. In the knowledge that intra-industry trade structured Switzerland’s external trade, it seems obvious to say that Switzerland takes
advantage of the development of its close partners (France, UK, Germany … ) and the evolution of modern industries (Chemicals, Metal … ) in order to develop specializations in accordance with partners’ desire. In our earlier work (Charles 2013), we develop this hypothesis showing that Swiss exports operate a move up-market. Indeed, the added-value of Swiss specializations becomes higher from 1885 to 1913.

At this step, it is important to evaluate the correlation between these indicators to determine if they tell us the same story. Table 1 gathered correlation coefficient between indicators.

Table 1: Correlation between the different indicators (1885-1905)

<table>
<thead>
<tr>
<th></th>
<th>Herfindahl</th>
<th>Grubel and Lloyd</th>
<th>Gini index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herfindahl</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grubel and Lloyd</td>
<td>0.66</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Gini index</td>
<td>0.77</td>
<td>0.28</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 2: Correlation between the different indicators (1906-13)

<table>
<thead>
<tr>
<th></th>
<th>Herfindahl</th>
<th>Grubel and Lloyd</th>
<th>Gini index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herfindahl</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grubel and Lloyd</td>
<td>-0.78</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Gini index</td>
<td>0.56</td>
<td>-0.79</td>
<td>1</td>
</tr>
</tbody>
</table>

Information give by these two tables is very interesting. As expected, the Herfindahl index and the Gini index are positively correlated, which corresponds to what we know from the literature and the similarity between the different measures of an economy concentration (Dalum et al. 1999).

Concerning the correlation between Grubel and Lloyd index and both Herfindahl and Gini indexes, it seems that at the beginning of the period, a high intra-industry trade is correlated with a high concentration of the economy. At the end of the period, the sign of the correlation changed from positive to negative. It means that the de-concentration of the Swiss economy is highly correlated with the emergence of intra-industry trade. This can be explained by the Swiss structure of exports. At the beginning of the period, Switzerland was very specialized in textiles and confronted with stronger competition with emerging markets (USA, Asian countries … ). To minimize the competition, Switzerland’s exports move up market to higher added-value goods which were exchange with high added-value goods from developed countries. At the end of the period, Switzerland develops new specializations in chemical species or metal (new industries) which are in high demand by developed countries and so contribute to promote intra-industry trade (Charles 2013).

To resume, Swiss new structure of exports leads Switzerland to be specialized in different products sharing a common point: to be high-value added and so promotes intra-industry trade.

Once identifying the structure of Swiss exports, and knowing its economic performances, we must interrogate the relationship between both macroeconomic facts.

*Do specializations explain the ‘Swiss miracle’?*

First, our new database allows us to identify the evolution of macroeconomic aggregates like export and import flows. Figure 7 shows evolution of GDP per capita and figure 8 shows evolutions of export and import flows.
These two figures show macroeconomic performances of the Swiss economy. Regarding figure 7, we can say that the Swiss economy was dynamic during the period covered and the evolution of its GDP per capita was not so far from the evolution of the UK’s. Indeed, as David (2009) underlines, Switzerland enjoys the fastest economic growth from 1870 to 1910 among developed countries (behind Argentina) with an average of 2.1% per year. Regarding figure 8, it appears that Switzerland suffers from a chronic external deficit. Nevertheless, this theoretical economic handicap was surpassed due to a combination of several elements as we see in the introduction.

Concerning the method to determine the role of specialization on economic performance, we are aware of the necessity of econometrics to determine the causal link between our different indexes and the GDP per capita. Unfortunately, several technical problems prevent us from doing a complete econometric analysis. First of all, the period covered brings a range of only 28 observations which is too small to expect strong results. We have the possibility to work on the indexes per category of products (which brings us $17 \times 28 = 476$ observations), but data on GDP per category of products are not available yet. Then, we suffer a lack of control variables like investment or school enrolment.
To deal with these lacks and try to better understand the link between macroeconomic performance and specialization, we present several correlations in table 3, 4 and 5.

Table 3: *Correlation between Herfindahl index and GDP per capita*

<table>
<thead>
<tr>
<th></th>
<th>Herfindahl 1885-1905</th>
<th>Herfindahl 1906-1913</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita</td>
<td>-0.72</td>
<td>-0.03</td>
</tr>
<tr>
<td>1885-1905</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP per capita</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1906-1913</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4: *Correlation between Gini index and GDP per capita*

<table>
<thead>
<tr>
<th></th>
<th>Gini Index 1885-1905</th>
<th>Gini Index 1906-1913</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita</td>
<td>-0.79</td>
<td>-0.49</td>
</tr>
<tr>
<td>1885-1905</td>
<td></td>
<td></td>
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<tr>
<td>GDP per capita</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1906-1913</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5: *Correlation between Grubel and Lloyd index and GDP per capita*

<table>
<thead>
<tr>
<th></th>
<th>Grubel and Lloyd 1885-1905</th>
<th>Grubel and Lloyd 1906-1913</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita</td>
<td>-0.48</td>
<td>0.12</td>
</tr>
<tr>
<td>1885-1905</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GDP per capita</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1906-1913</td>
<td></td>
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</tr>
</tbody>
</table>

These correlations show that the de-concentration of the Swiss economy is positively correlated with GDP per capita. Even if we do not know which aggregates influence the others, we can say that it gives a different view on specialization. It seems that a move to de-concentration occurs during the nineteenth century without preventing economic growth.

Concerning the correlation between the Grubel and Lloyd index and GDP per capita it appears to be negatively correlated during the first period and positively correlated during the second period. It seems that a high intra-industry trade is good for economic growth only if the economy is de-concentrated enough. First, if the GDP per capita increases, the gap between Swiss GDP and partners’ GDP reduces and it promotes intra-industry trade (Krugman 1983). Then, if the intra-industry trade increases it is often due to the emergence of modern specializations which promote exports and increase the GDP.

4. **Concluding remarks**

Our paper investigates the specialization of the Swiss economy through its concentration and the importance of intra-industry trade. We show that Switzerland’s economy during the nineteenth century is very de-concentrated. Switzerland is specialized in textiles but also in modern industries like chemical or mechanical objects. It means that Switzerland is far from the HOS theory and manages to export and promote its economic growth thanks to a diversification of its export structure.

Concerning the importance of the intra-industry trade, it demonstrates that this kind of exchange is usual between European countries during the first globalization. Indeed, Blancheton, Becuwe and Charles (2012) show the same importance of intra-industry trade in French external trade.
Taking into account both of these facts, it seems important to re-investigate the history of the nineteenth century adapting modern theories of international trade or economic development to historical data.

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Can output growth be measured in the absence of production data? A state space time series analysis of industrial growth in pre-WWII Germany

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Introduction

Germany’s rapid economic development from the late nineteenth century onwards has traditionally been described as a typical example of catch-up growth.\(^\text{541}\) In particular the rapid transformation of the new, science-based industries, such as engineering, chemical production, and metal manufacturing during the second industrial revolution has received much attention.\(^\text{542}\) To which degree these developments propelled Germany to the vanguard of industrial development is still a topic of debate, however, as demonstrated by the discussion recently held between Broadberry & Burhop and Ritschl, who fail to reach consensus on the question of whether or not Germany had surpassed Britain at the outset of the twentieth century.\(^\text{543}\)

The debate revolves around the construction of a reliable time series of industrial output in pre-WWII Germany, which is difficult in the absence of data on value added. Several series have been proposed that use different output proxies that vary to the extent that two stories can be told of Germany’s comparative performance before WWI; Germany either performed on par with the UK or it outperformed the UK by about 25 per cent.\(^\text{544}\) With an eye to the historical questions touched upon above, the ambiguity is unsatisfactory. This begs the question whether it is possible to confidently draw conclusions regarding Germany’s historical growth record in the face of incomplete and conflicting data? I think it is and I arrive at that conclusion through application of a new approach to the debate.

This paper sets out to solve the time-series issue by casting the debate in a new framework. Instead of choosing between different output proxies, I acknowledge that all series estimate output change by studying variables that correlate strongly, but not perfectly with value added. It follows that the behaviour of all series is largely determined by the same underlying component, i.e. the change of value added, while deviations in the observed series are contingent on the different correlation between the employed output proxies and actual output growth. Using state space time series analysis, I estimate value added change by filtering from all available data an unobserved common component.\(^\text{545}\) This way, the analysis makes full and efficient use of all information available, rather than choosing for one particular alternative only.

The debate on German output growth

Central to the debate on German output growth is the quality of Walther Hoffmann’s time series of industrial production constructed as a part of the Historical National Accounts.\(^\text{546}\) Hoffmann’s index has received severe criticism and its reliability has been called into question.\(^\text{547}\) Much of this criticism is aimed at his choice for particular output proxies in the absence of production data. For several metal processing industries Hoffmann employs

\(^{541}\) For instance, see Gerschenkron (1962), 16; Landes (1969), 236.  
\(^{542}\) Braun (1990), 20.  
\(^{543}\) Broadberry & Burhop (2007); Ritschl (2008).  
\(^{544}\) Broadberry & Burhop (2008), 932.  
\(^{545}\) Commandeur & Koopman (2007); Durbin & Koopman (2001).  
\(^{546}\) Hoffmann (1965).  
\(^{547}\) Fremdling (1988); Fremdling (2007).
labour-income data as a proxy of output change. Assuming a constant wage-productivity ratio, changes in the wage bill reflect the growth of output. However, Borchardt argued that after WWI wages rose as a consequence of labour unions’ increased bargaining power, rather than improved labour-productivity levels, which introduces an upward bias in Hoffmann’s output growth estimates in the post-1918 period.548

For this reason, Albrecht Ritschl revisited Hoffmann’s output index for metal processing.549 Using sales data of the Verband Deutscher Maschinen- und Anlagenbau (the German machinery producers’ association) to reassess output change in the machine-building industry, Ritschl records an output growth of only half the magnitude suggested by Hoffmann. Since metal processing has a weight of 17 per cent in Hoffmann’s compound index of industrial production, the revised data moderate German output growth considerably, particularly over WWI. This downward revision aligns well with an older study conducted by Wagenführ of the Institut für Konjunkturforschung in the early 1930s, whose output index deviates substantially from Hoffmann, too.550 Hoffmann’s, Ritschl’s and Wagenführ’s output series for industry are plotted in figure 1.

The modified output index evoked a reaction from Stephen Broadberry and Carsten Burhop for Ritschl’s proposed changes imply a revision of Germany’s performance relative to the UK that does not sit well with previous research.551 Combined with an index of employment, Ritschl’s output series points at a relatively slow pace of industrial labour-productivity growth over WWI. Extrapolating backward the obtained change in labour productivity from a known level of labour productivity in 1936, Ritschl’s revised estimate suggests a German lead over Britain of about 25 per cent, i.e. a stronger performance on the part of Germany than previously found.552 To cross-check the reliability of Ritschl’s time series, Broadberry & Burhop construct a benchmark of comparative labour-productivity levels for 1907, which points at an equality in performance between both countries rather than a commanding German lead.

550 Wagenführ (1933).
552 The 1936 level of labour productivity is established by Fremdling, de Jong and Timmer (2007) and generally accepted. Fremdling (1991), 37.
The benchmark estimate for 1907 corresponds closely with Hoffmann’s extrapolations, but not with Ritschl’s, and Broadberry & Burhop interpret this as proof of the former’s superior quality. In response, Ritschl adopts the same reconciliation principle, but in light of his previous findings refuses to accept Hoffmann’s original time-series estimates. Inevitably, the fault must then lie with the 1907 benchmark. Ritschl proposes several changes to the benchmark that lead to a German/UK comparative labour-productivity estimate for 1907 in line with the backward extrapolations using his own modified output series. Including these last additions to the debate, at this point a gamut of comparative labour-productivity estimates is available, obtained indirectly by time-series extrapolations or directly by benchmarks and indicating a German performance in 1907 either on par with or vastly superior to the UK. Choosing between these estimates seems, to some extent, arbitrary, and perhaps even inappropriate, as I will argue below.

State space time series analysis

In this paper I pursue a new strategy to this debate that provides a solution to, first, the question of the time series and, second, the reconciliation between backward extrapolations and benchmark estimates. With respect to the former, the innovative feature of my approach is the decomposition of the observed time series in an unobserved component that captures value-added change and a noise factor resulting from the use of output proxies. As the state space form is designed to uncover the dynamic evolution of time series when these properties are not directly observable from the data, it is an appropriate tool of analysis.555

After filtering a common component from the observed series, in a next step I address the reconciliation between time-series extrapolations and benchmark estimates by taking into account the measurement error associated with the estimation process. The debate described above has been fuelled to a large extent by the notion that point estimates obtained by benchmarks and time-series extrapolations ought to reconcile. However, this notion defies a large literature that identifies several causes for deviation between both measures.556 The question, then, is how much inconsistency one is willing to allow for without rejecting the fit between the filtered time series and the benchmarks?

The uncertainty associated with estimating the unobserved common component provides a yardstick for this. Using the variance of the model I construct a confidence interval to indicate a range around the point estimates that contains the true value of the estimated parameter with high probability. In case a benchmark estimate falls inside that range, the inconsistency can be explained by measurement error in the time series and while both measures do not reconcile perfectly the fit cannot be rejected.

To obtain a common component and an indication of the measurement error, the state space form formulates two equations. First, using scalar notation, the observed series are modelled by the set of measurement equations (1), which defines the series by two components, i.e. the unobserved dynamic process called the state (\( \mathbf{x} \)) and a disturbance term (\( \mathbf{e} \)). The state is common to all series, while the disturbance term is index-specific and captures for each series the inaccuracy of the employed output proxies. In case of Wagenführ’s and Hoffmann’s series, the common state is weighted by a coefficient \( \alpha \) to reflect the potentially inappropriate output proxy used to construct these indices.557

553 Ritschl (2008).
554 See also Broadberry & Burhop (2008) for a reply to Albrecht Ritschl’s reworked benchmark estimate.
556 For instance, see Kravis, Heston and Summers (1982), 326.
557 In practice, however, these coefficients are close to 1 as makes no differences. Excluding these coefficients does not change the conclusions.
Second, the state equations (2) and (3) model the unobserved state. The dynamics of the state are determined by two trend components: a level ($\mu_t$) and slope ($\nu_t$). The trend level is deterministically modelled as a function of its value in the previous period (AR1 process) plus the slope component ($\nu_t$). The dynamics of the latter is stochastically modelled by an AR1 process plus a disturbance term ($\xi_t$).

\begin{align*}
\ln(\text{Ritschl}) &= \mu_t + \varepsilon_{1t} \\
\ln(\text{Wagenführ}) &= \alpha^2 \mu_t + \varepsilon_{2t} \\
\ln(\text{Hoffmann}) &= \alpha^2 \mu_t + \varepsilon_{3t}
\end{align*} \tag{1}

\begin{align*}
\mu_{t+1} &= \mu_t + \nu_t \\
\nu_{t+1} &= \nu_t + \xi_t
\end{align*} \tag{2, 3}

The coefficients of the two hyperparameters, i.e. the measurement and state disturbances, cannot be obtained analytically and the model is therefore estimated using maximum likelihood based inference. The likelihood function associated with the model is obtained through the application of an algorithm called the Kalman filter.\textsuperscript{558}

Results

Figure 2 plots, first, the filtered state with the 99 per cent confidence interval and, second, the deviation between each of the observed series and the state. Vertical lines are drawn at the two benchmark years discussed above, i.e. 1907 and 1936. The estimated latent output change is a weighted average of sorts of the three observed series and the fact that the state lies in between the estimates of Ritschl and Hoffmann should not come as a surprise. Therefore, of prime interest is not the obtained dynamics of the state. Rather, the measured uncertainty associated with the state estimation contains the innovative element of my research design. Traditionally, in the debate on German output growth, indicators of statistical dispersion are not provided and point estimates are implicitly treated as true values. Looking at the upper and lower confidence limits, however, the margin for error can be quite large: using a 99 per cent confidence level, I find a range of over 10 per cent around my point estimate of output change.

The interval estimates are relevant in particular for the debate on labour productivity. Combined with employment data and extrapolated backward from a known level of labour productivity in 1936, the interval estimate of output change leads to a range of values that contains the German labour-productivity level in 1907 with high probability. So I move away from the notion that benchmarks and time series estimates need to align closely. Instead, I let the measurement error of my estimated value-added change determine the deviation between both measures that I am willing to allow for. This raises the question which of the benchmarks presented in the literature (if any at all) I am compelled to reject on the basis of the uncertainty associated with the estimation process?

\textsuperscript{558} Van den Bossche (2011).
In answer to that question, I have plotted in figure 3 my time-series extrapolation against benchmark estimates of comparative labour productivity for 1907. A 1907 German/UK benchmark that falls outside the confidence interval cannot be reconciled with the backward projection. Figure 2 shows that a deviation between both measures of a margin up till about 10 per cent does not imply a disqualification of the fit between both measures. Indeed, all 1907 benchmark estimates can be reconciled with my time-series projections when the state estimation error is taken into account.
Concluding remarks

Since the confidence interval encapsulates all benchmark estimates, from my point of view, it cannot be excluded that the benchmark estimates are different draws from the same probability distribution. Thus, they may well refer to the same parameter, even though the estimates differ substantially. The message to take away from this is that measurement error must be considered when benchmarks are used to check the accuracy of time series. In this case the estimation error of the time series is sizable partly because output change is unobservable. While this may differ in other cases, my research suggests that, in general, conclusions should not be based on differences between point estimates only.

In the particular context of the debate on German/UK comparative performance levels, my findings demonstrate the inappropriateness of the strict reconciliation principle employed in the literature. Rather, broad margins should be taken into account in the backward extrapolations. By providing an indication of the statistical error in my estimates, this chapter follows in the tradition of Charles Feinstein and Mark Thomas, who argued that any new statistical series should be accompanied by a guide to the associated margins of error. Of course, this begs the question if such a broad range of German labour-productivity levels obtained by the methodology advanced in this chapter renders impossible a concise assessment of Germany’s comparative performance?

Paradoxically, my answer to this question is that working with confidence intervals actually increases the reliability of the conclusions drawn with regard to historical economic development. Any conclusion drawn from the filtered time-series estimates are explicitly founded on a solid statistical basis, which provides an increased certainty compared to studies employing point estimates only. So I can confidently infer that, first, Germany had overtaken Britain in terms of labour productivity already before WWI, yet by a small margin only. Second, over WWI there was a statistically significant change in labour-productivity leadership with Germany dropping below the UK. And, third, Britain’s lead evaporated again in the 1930s and both countries performed roughly on par shortly before WWII.

Feinstein and Thomas (2002).
References


World War II and the industrialization of the American South

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1. Introduction
Convergence in industrial structures drives international and regional income convergence (Hanna 1959; Kuznets, Miller and Easterlin 1960; Williamson 1965; Krugman and Venables 1995; Kim 1998; Caselli and Coleman 2001). Convergence is delayed where barriers to technology adoption or restrictions on the mobility of labour and capital persist, preventing the transition out of agriculture or the reallocation of manufacturing activity toward higher value-added sectors. On the eve of World War II, the American South was more industrialized than at any point since the Civil War. Yet, in 1940, after more than a half-century of manufacturing growth, incomes in the region still lagged behind the rest of the country. The South’s failure to industrialize along northern lines helps explain its laggard economic performance through the first half of the twentieth century. In the 1940s, mobilization for World War II intervened and billions of dollars in government spending flowed to the South. In the subsequent decades, the region’s manufacturing became more diversified and expanded. Per capita incomes that were less than 70 per cent of the national average in 1940 were near parity by 1980.

In this paper, I examine the contribution of World War II to industrialization in the South after 1940. Specifically, I consider the impact of two types of war spending: supply contracts for military goods and investment to build or expand industrial capacity. The war provided demand and capital to the southern economy, which may have helped the region industrialize. I test this claim and find that war spending can explain only a small portion of the South’s aggregate postwar growth of manufacturing. However, I also find substantial differences in the effect of war spending across sectors. In particular, for textiles there is little effect of either type of war spending. For metals, machinery, and transportation equipment, activity increased with capital investment, but not supply contracts. Thus, while at the aggregate level the war had little impact, government spending did facilitate the reallocation of manufacturing activity toward higher value-added sectors.

The empirical analysis uses a discrete-choice model of establishment location decisions. I estimate the model using newly collected data on the number of establishments in each two-digit sector across counties in 12 southern states between 1927 and 1967. I aggregate counties to approximate labour market areas and address spillovers between establishments that may have extended beyond county borders. In addition, the model allows for random coefficients, which capture sector-level heterogeneity in the effect of war spending. This is particularly relevant in the context of the American South, which industrialized rapidly after the Civil War but concentrated in low value-added sectors. Indeed, the focus of recent research on the effect of government policy on aggregate manufacturing activity (Kitchens 2012; Kline and Moretti 2014) and an older literature that emphasizes the shift from agriculture to manufacturing (Matsuyama 1991; Kim 1998; Caselli and Coleman 2001) misses the reallocation of activity within manufacturing toward higher value-added sectors.

2. Mobilization for World War II
Planning for mobilization for World War II grew out of the failure of mobilization during the First World War. Shortly after the United States entered the conflict in April 1917, the pace of mobilization slowed dramatically due to the inexperience of civilian and military planners, the small share of appropriations devoted to planning activities, and the lack of attention to
procurement requirements (Smith 1959, 36-38). As a result, overlapping demands for inputs related to war production led to price inflation, contracts that could not be filled, and goods wasted. In response, planning for the next conflict began early in the interwar period, including the passage of the National Defense Act on 14 June 1920, to ensure “the adequate provision of the mobilization of material and industrial organization essential for wartime need” (National Defense Act, 1920, 764). By the time war broke out again in Europe in 1939, the United States had acquired considerable capacity to mobilize, manage, and fight a modern war.

At the end of the war, government spending on supply contracts in the South totalled $14.7 billion and $6.1 billion on capital investment. Although the South as a whole received less than other regions and southern cities received a smaller share than Detroit, Buffalo, Chicago, and Los Angeles, the war spurred economic activity and new capital formation that dwarfed the existing stock. The southern trade magazine, Manufacturers’ Record, routinely boasted, “South’s expansion breaks all records” (Schulman 1991, 95). Capital expenditures in the South, which made up roughly one-tenth of the country’s total in the prewar years, nearly doubled during the war. In total, the South accounted for 23.1 per cent of wartime plant construction and 17.6 of expansions (US War Production Board 1945; Deming and Stein 1949, 10-11).

3. Empirical Specification

The empirical analysis quantifies the effect of two types of government spending during World War II on industrialization in the American South between 1927 and 1965. I assume that manufacturing establishments choose to locate in the southern location that maximizes profits relative to the outside option of choosing to locate elsewhere in the United States. I allow the effect of war spending to vary by sector. The estimation then incorporates information on both the share of establishments in each location and sector identifiers for all establishments, similar to Berry, Levinsohn and Pakes (2004). The empirical analysis yields mean and heterogeneous effects of each type of war spending, which I use to calculate the overall effect on textiles and apparel, furniture and lumber goods, metals, machinery, transportation equipment, and a group that includes all other manufacturing sectors.

Formally, in each year \( t \), establishment \( i \) chooses the location, \( c = 0, 1, \ldots, C \) that maximizes profit given by:

\[
m_{ct} = \sum_j \text{war}_c^j \times d_{gast} \times \alpha_{it}^j + \text{trend}_t \times \rho_{tc} + \xi_{ct} + \eta_{ct}
\]

where \( \text{war}_c^j \) is the amount of war spending of type \( j \in \text{(supply, capital)} \) in location \( c \) interacted with a dummy variable equal to one if year \( t \) is a postwar year. \( \text{trend}_t \) is a linear trend that captures changes in the value of a southern location (i.e., \( c = 1, \ldots, C \)) relative to a non-southern location (i.e., \( c = 0 \)). This trend captures changes over time in the relative value of choosing a southern location versus locating elsewhere in the United States.

The term \( \xi_{ct} \) captures all the remaining unobserved location characteristics, which may vary over time. These include natural advantages, such as proximity to a body of water, availability of natural resources, climate, and other factors that make a location more (or less) valuable to manufacturing. \( \xi_{ct} \) may also capture agglomeration economies due to input-output linkages, labour market pooling, or technology spillovers (Marshall 1890). In practice, I decompose \( \xi_{ct} \) into a portion common to all counties in a given year, a fixed portion over time in a given location, and a portion that follows a location-specific trend. Finally, \( \eta_{ct} \) is a random shock to establishment profits that is assumed to be i.i.d. from a type I extreme value distribution.
The random coefficients, $\alpha_{it}^l$ and $\rho_{it}^l$, capture the heterogeneous effect of war spending and differences in the relative value of locating in a southern location due to individual establishment characteristics. That is,

$$\alpha_{it}^l = \bar{\alpha}^l + \sum_i^{2} \varepsilon_{it}^l \times \alpha_{it}^l + \eta_{it}^l \times \sigma_{it}^l$$

$$\rho_{it}^l = \bar{\rho}^l + \sum_i^{2} \varepsilon_{it}^l \times \rho_{it}^l$$

Each $\varepsilon_{it}^l$ is an identifier for two-digit sector $l$ of establishment $i$ in year $t$. The random it coefficients allow for a mean effect that is common to all establishments ($\bar{\alpha}^l$ and $\bar{\rho}^l$), variation due to observed establishment characteristics ($\alpha_{it}^l$ and $\rho_{it}^l$), and, in the case of each type of war spending, variation due to unobserved establishment characteristics $I(\sigma_{it}^l)$. Unobserved characteristics are assumed to come from a standard normal distribution. In principle, $\varepsilon_{it}^l$ could include any observed characteristics. However, for this paper, data availability constrains $\varepsilon_{it}^l$ to only include identifiers for each establishment’s two-digit sector.

4. Data and Variable Definitions

I apply the model to the location decisions of manufacturing establishments before and after World War II. Data on the spatial distribution of all manufacturing establishments are available in the summary tables for the Census of Manufactures for 1939, 1947, 1954, 1958, 1963, and 1967 (US Bureau of the Census, various years). I draw on two additional sources, the Market Data Handbook of United States and the Industrial Market Data Handbook of the United States, for the same information in 1927 and 1935 (Stewart 1929; Holleran and Davis 1939). In each year, for all counties in Alabama, Arkansas, Georgia, Florida, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Virginia, Tennessee, and West Virginia, I collected information on the number of establishments in each two-digit sector. I use information on the total number of establishments in the United States to construct the outside option of locating in a non-southern location.

For the empirical analysis, I collected information on over 1,000 counties in 12 southern states. I aggregated county-level data into 203 ‘commuting zones’ as defined by the Economic Research Service (ERS). The commuting zone (CZ) concept is intended as a spatial delineation of local labour markets without the constraint of a minimum population threshold. The included CZs are fully contained within one of 12 southern states listed above. The only requirement for inclusion in the sample is that a CZ must have at least one manufacturing establishment (in any sector) in each year analysed. In practice, this restriction retains all but one of the potential CZs and results in 203 CZs covering the southern United States. Establishments from outside the South are included in the outside option.

The main variables used in the empirical analysis are the value of war supply contracts and war-related capital investment (in current year dollars), which are drawn from Haines (2010). On average a commuting zone received $72.8 million in supply contracts and $29.9 million in capital investment. For the empirical analysis, I normalize both war spending variables by dividing by the location’s size (in square miles). Figure 1 contains maps showing the spatial distribution of the war spending variables. The raw correlation between them is high, 0.655, but leaves substantial variation to exploit in the estimation.
5. Results

Table 1 presents the results for the effect of each type of war spending from the full model, which includes controls for sector- and location-specific time trends. Columns 1-6 show the effect of war-related supply contracts and capital investment for a particular sector. Column 7 gives the estimate for the standard deviation of the unobserved preference for each type of war spending. The estimates in column 7 are small and statistically insignificant, which suggests that the sector identifiers capture a substantial portion of the variation in establishments’ preference for war spending. The sector identifiers should be interpreted as embodying not only the output of certain types of goods, but also sector-specific technology and input use as well as endowments of managerial talent and compatibility with industrial mobilization. The remainder of the discussion will focus on the sector-specific estimates in the first six columns of table 1.

The estimates for the effect of war supply contracts on each sector in table 1 are small and statistically insignificant. In general, this is consistent with the view that supply contracts provided only short-run stimulus to southern industry, and that reconversion was relatively rapid and mostly complete by the end of 1940s. However, the estimates for the effect of capital investment suggest an important role for World War II that has not been emphasized in the literature. In all six sector-groups the effect of capital investment is positive and statistically significant. The smallest estimate is for textiles (column 1) and is consistent with the war having little direct impact on this sector both because textiles was a large sector in the South prior to World War II and because little war-related capital investment was used to construct or expand textile factories. In the remaining sectors the magnitude for the effect of capital investment is larger (columns 2-6).
The effect of capital investment is largest for lumber goods and the sector that comprise the ‘other’ group. This is at least partially due to the wartime and postwar construction booms, for which lumber and stone products (included in the ‘other’ sector) were used as inputs. In addition, the effect on the ‘other’ group may be at least partially driven by the effect on the chemicals sector, which was an important wartime industry and was to a large extent located in the South. This would include, for example, synthetic rubber, which was not commercially viable in the United States before the war but expanded following the scarcity of natural rubber supplies in the later 1930s and substantial government investment. More broadly, chemicals, like metals and machinery, were important inputs into other industrial processes integral to the war effort.

For the sectors most closely related to the war effort (i.e., metals, machinery, and transportation equipment) the effect of war capital investment was smaller than the effect for lumber goods but larger than the effect for textiles. This effect is due to the substantial new investment in these sectors and suggests that industrial mobilization played some role in diversifying manufacturing activity within the South. Table 2 shows the average effect of increasing each type of war spending by $10 million on the number of establishments in 1967. The estimates for supply contracts in table 1 are statistically insignificant so the discussion in this section will focus on the effect of capital investment. In general, the results are consistent with a modest overall effect of capital investment – the total number of establishments increased by less than 1 per cent – and there was some reallocation toward metals, machinery, and transportation equipment. In particular, an additional $10 million increases the number of establishments in metals by 0.32, in machinery by 0.34, and in transportation equipment by 0.37, on average. The effects are small, but economically meaningful given the size of these sectors in the South prior to the outbreak of World War II.

Finally, the results presented above are robust to controlling for spending under the Agricultural Adjustment Act between 1933 and 1936, whether a location had access to electricity provided by the Tennessee Valley Authority, and the presence of a World War II military base in the second step of estimation. Federal grants through the AAA was an attempt to increase farm prices by taking land out of production and accelerate structural transformation. The TVA was aimed more directly at providing cheap electricity to underserved areas in the South and thereby facilitating the expansion of southern manufacturing. Finally, new military bases during World War II were accompanied by improvements in transportation infrastructure (e.g., local roads and highways) that may have benefited manufacturing or provided a source of postwar demand for industrial goods.

6. Conclusion
Industrial mobilization for World War II led to substantial spending on supply contracts and capital investment in the American South. Prior to the war, southern manufacturing concentrated in low value-added sectors and many observers credited the war with promoting the region’s industrial growth and shift to higher value-added sectors and eventual convergence with the North. In this paper, I estimate a discrete-choice model of establishment location decisions to test the claim that war spending explains the South’s postwar
industrialization. I depart from earlier work by using disaggregated data on the location of all establishments in each two-digit manufacturing sector and by considering the effect of supply contracts and capital investment separately. This allows me to examine the reallocation of manufacturing activity across sectors as well as the growth of overall manufacturing.

Overall, the effects I find in this paper suggest that war-related government spending cannot explain the convergence in industrial structures between 1940 and 1980 and, therefore, that explanations for the convergence of US regions must look elsewhere. My findings do not preclude a role for other aspects of military mobilization, in particular, the defence build-up during the Cold War, in explaining the postwar industrial growth of the South. However, these factors should be considered together with the revolution in race relations, postwar migration patterns, and state and local government efforts at industrial promotion.

References (available upon request).
The long-term effects of climatic change on economic growth: evidence from the Little Ice Age, 1500-1750

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Supervisor: Dr Diana Weinhold

Introduction
Anthropogenic climate change is a relatively recent phenomenon, yet unforced climatic change has regularly occurred and affected societies in the past. Prior to the onset of global warming, the most recent climatic episode that affected large parts of Europe was the Little Ice Age (c.1350-1750). This climatic period brought markedly colder climate to early modern Europe (Fagan 2000). Temperatures in Europe fell by 0.5 to 1 degrees centigrade, changes that were not uniform across space or time (Aguado et al. 2007, 483). “[The] seemingly small decrease in mean temperature [during the Little Ice Age] had a considerable effect on living conditions throughout Europe […] shortened growing seasons led to reductions in agricultural productivity […],” (Aguado et al. 2007: 483). Famines became more frequent (Behringer 2005, 226).

In this paper, I assess the effects of these long-term gradual temperature changes on economic growth during the Little Ice Age, in particular from 1500-1750. The historical, long-term perspective of this approach allows assessing the economic effects of climatic change when people have time to adapt.

Previous research on the economic effects of climate change made use of Integrated Assessment Models (IAM). The models simulate future interactions between climate and economy and have informed important policy choices (e.g. Stern 2007). They have been challenged, however, for not fully replicating the complex relationship between climate and economy (Dell et al. 2012, 67; Pindyck 2013). Besides, certain parameters, such as the economy’s rate of adaption, have to be assumed with little consensus among researchers on the appropriate rate of adaptation (Stern 2007, 60; 149).

A more recent strand of literature estimates the economic effects of climate change empirically based on panel data of year-to-year fluctuations in temperature (e.g. Deschenes and Greenstone 2007, 2012; Dell et al. 2012; Burgess et al. 2011). The effects of short-term temperature fluctuations, however, are likely to be different from the effects of long-term temperature changes – as they occur in the current global warming – because people may adapt in the long term.

The Little Ice Age
The Little Ice Age was a climatic period between c.1350 and 1750 that brought markedly colder climate to early modern Europe (Fagan 2000). Temperature in Europe fell by 0.5 to 1 degrees centigrade, changes that were not uniform across space or time (Aguado et al. 2007: 483). The cold conditions were interrupted a few times by short periods of relative warmth, e.g. around 1500 (Fagan 2000).

Historical records indicate that this “seemingly small decrease in mean temperature [during the Little Ice Age] had a considerable effect on living conditions throughout Europe. Shortened growing seasons led to reductions in agricultural productivity especially in northern Europe,” (Aguado et al. 2007, 483). During the seventeenth century, unusually wet and cold conditions had detrimental effects on the harvest in certain regions of Europe (De Vries 1976, 12). Wine and wheat yields that depend particularly on warm temperatures were especially affected. Viticulture had existed in England during the Medieval Warm Period, but was abandoned in most parts of England during the Little Ice Age. The tree line in the high Alps fell and mountain pastures had to be abandoned (Behringer 2005, 94). Later, “during the eighteenth century, Europe as a whole experienced warmer, drier weather […] in stark contrast
to the unusually cold and damp seventeenth century. This had a salutary effect on population, agricultural yields, and commerce”, (Merriman 2010, 363). “[The Little Ice Age] does represent the largest temperature event during historical times”, (Aguado et al. 2007, 483).

Data
To assess the long-term effect of these temperature changes on economic growth I construct a panel dataset for more than 2,000 European cities. These data measure annual temperature between 1500 and 1750 and city size data for several points in time. The temperature data for each city stem from a large temperature reconstruction effort that was undertaken by climatologists (Luterbacher et al. 2004). The dataset contains gridded ‘temperature maps’ for each year since 1500 that cover all of Europe. Each grid cell measures c.50 by 50 kilometres which allows for a precise measurement of climatic change at the local level. The temperature data are reconstructed using directly measured temperature for later years, temperature indices from historical records as well as proxy temperature reconstructions from tree ring series, lake sediments, and ice cores (Luterbacher et al. 2004, 1500). As a proxy for economic growth I use data on historical city sizes for 2,115 European cities that are obtained from Bairoch (1988).

Results
The main analysis investigates the effect of temperature on city size as a proxy for economic growth. To control for other factors that may have affected long-run economic growth I control for city fixed effects and country times year fixed effects. City fixed effects control for each city’s time invariant characteristics, such as geographic characteristics or persistent cultural traits. Country times year fixed effects control for changes over time that are common to cities within one country. This set up controls, for example, for the potential effects of a country’s overseas trade expansion, changes in country level changes in institutions, or the introduction of any country wide policies by the government.

\[
\text{City Size}_{ict} = \beta + \gamma \text{Mean Temperature}_{ict} + c_y + i_t + e_{ict}
\]  

City Size is the size of city \(i\) in country \(c\) in time period \(t\). Mean Temperature\(_{ict}\) is the mean year temperature in city \(i\), country \(c\), and time period \(t\) over a period of 100 years (for the years 1600 and 1700) and 50 years (for the year 1750). \(i\) is a full set of city fixed effects. \(c_y\) are a full set of country times year fixed effects. \(e_{ict}\) is the error term.

Table 1 shows basic results. In column 1 I estimate the relationship between mean temperature and city size including city fixed effects. The relationship is positive and significant. I include city fixed effects to control for time invariant characteristics that affect each city’s growth trajectory and could be correlated with temperature change. If temperature decreases especially in cities with disadvantageous geographic conditions that also hamper city growth, then the positive and significant relationship between temperature and city size may merely reflect the relationship between certain geographic conditions and city growth.

It is thinkable that temperature and city size happen to follow similar trends over time. Then, this result might be merely driven by time series variation in temperature and city size. This could then be misinterpreted as an effect of temperature on city size. In column 2, I introduce year fixed effects that take out variation that all observations in a given time period share. The coefficient remains stable. It slightly decreases in size by 0.06, and is again positive and significant.

Finally, I introduce country times year fixed effects. They control for all country level changes over time, e.g. the introduction of country level policies, the outbreak of wars. The coefficient in column 3 indicates that a 1 degree increase in temperature leads to an increase in city size by 54%. The mean temperature changes in the dataset lie between a decrease of 0.28 degree Celsius in the seventeenth century and an increase of 0.64 degree Celsius in the eighteenth century. The estimated effect of temperature changes on city size for European
cities during the Little Ice Age translates into temperature effects on city size between - 15% and 35%.

<table>
<thead>
<tr>
<th>Table 1: The Effect of Temperature on City Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Log CITY SIZE (inhabitants)</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Mean Temperature</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>(1)</td>
</tr>
<tr>
<td>0.634***</td>
</tr>
<tr>
<td>(0.107)</td>
</tr>
<tr>
<td>City Fixed Effects</td>
</tr>
<tr>
<td>yes</td>
</tr>
<tr>
<td>Year Fixed Effects</td>
</tr>
<tr>
<td>yes</td>
</tr>
<tr>
<td>Country×Year Fixed Effects</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Observations</td>
</tr>
<tr>
<td>6,345</td>
</tr>
<tr>
<td>R-squared</td>
</tr>
<tr>
<td>0.855</td>
</tr>
</tbody>
</table>

Robust standard errors in parentheses, clustered at city level
*** p<0.01, ** p<0.05, * p<0.1

The effect of temperature on agricultural productivity

The question arises through which channels temperature may have affected city size. Historians have argued that the Little Ice Age affected agricultural productivity. Fruit blossoming, haymaking and grape ripening, for example, were regularly delayed by cold weather (Behringer 2005, 93). “Shortened growing seasons [during the Little Ice Age] led to reductions in agricultural productivity, especially in northern Europe”, (Aguado, 2007, 483). The overwhelming importance of agriculture for the economy at the time also makes it plausible that temperature may have affected city size through its effect on agricultural productivity. “The growth rates of agricultural outputs and productivity within each country were the primary determinants of overall growth rates in each [European] country”, (Dennison 2010, 148). It is therefore plausible that a negative effect of disadvantageous weather conditions during the Little Ice Age on agricultural productivity may have translated into an effect on city size and on the economy overall.

To test this hypothesis, I combine yearly temperature data from Luterbacher et al. (2004) with annual data on wheat prices for 10 European cities from Allen (2001). Data is available for Amsterdam, London, Leipzig, Antwerp, Paris, Strasbourg, Munich, Florence, Naples, and Madrid. I use wheat prices as a proxy for agricultural productivity. As city level demand changes only gradually yearly fluctuations in wheat prices are likely to be a reflection of changes in supply. Determinants of agricultural productivity, other than temperature, such as certain institutions or technologies, are unlikely to change immediately from year to year in response to temperature changes. The immediate effect of temperature on wheat prices is therefore likely to depend primarily on temperature’s effect on agricultural productivity. I propose the following specifications to assess the effect of temperature on agricultural productivity:

\[ \text{Wheat Price}_{it} = \beta + \gamma \text{Mean Temperature}_{it} + i + e_{it} \]  

I regress the wheat price in city \( i \) and time period \( t \) on temperature in city \( i \), and time period \( t \). I also include a full set of city fixed effects \( i \). The coefficient of interest here is \( \gamma \). It describes the relationship between changes in temperature and changes in wheat price in city \( i \) and time period \( t \).

Table 2 reports results. The coefficient on mean temperature in column 1 describes the relationship between temperature and wheat prices when including all cities in the regression.
It is negative and significant. This indicates that a 1 degree increase in temperature leads to an average decrease in wheat prices of 0.106 grams of silver. This suggests that an increase in temperature leads to an average increase in wheat yields and therefore to a decrease in prices. This result is consistent with results in table 3 that show that, overall, an increase in temperature had a positive effect on city size.

Then, I estimate specification (2) for each of the 10 cities separately. I regress Wheat Price in time period $t$ on mean temperature in time period $t$. Previous results have indicated that the effect of temperature on city size varies with initial climate. It is therefore interesting to test whether the effect of temperature on wheat prices varies with initial climate. The 10 cities in the dataset are located in different climate zones within Europe. An increase in temperature might affect agricultural productivity differently in northern Europe, where it is relatively cold, than in southern Europe, where it is relatively warm. Columns 2 to 11 of table 2 show results of regressions for each city separately.

Results are shown according to latitude, showing the northernmost city, Amsterdam, first and the southernmost city, Madrid, last. For the seven northernmost cities results coefficients on temperature are negative indicating that an increase in temperature in these areas improves agricultural productivity and lowers wheat prices. For the three southernmost cities, Florence, Naples and Madrid, the coefficient on temperature is positive indicating that an increase in temperature reduced agricultural productivity and lead to an increase in wheat prices. These results are consistent with previous results that have shown variation in the effect of temperature on city size across Europe.
<table>
<thead>
<tr>
<th></th>
<th>All Cities</th>
<th>Amsterdam</th>
<th>London</th>
<th>Leiden</th>
<th>Antwerp</th>
<th>Paris</th>
<th>Strasbourg</th>
<th>Munich</th>
<th>Florence</th>
<th>Naples</th>
<th>Madrid</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Latitude (°N)</strong></td>
<td>52.37</td>
<td>51.3</td>
<td>51.34</td>
<td>51.22</td>
<td>48.86</td>
<td>48.58</td>
<td>48.24</td>
<td>48.77</td>
<td>49.85</td>
<td>49.42</td>
<td></td>
</tr>
<tr>
<td><strong>Temp in 1500 °C</strong></td>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
<td>(6)</td>
<td>(7)</td>
<td>(8)</td>
<td>(9)</td>
<td>(10)</td>
</tr>
<tr>
<td><strong>Mean Temperature</strong></td>
<td>-0.106**</td>
<td>-0.0574**</td>
<td>-0.105***</td>
<td>-0.00484</td>
<td>-0.0665*</td>
<td>-0.0974***</td>
<td>-0.00673</td>
<td>-0.0329</td>
<td>0.100***</td>
<td>0.165***</td>
<td>0.0436</td>
</tr>
<tr>
<td></td>
<td>(0.0439)</td>
<td>(0.0240)</td>
<td>(0.0381)</td>
<td>(0.0162)</td>
<td>(0.0370)</td>
<td>(0.0277)</td>
<td>(0.0251)</td>
<td>(0.0338)</td>
<td>(0.0367)</td>
<td>(0.0347)</td>
<td>(0.0492)</td>
</tr>
<tr>
<td><strong>Year Fixed Effects</strong></td>
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<td></td>
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<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td><strong>Region*Year Fixed Effects</strong></td>
<td>yes</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>City Fixed Effects</strong></td>
<td>yes</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Observations</strong></td>
<td>2,903</td>
<td>282</td>
<td>415</td>
<td>215</td>
<td>133</td>
<td>354</td>
<td>361</td>
<td>316</td>
<td>305</td>
<td>248</td>
<td>274</td>
</tr>
<tr>
<td><strong>R-squared</strong></td>
<td>0.663</td>
<td>0.020</td>
<td>0.018</td>
<td>0.000</td>
<td>0.024</td>
<td>0.034</td>
<td>0.000</td>
<td>0.003</td>
<td>0.024</td>
<td>0.084</td>
<td>0.003</td>
</tr>
</tbody>
</table>

Note: Data are panel data for ten European cities. The left-hand-side variable is the yearly wheat price in grams of silver. The data are available for Amsterdam (1500-1910), London (1500-1914), Leiden (1564-1810), Antwerp (1500-1715), Paris (1500-1911), Strasbourg (1500-1875), Munich (1500-1911), Northern Italy (1500-1860), Naples (1914-1803), Madrid (1501-1800). Mean temperature is seasonal temperature. Regression 1 includes the complete sample. Regressions 2 to 11 include one city.

Robust standard errors are in parentheses and clustered at city level.

* *** p<0.01, ** p<0.05, * p<0.1
Conclusion

The potential effect of global warming on long-run economic growth is a central question in the current debate on climate change. Empirical evidence on the long-term effects of gradual temperature change, however, is scarce. This paper provides empirical evidence on the long-term effect of gradual temperature change on economic growth during the Little Ice Age, from 1500 to 1750. During this time temperatures decreased in most parts of Europe. Historians have shown that decreased temperatures led to shortened growing periods and more frequent harvest failure. In this paper, I econometrically test whether gradual adverse climatic change during the Little Ice Age affected economic growth. I construct a panel dataset for over 2,000 European cities with information on temperature changes and city size. Consistent with historical evidence, results indicate that, during this particularly cold period, temperature decreases had an overall negative effect on city size. Then, I use historical wheat prices to show that temperature affected economic growth through its effect on agricultural productivity. Additional results that are not included here show that cities that were especially dependent on agriculture, such as small towns and towns without access to long distance trade networks, were especially affected. Results also show that the effect of temperature varies across climate zones.

Bibliography

The effect of climate on stature since 1800

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Supervisors: Professors Bernard Harris, Andrew Hinde & Dr Aravinda Meera Guntupalli

The world’s climate\textsuperscript{561} is of interest to historians and economists because environmental conditions affect the health and development of the entire population. However, it has often proved difficult to establish a clear connection between climate and measures of health and well-being. One reason for this has been a shortage of adequate meteorological data. Another is the complex multiple pathways through which climate may be related to health. A third is the difficulty of choosing a suitable measure of well-being which can be applied to different countries over long periods of time.

One solution to the third challenge is that adopted by anthropometric historians who use height and weight to investigate the health and well-being of earlier generations. They have devoted considerable attention to the examination of factors that can affect stature and have emphasized such factors as diseases, inequality, urbanization and food prices, but the extent to which meteorological factors may have influenced height, either directly or through their impact on these intervening factors, remains uncertain. Over the very long-run Steckel and Rose (2002) and Koepke and Baten (2005) found that the relationship was either weak or non-existent.\textsuperscript{562} However, others such as Baten (2002) and Komlos (2003) have suggested that climatic factors did have an effect on stature in more recent periods.

There are, therefore \textit{prima facie} grounds for thinking that climate ought to influence stature. However, little is known about the nature of the relationship, whether it is the same in all countries and how humans have adapted to changes in climate over time. This paper investigates the impact of temperature and precipitation on male height in north India, Mexico, Spain and east United States over the last two centuries.\textsuperscript{563} Temperature and precipitation are used as measures of climate because they are available for long historical periods. We ask three questions: (1) what are the climatic mechanisms that potentially influence human stature; (2) how might we measure the extent of climate’s impact on stature; and (3) what, empirically, has been the effect of climate on human stature?

\textbf{Conceptual framework}

The proximate determinants of stature are diet, disease and work. Climate can influence stature indirectly, through its impact on these determinants, and directly, because of its impact on the number of calories needed for basal metabolism (figure 1).

\textsuperscript{560} The long version of this paper (co-authored with Aravinda Meera Guntupalli and Bernard Harris) provides a more systematic description of the countries, analysis of the data, includes seven other countries and further analysis. GG-V would like to thank Andrew Hinde for his comments on previous versions of this short paper.

\textsuperscript{561} Climate refers to the behaviour of the atmosphere at a given location over a relatively long period of time. Weather is the state of the atmosphere at a particular place and time as regards heat, rain or cloud cover.

\textsuperscript{562} Steckel and Rose (2002) used a health index based on data from skeletal remains such as stature or dental health.

\textsuperscript{563} For India and the United States we have concentrated on the north of India and the east of the United States as most of our height data comes from these areas.
Effect A is based on previous anthropometric literature which suggests a relationship between climate and stature through agricultural production (Baten 2002, 9). Agriculture is the main calorie producer for bodily growth, and year-to-year swings in harvest yields are sensitive to weather and climate shifts (Campbell 2010, 295). Effect B reflects that climate, along with other factors such as geography and topography, can affect the spread of vector-borne diseases such as diarrhoea, cholera and malaria. Effect C highlights the direct impact of climate on stature insofar as extremes of temperature require a higher basal metabolic rate and rob the body of energy that could be used for growth (Bogin 1999, 286-7). Lastly, Effect D identifies some of the ways in which climate can influence other factors which may affect stature independently. For example, if resources are depleted, this can lead to population movements and/or to conflicts over the distribution of scarce resources. Other possible intervening variables include economic performance, urbanization, infrastructure, trade and technology.

Data and methods
We have contacted the authors of a range of published studies to assemble the most complete and up-to-date collection of individual height data for the last two centuries, presented in this short version of the paper for only four countries (table 1). This allowed us to examine large amounts of data which have not previously been analysed together or in the context of studying climate effects on stature. Individuals have been organized by the year of birth because the first year of life is the most important in determining adult mature height (Tanner 1962, 121-3) and members of the same birth cohort are presumed to have been exposed to the same conditions throughout the growing period of their lives. We concentrate our analysis on complete (untruncated) distributions and as the ‘rejected observations’ heading shows, when place of birth, age or year of birth was fully recorded and individuals were born inside the relevant area and stood at their mature height at time of measurement, resulting in 399,317 separate observations.
Table 1: Male height data collection and analysis

<table>
<thead>
<tr>
<th>Place of origin</th>
<th>Period of origin</th>
<th>Source type</th>
<th>Data level</th>
<th>Paper reference</th>
<th>Initial obs</th>
<th>Incomplete or missing information about place of birth</th>
<th>Incomplete or missing information about age and/or year of birth</th>
<th>Individual measured at below mature height limits</th>
<th>Individual aged above 30</th>
<th>Implausible measurement</th>
<th>Total rejected obs.</th>
<th>Retained obs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>North India</td>
<td>1802-1808</td>
<td>Migrant</td>
<td>District</td>
<td>Guantupalli &amp; Baten 2006</td>
<td>55,318</td>
<td>2,405</td>
<td>n/a</td>
<td>11,888</td>
<td>53</td>
<td>60</td>
<td>41,406</td>
<td>90,492</td>
</tr>
<tr>
<td>North India</td>
<td>1914-1944</td>
<td>Migrant</td>
<td>District</td>
<td>Guantupalli*</td>
<td>26,186</td>
<td>217</td>
<td>n/a</td>
<td>1,860</td>
<td>n/a</td>
<td>n/a</td>
<td>2,077</td>
<td>24,109</td>
</tr>
<tr>
<td>North India</td>
<td>1951-1999</td>
<td>Survey</td>
<td>City/State</td>
<td>IHDS 2005</td>
<td>91,834</td>
<td>23,149</td>
<td>n/a</td>
<td>11,354</td>
<td>2,740</td>
<td>n/a</td>
<td>37,243</td>
<td>54,591</td>
</tr>
<tr>
<td>Mexico</td>
<td>1837-1958</td>
<td>Military</td>
<td>Region</td>
<td>López-Alonso 2001</td>
<td>5,618</td>
<td>n/a</td>
<td>n/a</td>
<td>371</td>
<td>53</td>
<td>n/a</td>
<td>424</td>
<td>5,194</td>
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<td>Military</td>
<td>Region</td>
<td>López-Alonso 2001</td>
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<td>n/a</td>
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<td>225</td>
<td>n/a</td>
<td>230</td>
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<tr>
<td>Mexico</td>
<td>1894-2002</td>
<td>Survey</td>
<td>Fed. Entity</td>
<td>MxFLSI</td>
<td>12,133</td>
<td>n/a</td>
<td>3,314</td>
<td>5,740</td>
<td>2,202</td>
<td>n/a</td>
<td>10,896</td>
<td>1,147</td>
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<tr>
<td>Spain</td>
<td>1840-1974</td>
<td>Military</td>
<td>Village</td>
<td>Puche-Gil 2011</td>
<td>126,161</td>
<td>n/a</td>
<td>45,026</td>
<td>n/a</td>
<td>n/a</td>
<td>n/a</td>
<td>45,026</td>
<td>81,135</td>
</tr>
<tr>
<td>East U.S.</td>
<td>1788-1851</td>
<td>Military</td>
<td>Town</td>
<td>Costa 2004</td>
<td>15,544</td>
<td>4,012</td>
<td>508</td>
<td>2,630</td>
<td>117</td>
<td>n/a</td>
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<td>East U.S.</td>
<td>1812-1844</td>
<td>Military</td>
<td>Town</td>
<td>Fogel et al. 1990</td>
<td>39,052</td>
<td>18,214</td>
<td>1,231</td>
<td>5,614</td>
<td>80</td>
<td>n/a</td>
<td>25,139</td>
<td>13,913</td>
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<tr>
<td>East U.S.</td>
<td>1816-1845</td>
<td>Military</td>
<td>State</td>
<td>Fogel &amp; Steckel 1990</td>
<td>1,973</td>
<td>530</td>
<td>569</td>
<td>122</td>
<td>n/a</td>
<td>1,230</td>
<td>743</td>
<td>434</td>
</tr>
<tr>
<td>East U.S.</td>
<td>1816-1845</td>
<td>Military</td>
<td>County</td>
<td>Steckel 2009</td>
<td>6,760</td>
<td>29</td>
<td>19</td>
<td>332</td>
<td>1,620</td>
<td>n/a</td>
<td>2,000</td>
<td>4,760</td>
</tr>
<tr>
<td>East U.S.</td>
<td>1802-1908</td>
<td>Military</td>
<td>County</td>
<td>Sunden 2007</td>
<td>21,700</td>
<td>4,130</td>
<td>n/a</td>
<td>3,159</td>
<td>2,465</td>
<td>n/a</td>
<td>9,754</td>
<td>11,946</td>
</tr>
<tr>
<td>East U.S.</td>
<td>1847-1959</td>
<td>Survey</td>
<td>County</td>
<td>Wu 1994</td>
<td>9,632</td>
<td>n/a</td>
<td>n/a</td>
<td>840</td>
<td>936</td>
<td>n/a</td>
<td>1,776</td>
<td>7,856</td>
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<tr>
<td>East U.S.</td>
<td>1900-1999</td>
<td>Survey</td>
<td>State/area</td>
<td>NHANES-I-II</td>
<td>10,824</td>
<td>3,935</td>
<td>n/a</td>
<td>6,693</td>
<td>5,044</td>
<td>n/a</td>
<td>15,672</td>
<td>4,152</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>635,127</td>
<td>65,307</td>
<td>102,187</td>
<td>55,377</td>
<td>15,536</td>
<td>403</td>
<td>238,810</td>
<td>399,317</td>
</tr>
</tbody>
</table>

Notes: Single asterisk denotes data unpublished or extended by previous


North India, Mexico, Spain and east United States have been selected based on the availability of height and climate data along with geographical characteristics, climatological features, and levels of economic and social development (table 2). India’s economy has always been tied to the agricultural sector with little change over time. Abundant precipitation in the north allows the cultivation of rice, wheat and pulses but it also spawns some diseases such as malaria. Mexico is a middle-income country that since 1800 has undergone economic stagnation, war, export growth, revolution and sustained economic growth. The tropic of Cancer divides the country into temperate and tropical areas and the soil type and El Niño make most of Mexico’s land unsuitable for agriculture where, since 1940, extensive irrigation projects have been carried out.

Spain’s main continental climate is characterized by very cold winters, very hot summers and low and irregular rainfall. Between 1800 and 1950 slow growth was accompanied by a delay in structural change. In 1910 two-thirds of the active population worked in agriculture (declining thereafter) and agricultural advances achieved in Europe were irrelevant to Spain, as land suffered from summer droughts, with the main crops being grain, citrus fruits and wine. Lastly, in the United States between 1820 and 1998 GDP per capita increased 21.7 fold on the basis of a robust system of federalism, democracy, limited government and thriving markets (North 2005, 114). In 1810 farming dominated economic activity but declined thereafter with a shift of the population from rural to urban areas. The United States is a large continental country with assorted different climates and the east side of the country has a humid climate with hot and warm summers and cold and snowy winters, with rain in all seasons.
For the temperature and precipitation, we used global modern high-resolution gridded meteorological datasets that extrapolate discrete instrumental observations to build large-scale views of land areas over grid. Temperature data from 1750 to 2000 are at 1º by 1º grid resolution and come from the Berkeley Earth Surface Temperature (BEST) dataset. The BEST data are reported as anomalies, but we converted these to absolute temperatures. For rainfall, from 1901 until 2000 we used a global dataset at 0.5º by 0.5º grid resolution from the Climatic Research Unit Time-Series version 3.2. We were able to extend the dataset for Spain, using the European Pattern Climatology dataset for 1765-1900, and for India, using data from the Indian Institute of Tropical Meteorology for 1813-1900. The information gathered amounted to 425 million weather points since 1750.

We used Geographical Information System (GIS) software to assign to each individual the climate that they were exposed to during their year of birth, performing a spatial join by location with the Euclidean distance between the place of birth and the weather grid point. Further work was needed to ascertain the present names of the locations: some places changed their names over time and in other cases different names exist for the same place. We excluded individuals born in the jurisdictional domain of a country but geographically located far away from the country itself (such as the Canary Islands) and as we used the present borders of the countries we excluded individuals who were born outside these (for example, Spanish recruits who were born in Spanish Morocco).

To estimate the effect of climate on stature we regressed height on temperature and precipitation in separate models using a rolling regression method. The rolling regressions involve the calculation of the coefficients for the regression of height on either temperature or precipitation in moving windows of a fixed size through the sample. This method shows how the impact of either temperature or precipitation on height has changed over time. To establish the best window for analysis, we selected 15-year windows using the target year as the middle year. In comparison to windows of 1, 3, 5, or 11 years, a 15-year window reduces the amount of volatility and shows the same major patterns as shorter windows. In comparison to windows of 21 and 31 years, it involves the discarding of fewer data at the beginning and end of each sequence for which data are available.

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564 One degree at the equator is about 111 km. Above and below the equator, the circles defining the parallels of latitude get smaller until they become a single point at the poles where the meridians converge.

565 A temperature anomaly of 1°C at point \(\text{i}\) in year \(\text{t}\) means that the temperature at \(\text{i}\) was 1°C higher during \(\text{t}\) than the mean temperature at \(\text{i}\) over the period 1950-80.

566 For example, we plot the coefficient based on the window 1900-14 against the middle year 1907.
Our estimated model is: $Y_{itk} = \alpha_{i} + \beta_{ik}T_{it} + \varepsilon_{itk}$ (1) where $Y_{itk}$ is the dependent variable, stature, for the case $i$ ($i = 1, 2, ..., N_t$), in the country $k$ ($k = 1, 2, 3, 4$), belonging to year $t$ ($t = 1, 2, ..., T$). The equation refers to overlapping intervals labelled $\tau$ ($\tau = 1, 2, ..., T$). Additionally, $\alpha_{i}$ is the climatic variable of interest, $\beta_{ik}$ is the coefficient on the climatic variable for the window $\tau$, and $\varepsilon_{itk}$ is the error term.

**Results and mechanisms**

Figures 2 and 3 present the estimated regression coefficients with their 95 per cent confidence intervals over time for a succession of overlapping 15-year periods. Consider first the results for temperature (figure 2). In the United States, we find a negative (though largely non-significant) association between temperature and height between 1851 and 1900, changing to a positive and statistically significant association between 1930 and 1950. In Spain there is a significant negative association during the 1880s, but from around 1900 a consistent and increasingly strong positive association emerges. In Mexico the association is negative between about 1870 and 1920, but not significant in other periods. Finally in India the sign of the association fluctuates over time, but is only rarely statistically significant.

How might these relationships be explained in the context of the theoretical framework discussed earlier (figure 1)? In the United States, Bleakley and Hong (2012, 22) found a similar relationship between temperature and adult income. They attributed this to the role played by technological improvements in overcoming the negative effects of being born in hotter parts of the country in the earlier period. These negative effects included malaria, which suggests a combination of Effects B and D were operating. In Spain, Carreras (2005, 39) emphasized ‘the intensity and regularity in the fall of mean temperature registered during the 1880s, coinciding with the Spanish agrarian crisis’. It may be that the effect of temperature on stature in Spain varied according to temperature levels, so that the unusually low temperatures of the 1880s led to a reversal of the usual positive association. In Mexico, where we find a negative association until the 1930s after which no significant association is observed, we can link the change to the transformation of the country from an agrarian society into a more industrialized country, which is likely to have involved technological changes which overcame the historical effect of temperatures on food availability (a mixture of Effects A and D in figure 1).
We turn now to the results for the effect of precipitation on stature (figure 3). In India there is an increasingly strong negative association over the period 1850-1950, and this is maintained into the late twentieth century. In Mexico no association seems to exist. Both the size and the strength of the association between precipitation and stature in Spain vary over time, but after 1850 the association becomes consistently negative. In the United States the association is non-significant until the 1940s, after which it becomes positive.

It seems that the heights of people who are born in India, therefore, are much more sensitive to rainfall than temperature, which is not surprising, as there are probably effects operating in different directions: drought may lead to poor food availability and a positive Effect A, but high rainfall may be conducive to water-borne and gastrointestinal infections and the promotion of malaria (Effect B). It seems that since 1850 the negative effect has dominated. Spain has an irregular hydrological cycle and rainfall is not abundant which is argued to be the single most important handicap faced by agriculture (Santiago-Caballero 2013, 460). In the case of the United States, technological changes in the twentieth century may have mitigated the negative effects of high precipitation on agricultural productivity, allowing the positive effect to dominate.
Summary and conclusions

This short paper has examined a number of different aspects of the relationship between climate and stature in different countries since 1800. The paper applies precision techniques to large amounts of data and provides evidence that two meteorological variables may have been related to variations in stature at different times and in different countries. We also find some evidence, as Fogel and Costa (1997) have contended, that the technophysio evolution has diminished the relationship between natural factors, such as climate, and height over time as a result of our increasing ability to control the environment in which we live. However, anthropogenic climate change may become more evident in the near future.

Of course, the two meteorological variables may be associated as, for example, in cold areas increases in precipitation are associated with the influx of warm and humid air. Our current models do not control for this, or for variations in other covariates such as urbanization. However, the results of this preliminary investigation are sufficiently interesting to warrant the use of more complex models incorporating economic and technological controls. So far we have concentrated on the overall association, but extending and refining the models would allow us to study the direct and indirect effects of climate on height in future work.

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ABSTRACTS OF ACADEMIC PAPERS
Paying the price for spiritual enlightenment: tax pressure and living standards in Kofun and Asuka-Nara Japan, c.300-794 AD

How did the twin processes of political centralization and urbanization in ancient economies affect the living standards of rural commoners? In this paper, we use quantitative information on public revenues (poll tax, land tax, and corvée labour; i.e. taxation on both income and leisure) and public expenditures in Japan during the Kofun (c.300-538), and Asuka-Nara (538-794) periods to investigate the consequences of the shift to a unified polity ruled by a centralized administration. The fact that a number of societies evolved towards this model only in the early modern or contemporary period is well documented by archaeological work and historical records. In various regions of the world, local agrarian societies deliberately remained apart and cultivated “the art of not being governed” (Scott 2010). By keeping the state at distance they avoided slavery, conscription, taxes, and corvée labour. It is therefore worth considering how the living standards of rural commoners evolved during the emergence of ancient states and the first large cities.

The protohistoric Kofun period, named after the Japanese term used for large-scale tumuli of local chieftains, came to an end with the diffusion of Buddhism among the political elite. The new Chinese-style political system of the Asuka period was based on new economic and religious institutions legitimized by Buddhism. However, in terms of most advanced technologies used in agriculture (including irrigated rice) and metallurgy, the transition from the Kofun to Asuka period was a very gradual one. Staple food production barely improved during the process of urbanization. But in the meantime, new types of public expenditures appeared, particularly for the construction of Buddhist temples and, albeit to a lesser extent, for the construction of palaces. In terms of urbanization trends too, Asuka marks the start of a new era. A new capital, Fujiwarakyo, was established in 690-704 with a master plan based on the grid system of Chang’an, the capital of Tang emperors. The population of Fujiwarakyo was estimated on a range between 10,000 and 60,000. The transfer of the capital to Heijokyo (Nara) was associated to a further increase in the size, the population reaching around 74,000 in the mid-eighth century.

The paper first discusses population growth and institutional change in the Kofun and Asuka-Nara periods. We then estimate tax revenues required for constructing large-scale tumuli in the Kofun period using benchmark data for a major Kofun and information based on archaeological records covering different Japanese regions. We can rely on estimates of labour inputs based on the study of Nintoku kofun by Obayashigumi (1985), which indicates that the building of this kofun, which has a volume of 1,405,866 cubic metres, required 6,807,000 working days (mostly unskilled workers) using techniques of the kofun period. A similar calculation is undertaken for estimating for capital formation related to the construction of Buddhist temples in Asuka-Nara period. A comprehensive estimation of the cost of major projects and their fiscal implications is possible for the Todaiji complex in Nara, built between 743 and 751. This project included a monumental building harbouring a massive 15m high statue of Buddha made in bronze and around 450 tons. It required large financial resources founded in part by private contributions for the purchase of material: 51,590 donators were recorded for lumber and 372,075 for gold. Our findings indicate that tax pressures, which fall most heavily on peasants, increased sharply in the Asuka-Nara period. The tax pressure was equivalent to around 5% of GDP in the Kofun period and increased to around 20% in the Asuka-Nara period, an extremely high figure considering that average per capita income was barely above subsistence level in eighth-century Japan.

We finally examine how urbanization affected the nutritional status of commoners in rural areas of the Kinai region (the core around Nara, including present-day Kyoto and Osaka.
Academic Session I / A

Meat consumption drastically declined in Japan in the seventh and eighth centuries. The received wisdom is that this change occurred as a result of the proclamation in 675 by Emperor Tenmu of a ban on meat consumption. Archaeological evidence shows that swine animal husbandry was common in Japan during the Kofun period, and that pork, not only the flesh of wild boars but also that of domestic swine, was part of the standard diet (Crawford, Takamiya, 1990; Anezaki 2007). Our conjecture, based on food supply estimates for the Kinai region, is that the prohibition of meat consumption that was ostensibly associated with Buddhism, was in fact motivated by difficulties in provisioning in rice the political capital. The restrictions on animal husbandry reduced the use as feed of non-rice staples (in particular barley, millet, buckwheat). This made non-rice grains available for the food consumption of commoners and, as a consequence, increased the volume of rice available for provisioning the capital city through taxation.

We argue therefore that the introduction of new institutions resulted not only in a dramatic rise in personal income inequality but also in a decline in the nutritional status of rural commoners. The reason why the new social order was apparently well accepted could be that Buddhism was perceived as a pacification device that reduced the exposure of agricultural producers to warfare-related risks, while improving social stability, property rights, and contract enforcement.

Keywords: political centralization; urbanization; taxation; living standards; nutrition, Buddhism; Japan.

References

John Tang (Australian National University)

A tale of two SICs: industrial development in Japan and the United States in the late nineteenth century

Between 1870 and 1900, the United States saw a three-fold increase in the value-added of manufacturing, with its share of national output rising 4 per cent over the period to just under a fifth of total income. While this rapid expansion of American industry laid the groundwork to the country’s economic leadership in the twentieth century, no less remarkable was the catch up of other late developing countries, particularly Japan. Starting from a much smaller base, Japanese industry also grew apace, with manufacturing’s share of national income increasing 4 per cent between 1885 and 1900, and another 3 per cent the following decade to reach 18.5 per cent in 1910. In effect, what took the United States three decades was achieved by Japan in half the time.

Like other late developing countries, Japan had the opportunity to hasten its development by adopting technologies at their current best practice, also known as technological convergence. Besides potential savings in time and resources for the economy as a whole, this process also allows for policymakers to target industries that may have a relative comparative advantage and for entrepreneurs to compete with established foreign producers in local and possibly international markets. This was the case for leading Japanese sectors like railroads and cotton textiles that used state-of-the-art equipment and production techniques; less is clear is whether the country’s path to industrialization can generally be
described as asynchronous for the economy as a whole or if adoption was ad-hoc and specific to certain industries.

While numerous studies have examined economic convergence between leaders and laggards, few examine the actual timing or dimensions of technological catch-up. Are increased labour productivity or the number of steam engines by themselves sufficient statistics to assess industrial advancement or economic policies? How can different types of technologies and sectors be measured and compared without loss of generality? These issues, difficult by themselves within a single economy, are magnified when making international comparisons crossing time and space. Japan’s industrial development in the Meiji Period (1868-1912), however, provides a unique context to analyse the dynamics of technology adoption due to its relative isolation prior to its integration into the world economy and the observed introduction of foreign technologies thereafter.

To assess the relative speed of Japanese technology adoption, this paper uses official statistics of manufacturing industries starting in 1885. These data, which include figures on establishments and industry capitalization, allow one to identify when sectors appeared in the country and grew in importance during its initial wave of industrialization. The timing of Japanese industrial change is then compared to that of the United States at an earlier period to establish whether the two economies followed similar patterns. Assuming that the classification of industries is a reasonable proxy for embodied technologies and that the chronology corresponds to technology adoption, comparing the two countries’ experiences may demonstrate the extent to which Japan engaged in technological leapfrogging relative to an industrial leader.

To test the hypothesis that Japan adopted technologies faster than advanced economies like the United States, and thus enabling it to converge toward industrial leaders, this paper uses a duration analysis model to compare the relative timing of industry development in the two countries. It does this by estimating the expected time to when a new industry will appear in an economy based on a parametric model that reflects the observed behaviour of events in the data and is conditional on covariates that may influence the occurrence. Also, since the impact of industrialization is felt more in its sustained growth over time as opposed to a possibly short-lived market appearance, separate regressions are run using as the dependent variable the duration until an industry attains economic significance, defined as having at least 0.5 per cent of the country’s total manufacturing capital. One of the advantages to using duration analysis instead of other regression models is that censored subjects (e.g., industries that do not pass the capital threshold) remain in the analysis and thus improve the precision of the estimated coefficients.

Estimates from duration model analysis show substantial differences in the respective industrial development of the two countries in the second half of the nineteenth century. Consistent with technological convergence, per capita income levels were inversely correlated with the speed of adoption in general (i.e. poorer countries adopt new technologies more quickly); however, benchmarked against the United States, new manufacturing sectors do not appear in Japan relatively earlier and in some cases emerge later. In both countries, but especially true for Japan, industries with larger firms are associated with faster introduction. Furthermore, unlike in the United States, a lower share of capital among related sectors and higher capital intensity appear to speed up technology adoption.

In contrast, for industries that became economically significant, defined as those attaining at least 0.5 per cent of total manufacturing capital stock, Japanese industries passed the threshold more quickly than those in the US. This result obtains even though both per capita income levels and firm size become directly correlated with economic significance (i.e. richer countries pass the capital share threshold sooner). Results for both new industry entry and industry significance are robust to different specifications, although higher capital thresholds weaken the significance of faster Japanese industrialization.
As a whole, these results qualify the conventional wisdom that Japanese industrialization was based simply on accelerated adoption and diffusion of foreign technologies by controlling for industry characteristics and differentiating between sector appearance and their rise to economic importance. New technologies were adopted more slowly, but once introduced spread more quickly through the economy. This may have been due to the relative concentration within Japanese industries, with larger firms able to standardize application of new production techniques more effectively.

Bishnupriya Gupta (University of Warwick) & Tetsuji Okazaki (University of Tokyo)

*When did Japan overtake India? Evidence from cotton mills*

Japan’s spectacular success as an industrial economy after Meiji Restoration stands in contrast to India’s sluggish industrial growth over the turn of the nineteenth century. The comparison between the GDP per capita of the two countries in 1870 make them comparable, but by 1913 Japan’s per capita GDP was twice as high. Comparing labour productivity in a major industry, the cotton textiles, provides new insights. Using firm level data we find that there was no significant difference in labour use per machine in cotton spinning textile producing firms in India and Japan, but by 1910 the Japanese firms had significantly higher labour productivity. The results hold for 1933 although the difference did not widen. The paper explores reasons for Japan’s success. Money wages in Japanese cotton mills rose twice as fast and may have been a driver for productivity increase. Better managerial practices may also have contributed to it.

Ryo Kambayashi (Hitotsubashi University)

*The role of public employment services in a developing country*

Like all developed and developing economies, Japan struggled with labour market issues in the process of industrialization. The Public Employment Service (PES) was probably the only countermeasure of the Japanese government before 1938, since other labour market policies such as minimum labour standard, unemployment insurance, and unionization were highly restricted by the political climate. In this paper, we discuss the importance of the institutional arrangements of the PES by examining the developing stage of the Japanese labour market. In Japan, the PES was first institutionalized officially by the Employment Exchange Act in 1921. In the wake of the Kanto earthquake disaster in 1923, the PES played a substantial role in the recovery process, which implies the capacity of the PES to reduce unemployment even in a developing economy. However, under normal economic circumstances during the 1910s and 1920s, the institutional arrangement of the PES – namely, the financial backbone of the government and the nationwide network – was not effective as shown by anecdotes and ad-hoc surveys. The statistical analysis of the matching function clearly shows that the PES, at least during the 1920s, had a fundamental problem – lacking long-term relations with other economic agents. Finally, improvements were made in the PES during the 1930s to cope with the economic crisis from the Great Depression. Such improvements were realized by incorporating already-existing networks of organizations that spontaneously emerged at the grassroots level. By 1938, when the Employment Exchange Act was revised to abolish private agencies, some PES centres had already absorbed nearby private networks and the matching technique of the PES was almost the same as that of private agencies. An ad-hoc physical and financial investment by the government may not lead to the provision of efficient public services, and it is important to recognize that labour market policies are based on a long-term relationship among the PES, job seekers, and employers.
I/B Financial Crises

Mark Billings (University of Exeter)

Managing risk or appeasing the Nazis? British banks and Standstill debt in the 1930s

This paper explores an episode in which Britain's banks were forced to address a shared problem, unusual in size and form, which required them to exercise judgment in the face of financial, economic and political pressures and uncertainties. In July 1931 financial crisis led Germany to declare a defacto moratorium on its international debts, including normal commercial debts, which were soon subject to a Standstill agreement. British creditors, including the banks, were left heavily exposed to German debt which had suddenly become subject to sovereign and, with the abandonment of the gold standard, currency risks.

The Standstill provided for limited payments to the creditors and was renegotiated and renewed regularly until the outbreak of World War Two. But, in what some observers regarded as enlightened pragmatism, the British banks appeared less aggressive than most Standstill creditors in reducing their exposures. Under significant pressure from government and the Bank of England, both of whom wanted to keep Germany integrated with the international financial and trading system and defuse economic tensions, the banks were obliged to balance patience against the desire for speedy recovery of their funds, as Forbes (2000) has documented in his study of the wider relations of British business with the Nazis.

Others, for example Kirshner (2007), have interpreted the banks' behaviour as one-sided concessions which contributed to 'economic appeasement', defined by Peden (2000, 300) as 'attempts to secure peace by removing the economic imperatives for war'. This remains a controversial topic, and sensitivities have very recently been aroused by confirmation of the Bank of England’s role in the transfer of gold from the Czech National Bank to the Reichsbank in 1939 (examined earlier by Blaazer, 2005).

This paper, based on new evidence from bank archives, and contemporary and recent secondary sources, makes two contributions. First, I argue that the major British commercial (or clearing) banks dealt with Standstill debt, notwithstanding its unusual political character, in a manner broadly consistent with their management of risk arising from other types of lending (recently examined by Baker and Collins, 2010), and informed by their experience of dealing with ‘problem’ exposures over the preceding twenty years. Second, I reinforce Newton’s (1996) interpretation of economic appeasement, and assert that the outward appearance of a common approach by ‘City interests’ implied by the Standstill arrangements fails to explain the behaviour of different banks. In reality, the pressure exerted by government and the Bank of England led different institutions to make their own decisions in addressing German exposures after making their own assessments of risk and reflecting their own commercial interests.

References


Academic Session I / B


**Keywords**: 1930s; appeasement; bad debts; British banks; German Standstill.

**Oliver Accominotti** (London School of Economics)

*The propagation of the 1931 financial crisis to the New York and London financial centres: new evidence from micro-data*

The year 1931 was marked by the most severe financial crisis of history. A banking panic in Austria in May rapidly propagated to neighbouring countries, Hungary and Germany, before spreading to the global economy. In September, the United Kingdom was pushed off the gold standard. The central European crisis was also followed by a wave of banking failures in New York City.

Most scholars recognize that financial troubles in the European periphery spread contagiously in 1931. Yet, recent research on this episode has provided conflicting results. On the one hand, Accominotti (2012) reports evidence that British banks’ exposure to Germany was an important cause of the 1931 sterling crisis. On the other hand, Richardson and van Horn (2009) argue that banking failures in New York in 1931 had little to do with troubles in Europe and were rather a consequence of intensified regulatory scrutiny.

Why did the central European crisis affect the banks in London and not in New York? This paper provides a comparative analysis of the impact of the German crisis on both financial centres. First, using new archival material, I document for the first time the New York banks’ exposure to Germany. Second, I present a new dataset of London and New York banks’ foreign correspondents in the early 1930s.

I argue that differences in banking structures between the US and the UK explain why the German crisis affected London more severely than New York. The introduction of capital controls by Germany in July 1931 resulted in the freezing of short-term credits to German debtors. Most of these credits took the form of bankers’ acceptances, an instrument through which a bank in an international financial centre could guarantee a foreign customer’s debt in exchange for a fee.

In London, accepting foreign bills was the merchant banks’ speciality. These institutions were weakly capitalized but enjoyed an informational advantage over the commercial banks in acceptances, as they could rely on their extensive network of foreign correspondents built over more than a century. Yet, those merchant banks with strong connections to Germany suffered a huge shock in 1931.

The situation was different in the US, where accepting foreign bills was still a new activity, as New York had only recently emerged as an international financial centre. When legal restrictions on acceptances were removed in 1913, no institution already enjoyed an informational advantage. The first banks to enter the business were therefore the largest and most capitalized ones. For this reason, exposure to Germany was concentrated among those institutions which were the best able to cushion a German default.

New archival evidence supports this argument. First, I find that the most exposed US banks had enough capital to cushion the shock imposed on them by the German crisis. Second, I show that, in contrast to the London merchant banks, which specialized on a few countries where they had close connections, New York banks were much more geographically diversified. The paper emphasises the role of the domestic banking structure in countries’ ability to insulate themselves from contagion during the 1931 financial crisis.

**Kerstin Enflo** (Lund University) & **Joan Rosés** (London School of Economics)

*The Swedish recovery from the Great Depression*

In the current policy debates over the ongoing Great Recession, historical experience has conspicuously figured. More prominently, several policymakers have legitimized their policy responses to the financial downturn with historical analogies to the Great Depression of the
1930s. The Swedish recovery from the Great Depression is a case study that led to numerous analogies by specialized media and policymakers. The reason for this is simple: Sweden was one of the countries that recovered earlier and swiftly from the economic downturn that followed the 1929 crash. Everybody agrees that the abandonment of the gold standard by September 1931 was the first step toward the economic recovery of Sweden. However, a profound disagreement subsists among academics on what sustained GDP growth rates during the rest of the 1930s. Then, some have argued that Swedish recovered because a new Social Democratic government introduced an expansionary fiscal policy. Others, instead, have championed the idea that Sweden experienced a typical export-led recovery benefiting from its weak currency and a vigorous foreign demand, mainly from Germany, of certain Swedish commodities. Sweden’s success has been also attributed to the action of the Bank of Sweden, which was able to implement a new monetary policy that avoided both banking crisis and inflation. Finally, others have insisted on the importance of domestic demand for economic growth during the 1930s.

Each of these different historical interpretations of the Swedish recovery from the Great Depression may generate different analogies and, hence, policy recommendations to remedy the current economic recession. To disentangle what caused Swedish recovery during the Great Depression, our research strategy is the following. First, we begin by reviewing the basic macroeconomic data. At first sight, macroeconomic evidence gives little support to several of the above mentioned hypothesis about Sweden’s recovery during the 1930s. In particular, government investment and consumption only grew modestly during most of the 1930s. Similarly, the share of exports in GDP did not grow significantly over these years. Even, inflation was not constant over the years. Instead, non-tradable sectors experienced notable rates of growth and, at first sight, appear to be the leading sectors of the Swedish recovery.

We test this hypothesis with the use of a panel of counties and industries. Specifically, we analyse the effects of export and domestic prices on the probability of an industry $x$ in a county $i$ came back to its pre-crisis growth path or economic level. Given that the changes in international and domestic prices were exogenous to the local industry, we use an efficient measure of the causes of economic recovery. Our results indicate that movements in domestic prices explain much better the expansion of certain industries than international prices. In other words, Swedish recovery was more domestic-led than export-led.

Christopher Coyle, Gareth Campbell & John D Turner (Queens University Belfast)
This time is different: causes and consequences of British banking instability, 1830-2010

Financial crises and banking instability have various causes, and may have substantial consequences for the real economy. Importantly, instability in the financial system may have a significant effect on the cost of credit intermediation.\textsuperscript{567} Increases in the cost of credit intermediation will reduce the efficiency of the financial system, potentially having a detrimental effect on financial development, and consequently, economic growth. It is important, therefore, that we have a robust knowledge of the scale of financial instability over the long run as well as any associated causes and consequences.

Studies on financial crises over the long run generally use a narrative approach in determining whether a crisis has occurred or not.\textsuperscript{568} This makes it difficult to differentiate
between different levels of financial instability, and does not allow rigorous testing of the causes and consequences of this instability. A potentially superior method of assessing the scale of banking instability is to use the price of bank stocks. In this paper, in order to examine the long-run stability of British banking, we analyse a new dataset of monthly British bank share prices, which spans 181 years. We find that the banking system has faced varying degrees of instability during this 181-year period. Notably, we find that instability increases significantly in the second half of the twentieth century and peaks in 2007-8.

We assess the macroeconomic triggers of British banking instability over this period. Our results indicate that interest rate volatility, inflation, and equity prices are significant indicators of banking instability over the last two centuries.

We also examine the consequences of banking instability, specifically for changes in the cost of credit. This is tested using a hand-collected annual dataset of corporate and government bond yields since 1860. We find that there is a significant relationship between banking instability and the cost of credit in the UK over the sample period. Furthermore, the increase in the cost of credit caused by financial instability is more severe for smaller and more risky firms.

Keywords: banks; financial crisis; corporate debt markets; cost of credit.

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I/C  World War and Women in the Twentieth Century

Jessica Bean (Denison University)

Female workers and the First World War in Britain: why no labour supply shock?

Countless accounts of the increase in female labour force participation in the United States credit the positive shock to their labour supply provided by World War II (most recently, Goldin and Olivetti 2013). This raises a puzzle about the experience of female workers during and after the First World War in Britain. Although the number of female workers increased by as many as two million and proportionately by as much as 50% between 1914 and 1918, and women replaced male workers extensively in previously male-dominated industries, Census figures show no increase in female labour force participation between 1911 and 1921, and very little of any increase by 1931 (Braybon 1981; Hatton and Bailey 1988). At the same time, the war is credited with opening up opportunities for female workers in the clerical sector (Seltzer 2011), so it may be that the wartime and postwar experiences of women in different industries and economic categories varied widely – as indeed Goldin and Olivetti (2013) find was the case for the US after WWII.

A debate about whether the experience of female workers in Britain during the First World War constituted a watershed moment for women’s position in the economy or not appears to exist in the historical literature, but the issue has been explored very little in the economic history literature, using the tools of economic theory and quantitative analysis. Using Census data and data collected from numerous wartime government reports and surveys, this paper aims to answer the question: why were the female labour supply effects identified for WWII in the US absent for WWI in Britain? Was the issue primarily one of a decline in the demand for female labour after the war, or the lack of a positive labour supply response? In order to compare the experience of British women in WWI to that of American women in WWII, this paper aims to identify who the war workers were, what motivated them, and possible explanations for their withdrawal after the war, as well as differences in the experiences of women by occupation and industry.

Works cited

Price Fishback (University of Arizona), Dina Shatnawi (Naval Postgraduate School) & Alec Smith (Cal Tech)

The labour market for American women during three crises: World War I, the Great Depression, and World War II

The rapid advancement of females in the work place has sparked empirical interest in historical events that have influenced their economic progress. We analyse the relative annual earnings of males and females and the extent of segregation across industries and between industrial and clerical work between 1915 and 1950 in the US. This period spans three major crises: World War I, World War II, and the Great Depression. Most prior studies focus on data from the Censuses of 1920, 1930, 1940, and 1950, which causes the studies to miss the most dramatic changes during the period, which all occurred between census years. We use annual data from 300 industries in Pennsylvania to explore the exact timing of the changes.
We develop a counterfactual trend for the paths of gender segregation and differences in annual earnings by forecasting from trends between 1923 and 1929. We chose the 1923 and 1929 years to establish trends based on business cycle peaks between the crises of World War I and the Great Depression during a period when female employment was changing mostly due to the rise in the clerical sector and not due to any other specific event. We estimate changes in labour demand for specific industries to examine differential labour effects by industry. We find the same patterns during World War I and World War II. The share of women in clerical salaried positions and in industrial positions grew during the war. Our results suggest that WWI and the high school movement had a long lasting impact in advancing women’s economic roles. WWII had a larger initial impact in increasing female labour force participation because World War II lasted so much longer than World War I. Claudia Goldin’s work using the Palmer data from World War II and immediately after shows that World War II did not lead to a major shift toward women in the workforce immediately after the war because many women employed during the War were no longer employed by 1950 and many who were employed in 1950 were too young to have been employed during the war. The longer range look afforded by trends back into the 1910s and 1920s suggests several interesting results. First, a very large big jump in women’s industrial opportunities in both wage and salaried work occurred during World War I. Between 1915 and 1919 women’s share of both wage work and salary work jumped markedly. Both percentages in Pennsylvania stayed roughly the same as their 1920 levels through the Depression and into the early 1940s. The shares then jumped markedly again during World War II. Moreover, we find using the Duncan Dissimilarity Index, that WWI had a long lasting impact in reducing occupational segregation across industries. Second, a look at the longer-term trends show that both the number of female production and clerical workers in Pennsylvania in the late 1940s were significantly above the levels that would have been found had the trends from the 1920s continued.

Sheena Evans

A Memorandum of Dissent: divided opinion within the 1944-46 Royal Commission on Equal Pay

The Second World War resulted in the greatest and most systematic mobilization of female labour in all areas of employment yet seen in Great Britain. Measures to avoid industrial unrest caused by disparities in pay for men and women were at first largely effective. But once victory was in sight, pent-up frustration began to break through. In spring 1944, following a strike at an aircraft factory in Scotland the previous autumn, a parliamentary vote in favour of equal pay for men and women teachers and an ongoing campaign for equal pay in central and local government service, the wartime coalition government decided to set up a Royal Commission on the subject. Unusually, the Commission was both small (eight members plus chairman) and gender-balanced, with four men and four women selected to represent areas of general interest.

The government intended by this to show that it was taking seriously a complex and emotive subject; but also and more importantly to ‘park’ the issue until the war was over, and in the process to neutralize pressure for change. The expectation was that this pressure would be much reduced when fewer women were employed on producing armaments, and that the anticipated dire economic situation of the immediate postwar period would provide an excuse for government to take no further action.

The terms of reference of the Commission specified that it was “to examine the existing relationship between the remuneration of men and women in the public services, in industry and in other fields of employment; to consider the social, economic and financial implications of the claim of equal pay for equal work; and to report”. There were to be no recommendations to which government would have specifically to respond. And the
commissioners chosen were intended so far as possible to be of a type who would produce, or
acquiesce in, a report which was conservative in tone.

It took six months to set up the Commission, and two years rather than the expected six months to a year for it to publish its report. Some of the initial delay may have been intentional, but once the work started the commissioners had no desire to prolong it unnecessarily. Delays then were down to genuine difficulties in getting essential information, and deep and ultimately irreconcilable differences of opinion among members. By the time the report was produced, in November 1946, the country was at peace, under a Labour government which was committed both to severe austerity and a popular and wide-ranging health and welfare reform programme.

The main questions addressed by the paper will be how members of the Commission were appointed; how and why opinion among them was divided; and how the Memorandum of Dissent which was published with the final report came to be written. This will necessarily involve some reference to contemporary feminist and socialist opinion, the effect of wartime experience on male and female attitudes to women at work, and the effect of the class divide on women’s own experience and perceptions.

The sources used are primarily government files on the Royal Commission in the National Archives, and the 1946 Report of the Commission (Cmd 6937). There are also some personal letters and in one case a memoir written by the main participants; as well as relevant Trades Union Congress and British Employers’ Confederation files at the Warwick University Modern Records Centre.

Chance, and long-term trends in the economy and in public opinion, played their part in this story. But the paper’s main conclusions will be that:

(i) the argument within the Commission was carried forward primarily by two of its members: the economist Dennis Holme Robertson who had recently become Professor of Political Economy at Cambridge, and Dr Janet Vaughan, a pioneering haematologist who became Principal of Somerville College Oxford in 1945;

(ii) Dr Vaughan almost won a majority of Commission members to her viewpoint. If she had done so, the final report would have followed the line taken in the Memorandum of Dissent which she wrote and which two of the three female members of the Commission joined her in signing;

(iii) the Memorandum, which owed much to a paper put to the Commission by the Cambridge economist, Joan Robinson, and to her later advice, placed on record a lucid, coherent argument in favour of equal pay for women which helped keep that cause alive in the years after the Second World War.
I/D Height and Health

Timothy Hatton, Roy Bailey (University of Essex) & Kris Inwood (University of Guelph)

Heath, height and the household at the turn of the twentieth century

An extensive literature has analysed the heights of children and adults during the nineteenth century and earlier to provide a window on the proximate determinants of health. As is widely recognized, height is influenced both by nutrition and by the surrounding disease environment during infancy and childhood. Most studies of the heights of adults analyse military recruits or conscripts but the information on childhood circumstances is often limited to characteristics of the locality in which they were born and perhaps the occupation of the individual or that of his father. Yet much of the interest, and inference, from these studies relates to the conditions within the household, for which local area characteristics can be only a rough proxy. As a result it has not generally been possible to distinguish between those effects that genuinely arise from the locality, such as the local disease environment, and those that stem from within the household.

In this paper we analyse for the first time a sample of soldiers who enlisted in the British army around the time of the First World War. Given the vast numbers that were recruited, these are likely to be a more representative cross-section of British males than samples observed in peacetime. And all the more so as we focus exclusively on those born in the 1890s, who were young adults during the war and for whom enlistment rates were extremely high. In order to capture the conditions in which they grew up we find the households of these servicemen in the 1901 census. Because we search each case individually using the information recorded on enlistment we achieve a remarkably high match rate of 80 per cent. We also link the individual and his childhood household to the characteristics of the registration district in which they were located. This gives a much finer classification of local conditions that would be possible at the county level, while ensuring a mix of urban and rural locations.

Our findings point to a number of household features that are associated with differences in adult height. Most important of these is the negative effect on height of the number of brothers and sisters. Our results therefore support the idea of a trade-off between the quantity of children and their quality in terms of health – something that is widely believed for the nineteenth century, but rarely measured. Other results include a negative effect of overcrowding on height and, somewhat surprisingly a negative effect of the share of earners in the household. These capture elements of both nutrition and disease, but particularly the latter. In the presence of these variables the occupational class of the head of household has only a modest independent effect. However, local conditions still matter, in particular, the disease environment as represented by infant mortality. Thus is consistent with other studies, but we also find that female illiteracy has a negative effect on height. This is suggestive of the idea that a more educated female population was conducive to the better nurturing of children.

Eric Schneider (University of Sussex)

Children’s growth in an adaptive framework: explaining the growth patterns of American slaves and other historical populations

This paper presents a new adaptive framework for understanding children’s growth in the past. Drawing upon the recent work of Gluckman and Hanson (2006) and their co-authors on adaptive responses in relation to growth, I present several adaptive mechanisms that affected the growth patterns of children. First, the general or average conditions experienced by a foetus in utero lead to a predictive adaptive response where the foetus develops assuming that the postnatal environment will closely match prenatal conditions. Thus, the metabolism and growth trajectory of a child is programmed during the prenatal period: children experiencing good conditions in utero would have a higher metabolism and growth trajectory than their
counterparts facing poor conditions. Second, a nutritional or disease shock in childhood or adolescence can lead to an immediate adaptive response where growth is temporarily slowed until the child has enough energy to continue growing. Third, poor conditions before the pubertal growth spurt can prompt the child to delay his/her growth spurt until conditions improve. All of these responses are adaptive because they increase the probability that a child will survive to reproductive age and produce viable offspring, but this does not mean that there are no costs involved. Having discussed the framework in great detail, I then use it to reinterpret the growth pattern of American slaves (Steckel, 1979, 1986). I argue that the mismatch between relatively good conditions in utero and absolutely appalling conditions in infancy and early childhood led slave children to become incredibly stunted by age three or four. However, after this age, slave children experienced rapid catch-up growth, first because their immune systems had become more developed and had adapted to the poor disease environment and later because their diet improved tremendously when they entered the labour force around age ten. Thus, American slave children were able to experience rapid catch-up growth because they were prenatally programmed for a higher metabolism and growth trajectory. The paper concludes by setting out some stylized facts about children’s growth in the past and pointing toward areas of future research.

Bernard Harris (University of Strathclyde) & Andrew Hinde (University of Southampton)
Sanitary reform in England and Wales, 1871-1914

In 1890, the former Chief Medical Officer to the Local Government Board for England and Wales, Sir John Simon (1890), argued that the value of the loans contracted by local authorities for public works from central government funds was a powerful index of sanitary effort. This claim was repeated by Anthony Wohl (1983) in his classic study of ‘Endangered lives’, and by Simon Szreter (1988), in his critique of Thomas McKeown’s (1976) account of the reasons for the decline of mortality. Floud, Fogel, Harris and Hong (2011) also highlighted the importance of these loans in their study of ‘The changing body’.

Despite their importance, the purpose and distribution of these loans have not been analysed in any great detail. However, we have now assembled a database which includes details of the value of the loans contracted by each local authority and the purposes for which they were intended. This paper will present an analysis of these data, shedding new light on the content, distribution and timing of public works loans throughout England and Wales during this period. We also aim to compare the pattern of the loans with the geography and timing of mortality changes in order to increase our understanding of the role played by sanitary reform in the process of mortality change.

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I/E The State and the Shaping of Good Taste

Giorgio Riello (University of Warwick)

The state and the textile industry in early modern Europe

What is the role of the state in fostering innovation in the ancient regime? My paper focuses on eighteenth-century France – perhaps one of the most complex state bureaucracies in early modern Europe. It does so by considering the production and trade of textiles – a major sector of the French economy with the Lyons silks, the fine woollens and the new cotton industry that developed in Rouen and other parts of the kingdom at the end of the eighteenth century. By focusing on textiles, it shows that many of the characteristics that we associate with fashion seem to have been born out of the liberal era of the second half of the nineteenth century in which freedom of innovation and enterprise went hand in hand with freedom of choice for the consumer. However, the opposition between an ancient regime dirigiste and a liberal nineteenth century is untenable. In the ancient regime, fashion was shaped in the mounds of an economic and social system that provided structures for its industrial formation, innovation, and relationship with consumers. I have chosen to focus on the role of the state because, among the ‘fashion stakeholders’, it owned a majority position. It was within the rules imposed by the state itself that the interests of different actors were played. National markets were shaped by the rising European nation states. From the mid-seventeenth century states started to develop mercantilist positions based on protectionism and regulatory policies. They had at their disposal complex bureaucratic structures. They gathered an unprecedented amount of information, for instance on colours, patterns as well as quantities, qualities and varieties of cloths produced that was collected by state officials as part of a methodical regulation of trade and production. The political economy expands therefore beyond the mere enactment of laws and their enforcement. Under the rubric of ‘regulation’ are a series of tools that the state and its local agencies used to shape not just ‘the economy’ as a new national concept but also local production, trade and distribution. This paper is based on archival research carried out on a series of manufacturing enquiries over the course of the eighteenth century that show the existence of a complex structure governing production and at times encouraging innovation.

Luca Mola’ (European University Institute)

Textile manufactures and state policies in Renaissance Italy

The production of medium and high quality woollen and silk cloth was at the heart of the economic success of many Italian states during the Renaissance. The supply of raw materials for these two crafts, as well as the sale of their final products, involved geographical areas that ranged from the whole European continent to the Ottoman Empire, the Middle East, South-East Asia and even the New World, therefore reaching a global dimension. This paper will consider broad economic policies adopted by Italian governments in order to support textile production from the fifteenth to the early seventeenth century, and particularly their role in fostering the development of new technologies that would maintain their goods competitiveness in international markets. Special attention will be dedicated to state-sponsored innovations aimed at improving the quality of fabrics through new spinning, dyeing and weaving processes, and to the mechanisms devised for attracting foreign know-how and technicians from other parts of the Italian peninsula and from abroad. The main aim of the paper will be that of finding the common elements that determined the economic policies of Italian states in a period of expanding markets and growing international competition.
Klas Nyberg (Stockholm University)

The Swedish textile trade in the early modern period

This paper argues that the national manufacturing policies enacted by the Swedish state played an important part in shaping taste and consumer preferences in the seventeenth and eighteenth centuries. Sumptuary laws; bans on textile imports and other consumer goods; privileges and legal protection; and hallmark standards and the creation of hallmark courts (created with the ‘trading house privileges’ of 1668, the dressmakers’ order of 1688 and the woollen clothiers hallmark standard of 1722) were all means though which the Swedish state actively encouraged the manufacturing of high-quality goods. The arguments proposed and the rules which were eventually enacted were inspired by an international framework in which the leading industrial areas of France, England, Flanders and Germany acted as models for the Swedish manufacturing regulations and for the textile technical ‘instructions’ in particular. These instructions were to remain in existence until after the crises of the 1760s when the Hat Party’s subsidy policy was turned into a more realistic national industrial policy.

Economic policy took on new significance during the changes which came about in the early nineteenth century. Textile production concentrated on fewer grades of highly technical design, although it remained embedded within the general framework provided by the international textile industry. During a transition period in the late eighteenth century, manufacturing and handicraft came to interact in a number of different ways: it was not simply a case that mercantile cloth was increasingly combined with craft-produced textiles; national industrial policy also included efforts to produce premium-quality wool and yarn and to develop new preparatory, dyeing and finishing processes. The finished cloth became more standardized in design, its width and other details came to be regulated by state legislation, and attempts were made to influence the crafts sector’s products in the same direction. This paper argues that it was thanks to the state that Swedish manufacturing took the lead in terms of technology and artistic quality.
I/F Occupational Structure I

Tony Wrigley & Richard Smith (University of Cambridge)

Reconsidering recent estimates of the occupational structure of late fourteenth-century England

The availability of a full three-volume edition of the English poll taxes that were levied in 1377, 1379 and 1380-81 has recently attracted the attention of economic historians who have attempted to use these sources to calculate the occupational structure of the adult tax-payers. The tax of 1380-81 has been principally exploited for this purpose and the listings purportedly record all lay persons over the age of 15 who were taxed at a basic per capita rate of 1s.0d with higher rates levied on persons with greater wealth. The tax of 1379 was levied on all those over 16 with criteria that differed from those used in 1380-81 and husbands and wives paid as one. Both taxes record occupational details of males and some females although far from consistently or comprehensively, so any estimates of national occupational distributions have to be undertaken with extreme care.

Two recent studies of occupational structure in 1379/1381, using samples of tax payers amounting to c.25,000-30,000 persons in toto from a national population of perhaps 1.75 to 2 million aged 15 and over, have reached the striking and unanticipated conclusion that agricultural employment in late fourteenth-century England accounted for less than 60 per cent of the combined male and female working population. In these studies limited attention was given to the fact that between 1377 when a flat-rate tax of 4d per head on those lay persons aged 14 and over was levied and 1380/81, the number of persons paying tax declined on average between 30 and 33 per cent. Also in 1380/81 the sex ratio of tax payers over 15 was generally 120 or more suggesting a substantial undercount of females, most of whom were young and unmarried. A demographically ‘normal’ sex ratio for a population of persons over 15 years would be c.94-95, suggesting that in 1380/81 there was a very large evasion of females. It was also assumed in these studies that the missing tax-payers were occupationally distributed in a similar fashion to those who paid tax. Evidence analysed from the admittedly small number of locations where tax collectors returned to record a ‘second’ count of missing tax-payers suggests that this assumption may be insupportable. Furthermore individuals listed as labourers have been assumed to be distributed between the agricultural and industrial occupations in a manner similar to those given occupation titles that unambiguously located them in those sectors. A more finely tuned analysis has been undertaken and reported in this paper in which only those locations that have tax returns for 1377 and 1380/81 are used to determine if there are any systematic links between the degree of evasion and the occupational distributions and the sex ratios. Assumptions that are also made in these recent studies adopting participation rates of females that derive from nineteenth-century data are also likely to be problematic, given that the ‘missing’ females are disproportionately from the young unmarried section of the population where participation rates were likely to have been higher in a demographic phase in which serious male labour shortages in agriculture prevailed. Revised estimates of female occupational structures are made using different assumptions regarding female participation rates.

Sebastiaan Keibek (University of Cambridge)

Probate records as a source of occupational information for early modern England and Wales

The first interim estimates of the male occupational structure of England and Wales arising from the long-running Occupational Structure of Britain project are about to be published by Leigh Shaw-Taylor and E.A. Wrigley in the fourth edition of the Cambridge Economic History of Modern Britain. Their pre-census estimates derive from baptism registers and relate to c.1710 and c.1817. They shed considerable doubt on the long-standing idea of a structural shift from agriculture into industry during the classic industrial revolution period.
Instead, they suggest that the secondary sector’s share of the male, English labour force increased relatively modestly across the eighteenth and nineteenth centuries; standing at 37 percent in 1710, it still stood at no more than 42 percent in 1817 and 46 percent in the late nineteenth century. The major growth in the secondary sector’s share of the labour force appears to have predated the eighteenth century. These results suggest a fundamental revision of our understanding of the industrial revolution is necessary and beg new questions, not least when was the major period of secondary sector growth?

However, the parish register data on which the estimates are based are not without their weaknesses. The c.1817 figures are based on all 11,400 baptism registers for the period, but before Rose’s Act of 1812, only a minority of parishes registered occupations in baptism documents. The c.1710 estimates are, for example, based on about 10 percent of all parishes in England and Wales, and this sample is geographically non-random. Since occupational structure was spatially variegated the data need correcting for geographical biases. The correction undertaken by Shaw-Taylor and Wrigley for the over-representation of urban centres and the industrial North-West is likely to be imperfect. For dates intermediate to 1710 and 1817, the parish sample is considerably smaller and, furthermore, of changing geographical composition, making it difficult to accurately follow occupational developments over time even in areas with relatively good coverage. As examples of several English counties show, the uncorrected parish registers can give the impression of sharp and puzzling falls and increases in occupational sectors, often followed by inexplicable recoveries or declines later; it will be demonstrated that such perceived developments are often spurious, merely the result of the changing geographic composition of the sample over time. Furthermore, the temporal range of the parish register data is limited: before 1700, baptism registers are virtually silent about occupations altogether. Parish registers will not provide the answer to the question, when, and where, the major growth in the secondary sector’s share of employment took place.

This paper will demonstrate how testamentary data can be used to interpolate and extrapolate parish register data geographically and temporally. Using probate records as sources of occupational information is hardly new. Historians of pre-industrial Britain (recently, Clark et al. 2012) have relied heavily on counting occupations recorded in probate documents. Such studies typically acknowledge the social biases inherent in this source, but then proceed to use the data as if they were unproblematically representative of the underlying population. However, it can be shown that men in capital-intensive and/or stock-rich occupations such as farming, tanning, or trading were many times more likely to leave a will or inventory than those employed in capital-extensive occupations, such as weavers, transport workers, or shoemakers (Keibek and Shaw-Taylor, 2013). Labourers are particularly underrepresented in the probate record, with farmers being 25-50 times as likely to leave a will as the agricultural labourers they employed. This approach cannot therefore generate reliable estimates. In support of their analyses of the sectoral composition of the labour force, Clark et al. provide examples of agreements between ‘raw’ probate data and other, non-biased data. It will be shown that such similarities are merely occasional and coincidental.

Nevertheless, whilst socially selective, testamentary data have a very valuable strength: they are available for all parts of the country, over a long period of time. The strength of the parish registers data is that they are not socially selective. The strengths and weaknesses of parish register data and testamentary data in the pre-1813 period therefore mirror one another. Using a number of English counties as case studies, it will be shown that reliable, unbiased estimates for male occupational structure can be derived with full geographic coverage, which can be compared consistently across long time intervals, thus providing faithful insight into historical developments. These results will be compared to ‘mono-source’ estimates derived from probate records or parish registers alone, thus providing insight into the need for corrections of the figures of Clark et al. and, the
Cambridge Group respectively, though it is anticipated that the latter will be modest compared to the former.

Obviously, combining testamentary and parish register data is only possible for areas and time periods in which the latter are actually available. But, the paper will demonstrate how calibration parameters for the probate data derived from such combinations can be extended to other areas and time periods. Thus, the wide geographic and temporal coverage of the testamentary data can truly be exploited, opening the door towards analyses of geographic variations and temporal developments in Britain’s male occupational structure throughout the early modern period – and thereby towards an answer of the question when the elusive shift from an agricultural to a manufacturing dominated economy really began to take off.

Leigh Shaw Taylor (University of Cambridge)

*The occupational structure of England and Wales, 1381-1951*

This paper will summarize our knowledge (at the time of the conference) about the evolution of the male occupational structure of England and Wales over from the late middle ages through to the second half of the twentieth century as a result of over a decade of research by many people at the Cambridge Group for the History of Population and Social Structure (funded by The ESRC, The Leverhulme Trust, The British Academy and The Isaac Newton Trust).

Our estimates will be compared with other estimates published recently by Steve Broadberry et al. (2013) and Greg Clark (2013) in *Explorations in Economic History*. The paper will discuss how a possible rise and decline in the importance of by-employment over the period 1381-1700 might affect the headline results. The paper will also offer a summary of what we know about female employment over the period 1381-1820 and discuss problems with the recent estimates of female employment over that period by Broadberry et al. (2013) and Clark (2013). Data on male and female employment will be presented for the period 1851-1951 with a discussion of the limitations (both real and widely presumed) of the census data. Finally the paper will consider the not inconsiderable lacunae which remain, most notably with respect to female economic activity, and how these might be overcome by future research.

At the time of writing the paper proposal, it is not possible to summarize results for the whole period under consideration because the work is still in progress. However, it is possible to summarize the results for male occupational structure for the period c.1710 to 1911. These will be published shortly in fourth edition of the Cambridge Economic History of Modern Britain for the period 1710 to 1871. The data suggest that, as early as the beginning of the eighteenth century, only 50 per cent of adult males worked in agriculture. This figure is not at variance with the figure of 56 per cent for 1688 used by Crafts (1983, 1985) following Lindert and Williamson (1982). But our estimate for male employment in the secondary sector at that date of 37 per cent of the male labour force is twice the figure of 19 per cent that Crafts derived from Lindert and Williamson. Since male employment in the secondary sector peaked in 1881 at 48 per cent it follows that most of the structural change in secondary sector employment conventionally associated with the classic industrial revolution period (whether conceived of as 1750-1850 or more narrowly 1780-1830) took place before the opening of the eighteenth century and that secondary sector productivity growth was much faster than Crafts estimated. How much of the growth of male secondary sector employment that took place between the late fourteenth century and c.1700 should be attributed to the second half of the seventeenth century, should be clearer by the time of the conference. Male tertiary sector employment rose from 12 per cent of male employment c.1710 to 38 per cent in 1911 making tertiary sector growth the most striking feature of structural change in employment in the eighteenth and nineteenth centuries.
I/G White Collar Workers

Michael Heller (Brunel University)
British clerical workers, career ladders and the rise of internal labour markets, 1880-1914

This paper aims to examine the rise of the career amongst clerical workers in Britain between 1880 and 1914. It will outline why these career structures emerged, how they were engineered and implemented, and the impact that this had upon both organizations and individual clerical workers in terms of labour turnover, salary levels and staff satisfaction.

Until the 1880s labour markets and labour conditions in Britain amongst clerical workers were based on personal relations and external markets. Clerks worked mainly for individuals rather than companies, and their relations with their employers were personal, idiosyncratic and dependent. They were commercial servants rather than employees. Labour markets were, however, relatively fluid with clerical workers, who after serving a period of apprenticeship often moved between different business houses. Following the 1880s large scale organizations in both the public and private sector emerged as major employers of clerical workers. Faced with problems of staff turnover, remuneration levels and motivation these organizations gradually developed career paths amongst their clerical workers in order to deal with these issues. Career paths locked workers into organizations by developing structures that were based on tenure, commitment, self-discipline and motivation. By developing careers, organizations created internal labour markets which reduced labour turnover and altered the nature of relations between employers and employees.

This paper, based on research at organizations such as the London, County and Westminster Bank, the Prudential Assurance Company, the Great Eastern Railway Company, the London County Council and the Civil Service, aims to examine the development of careers amongst clerical workers. It will look in detail at how new structures were introduced into these organizations such as pay structures, pensions, company welfare and employment grades, and demonstrate how these facilitated the development of career ladders amongst clerical workers. It will also look briefly at the development of commercial education in London, and show how this acted as a key component in the emergence of the career via the enhancement and legitimization of commercial knowledge. Finally it will examine how clerical workers viewed the career ladder, how it impacted on their work and how it developed new approaches and personal strategies to employment.

Overall the paper will argue that the development of the career at the end of the nineteenth century had a revolutionary impact on clerical work in Britain. It developed long-term relations between employers and employees, locked workers into organizations and created more structured pathways in clerical work. The development of the career also enhanced clerical incomes amongst men, though this was due to increased tenure rather than increases in pay per se.

Nicole Robertson (Northumbria University)
The occupational health and welfare of clerical workers in twentieth-century Britain

The number of British workers engaged in clerical work continued to grow substantially in the period following the First World War, with this sector employing over 10 per cent of the British workforce by the mid-twentieth century. A range of factors, including an increase in the size of major companies and markets, contributed to the expansion of office work and the subsequent increase in the volume of clerical assistance required. This paper will contribute to a history of work in twentieth-century Britain by focusing on the working conditions and welfare of clerks during the interwar period.

This paper is based on an analysis of records of two trade unions representing clerks during this period – the Association of Women Clerks and Secretaries (AWCS) and the National Union of Clerks and Administrative Workers (NUCAW). This paper uses annual
Academic Session I / G

reports, press cuttings, publicity material, journals and publications from these two organizations in order to explore the working conditions of this group of white-collar workers.

Following the First World War, growing numbers of the working population entered the white-collar industry. The white-collar often symbolized entrance into professional life and could be associated with respectable and secure employment. During this period, there was a perception that clerical and secretarial work was a ‘safe career’. This, however, was not necessarily the case. This paper will focus on the campaigns and work of the AWCS and the NUCAW as they sought to improve the conditions of clerical work. It will focus on two specific areas. Firstly, it will examine campaigns to protect the health of clerks employed in offices. Secondly, it will explore the activities designed to promote the welfare of workers facing unemployment.

Firstly, the paper will investigate concerns relating to the impact of clerical work and the office environment on workers’ health. Research has been published on manual work and industrial health. Substantially less research has been carried out on the impact of work organization and the work environment on employees’ health in white-collar work, yet this was an issue raised by trade unions that represented clerks. Not all clerical workers were employed in secure and purpose-built offices. Trade unions and the workers they represented raised concerns about inadequate accommodation and depressing conditions. This paper will investigate trade union concerns regarding the unclean and unhealthy premises constituting the working environment of some clerical workers and their campaigns to regulate conditions of employment in offices (for example, through the Offices Regulation Bill). This will contribute to wider debates concerning occupational health and disease.

Secondly, the paper will consider strategies used by, and support offered by, the AWCS and NUCAW to improve the lives of those clerical workers facing unemployment. Unemployment caused by industrial depression during the interwar years is often associated with manual workers, and in quantitative terms the clerical and administrative worker was not affected by the economic depression to the same extent. However clerks did suffer. They were not immune from the distress of unemployment and poverty that affected other workers during this period. This research will explore how the experience of white-collar unemployment was portrayed in the press and journals associated with clerks. It will consider how clerical unions sought to support their members who faced the uncertainty of unemployment. It will also examine the extent to which clerical workers responded to these circumstances and developed initiatives to protect their own economic security.

The paper considers the ways in which clerical work can contribute to an understanding of characteristics and perceptions of white-collar work in the twentieth century. An exploration of the campaigns and strategies of organizations committed to improving the health and welfare of clerical workers informs debates on the nature, practice and conditions of this aspect of white-collar work, and in so doing can contribute to research on the transformation of the labour force during this period.

Alan McKinlay (Newcastle University) & Scott Taylor (University of Birmingham)

Strategy, technology and gender: making and unmaking the marriage bar in twentieth-century British clerical work

The organizational practice known as the ‘marriage bar’ prohibited women from continuing in employment after getting wed. The bar was widespread in both public and private sectors, especially white collar bureaucracies and light manufacturing. In banking, it was articulated in employment contracts, staff handbooks, and everyday custom or practice. In the public sector, the marriage bar was challenged by women and by some unions from early in the twentieth century. However, it remained firmly in place in the private sector until the early 1970s; where it was challenged it was more likely to be by individual women rather than unions. The end of the marriage bar was not the result of political intervention, specific legal changes, or union challenge, but as a side effect of equality legislation. In this paper we report on analysis
of business, union, and Mass Observation archives, complemented by a small oral history dataset.

We argue that the marriage bar cannot be understood solely as an expression of employer paternalism or misogyny. Rather, we suggest that its introduction and withdrawal was an expression of strategic choice about organization, staffing and the stability of bureaucratic careers. In the banking sector the bar was surrounded by a complex set of issues relating to long-term trends in technology, task routinization, and securing the long-term viability of the male career. Very few women were employed in banking before 1914, all confined to ancillary tasks: a marriage bar was therefore unnecessary. After 1918, women remained few in number and confined to specifically feminized tasks. However mechanized accounting technologies spread rapidly during the 1920s, evaluated in terms of cost and staffing, specifically gendered wage differentials. Female staff were usually paid the same as males until age 23; at that point a gender differential of between 10-30% opened up, rising to over 40% by age 28. Personnel records demonstrate that before 1939, around two-thirds of female bank staff left their employment to marry before age 23; fewer than 10% of women remained employed beyond age 35. This was encouraged by a marriage gratuity or ‘dowry’ that usually hit its ceiling after eight to ten years employment. The point at which women exited bank employment was when men made the transition to full members of the bank staff, entering the internal labour market and treated as a strategic issue by bank executives and constantly reviewed.

After 1945 staff associations and trade unions bargained about the terms of the dowry, but the principle remained largely unquestioned. The bar was relaxed: women were permitted to return to bank work after marriage, although their status changed to ‘temporary staff’ and they lost seniority, pension rights and employment security. However by the mid-1950s, young female staff were proving difficult to recruit and retain, as young women were more likely to avoid or exit banking for more attractive alternative employment than marriage. The banks made modest concessions in terms of female careers and pensions, the better to retain more experienced female staff. The marriage bar was formally rescinded in British banking in 1961.
Since Montesquieu, scholars have attributed Europe’s success to its political fragmentation (Montesquieu 1748, 1989; Jones 1981; Diamond 1997). Nevertheless throughout most of history, the most economically developed parts of the world belonged to large empires, the most notable of which was Imperial China. This contrast poses a puzzle that has important implications for our understanding of the origins of modern economic growth: Why was Europe perennially fragmented, whereas political centralization was a stable equilibrium for most of Chinese history? Can this fundamental difference in political institutions account for why sustained economic development began in Europe and not in China?

This paper proposes an explanation for this divergence. We emphasize the geographical differences between China and Europe and the importance of the external threat that nomadic, pastoral peoples posed to communities of settled agriculturalists. Our model predicts when and where political centralization will be more likely to be stable based on the extent and nature of this external threat.

China faced a large unidirectional threat from steppe nomads. Europe confronted several less powerful external threats. We show that this meant that empires were unstable in Europe and political fragmentation the norm. This fragmentation was costly due to wasteful interstate competition. Empires were more likely to emerge and survive in China because the nomadic threat threatened the survival of small states more than larger ones. However, the same features that made an empire a stable outcome in China also meant that major invasions were likely to be more costly in China than in Europe.

To explore the consequences of political centralization and fragmentation we integrate our model into a simple unified growth framework (Galor 2011). A greater intensity of interstate competition meant that Europe was initially poorer than China. However, as it was more centralized, China was more vulnerable to political collapse due to nomadic invasion. Over time, then, population growth was more frequently interrupted and there were more population reversals in China relative to Europe. As a steady increase in the stock of population is important for cumulative innovation to occur, China was unable to escape the Malthusian trap while Europe was gradually able to move towards sustained economic growth.

To substantiate the mechanisms identified in our model, we show that the predictions of our model are consistent with data on the number of internal and external wars in Europe and China. Furthermore, the main prediction of our framework is borne out by evidence on the greater volatility of China’s population. Finally, we provide detailed historical evidence on the failure of several European states to achieve hegemony within the continent and contrast this to the stability obtained by the most successful Chinese dynasties.

This paper contributes to a range of literature. First and foremost our argument helps to clarify the emergence and stability of the European state system and its significance for the onset of sustained economic development. Numerous historians, sociologists, and economists have argued that political fragmentation in Europe led to the growth of economic and political freedom (Montesquieu 1748, 1989), helped preserve the existence of independent city states, and permitted the rise of a merchant class (Pirenne 1925; Hicks 1969; Hall 1985; Rosenberg and L.E. Birdzell 1986); encouraged experiments in political structures and investments in state capacity (Baechler 1975; Cowen 1990; Gennaioli and Voth 2011); and fostered innovation and scientific development (Diamond 1997; Mokyr 2007).
However, the relationship between political fragmentation and the industrial revolution is not clear cut. Epstein (2000) shows that the fragmentation of sovereignty that characterized late medieval Europe raised transaction costs, impeded market activity and led to the under provision of public goods. India’s economic decline in the eighteenth century has been blamed on the political division that followed the breakup of the Mogul Empire. Shiue and Keller (2007) show that during the eighteenth century grain markets were more efficient in China than in much of Europe. Furthermore, tax rates were higher in Europe than in China (Rosenthal and Wong 2011; Sng 2011). Moreover, a limitation of traditional arguments for the virtues associated with political decentralization in Europe was that they assumed a monolithic and unchanging or static Chinese empire as the ‘perfect conceptual foil for the Europe of small and competing states, focused on seaborne trade and conquest’ without explaining China’s apparent unity or stability (Goldstone 2002).

This paper proposes a unified theory that allows us to study both the causes and the consequences of political centralization and fragmentation in a single coherent framework that is not subject to the above criticisms. Our approach integrates several existing explanations such as the importance of geographical differences between China and Europe as emphasized by Diamond (1997) and the importance of providing defence against external invasion by nomads in shaping the emergence of states in Eurasia (McNeil 1964). Furthermore, by integrating a formal model of centralization and fragmentation for rulers with a growth model in which technology, income, and population evolve over time, it also allows us to study the dynamic consequences of this trade-off over the very long run.

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early modern states to develop capital markets and promarket policies. Gennaioli & Voth (2011) show the military revolution induced investments in state capacity in some but not all European states.

Diamond argued that ‘Europe’s geographic balkanization resulted in dozens or hundreds of independent, competing statelets and centers of innovation’ whereas in China ‘a decision by one despot could and repeatedly did halt innovation’ (Diamond, 1997, 414415). Mokyr notes that ‘many of the most influential and innovative intellectuals took advantage of what Jones has called the competitive ‘States system’. In different ways, Paracelsus, Comenius, Descartes, Hobbes, and Bayle, to name but a few, survived through strategic moves across national boundaries. They were able to flee persecutors, and while this imposed no doubt considerable hardship, they survived and prospered’ (Mokyr, 2007, 24).
Habemus Papam? Polarization and conflict in the Papal States

Does increased disagreement among members of an elite translate into more conflict? Divisions among the elite might weaken the central authority, lowering its ability to suffocate revolts. In this paper we study the effect of division within elite groups on the probability of internal conflicts in the Papal States between 1295 and 1878. Using data from the papal conclaves during this period, we want to understand how divisions within the College of Cardinals (the elite of the Papal States) shaped conflict within the Papal States. We build a dataset that covers our period of study on both measures of division within the elite of the Papal States as well as internal conflicts. In particular, we use different measures of polarization and fractionalization among cardinals as proxies for division within the College of Cardinals. We also assemble a complete database on internal conflicts, wars against other Italian states and European states. Our main result indicates that more polarization among cardinals increased the likelihood of an internal conflict. In particular, we find that an increase of one standard deviation in our measure of polarization, constructed using cardinals’ nationalities, raises the probability of an internal conflict by 12%. This result is robust to alternative measures of conflict, such as considering only disturbances that occur in the first five years of the papacy. Moreover, we find that polarization among the cardinals does not have an effect on conflict in other regions of Italy. We also find evidence that polarization increases the intensity of conflict, while fractionalization decreases it. These results provide support to recent theories concerning the determinants of conflict.

Military conflict and the economic rise of urban Europe

We present new city-level evidence about the military origins of Europe’s economic ‘backbone’, the prosperous urban belt that runs from the Low Countries to northern Italy. Military conflict was a defining feature of pre-industrial Europe. The destructive effects of conflict were worse in the countryside, leading rural inhabitants to relocate behind urban fortifications. Conflict-related urbanization in turn had persistent economic effects. Using GIS software, we construct a novel conflict exposure measure that computes city distances from nearly 300 major conflicts from 1000 to 1799. We find that conflict exposure had significant, positive, and robust impacts on historical urbanization. Next, we use luminosity data to construct a novel measure of current city-level economic activity. We show robust evidence that the economic legacy of historical conflict exposure endures to the present day.

From slums to slums in three generations: housing policy and the political economy of the welfare state, 1945-2005

Housing was the major domestic priority of all postwar UK governments. By 1970 the physical conditions of British housing had been transformed; by the 1990s 70 per cent of households in England owned their own homes. Yet in 2012 there were still parts of many
cities that deserved labelling as slums. Why had massive public expenditure not managed to achieve the goal of successive governments?

Vested interests, created by each wave of intervention, limited subsequent policy choices. From about 1950 to about 1995, governments expanded owner occupation via a wide range of subsidies, but increasingly restricted the supply of land by restrictive planning laws. There was a massive (and unremarked) tenurial revolution, as privately rented houses were sold off to owner occupiers. At the same time, slum clearance created large single-tenure areas. This changed the nature of the demand for council housing (once occupied by the upper skilled working-class). In some parts of the country, gentrification removed a once-affordable source of owner-occupied housing. But rent control meant there were few homes for would-be renters. Access to good quality social housing thus became a very high-stakes game, for those on modest incomes – and a major source of ethnic tension in some inner cities.

From the mid-1980s on, means-tested help with rent payments and market liberalization provided new help to would-be private renters. By 2010 this had resulted in the provision of over 2.2 million new privately rented dwellings in under 20 years (almost as many as had vanished between 1960 and 1975). Small debt-funded capitalist landlords, and tenants with limited security of tenure, would have been familiar one hundred years earlier. But this time the government was paying the rent; guaranteeing the market for a new generation of slum landlords, while producing severe disincentives to labour-market participation by the poor. This new form of subsidy (coupled with continuing high land prices) helped to increase nominal rents much faster than average earnings. Housing benefit expenditure rose from £11 billion in 2000 to £22 billion in 2010.

As, on the surface, the British housing market moved away from social democracy and towards market liberalism, its underpinnings moved in the opposite direction. Measure was piled on measure, and subsidy on subsidy, until at the end of the century the influence of government had become all-pervasive.

Social amelioration of this kind faces two major problems. The first problem is that it tends to reward the majority at the expense of the weak. The second great problem is that it depends on a continuing flow of new resources, to fix each new problem while still preserving the interests of existing clients. If liberal democracies survive by buying-off trouble from new problems, while continuing to support accrued vested interests, how will they manage if economic growth can no longer be relied upon? Based on the experience of the UK housing market, it seems likely that they will focus their resources on those in the middle. This does not bode well for the poor.
II/A Africa

Stephen Broadberry & Leigh Gardner (London School of Economics)
Africa’s growth prospects in a European mirror: A historical perspective

African countries have achieved impressive rates of economic growth since the mid-1990s, second only to those of East Asia. This has generated debates about whether or not Africa has now turned the corner and started on a path of sustained economic growth. Both optimists and pessimists have looked back to the period of rapid growth following the end of World War II and its subsequent reversal in the 1970s. Optimists have argued that this reversal was the result of the challenges of decolonization and that conditions now are different. Pessimists have suggested that the export-led growth of the current boom is similar to that of the 1950s and 1960s.

A longer view of Africa’s economic history demonstrates that periods of rapid growth are nothing new (Jerven 2010; Prados de la Escosura 2012). Recent research on economic performance during the colonial period has shown that particularly prior to the Great Depression, much of Africa achieved positive growth. The expansion of cash crop exports during the nineteenth century also reflected an earlier period of growth. However, these growth episodes have historically been followed by severe reversals, which have limited overall improvements in per capita income. Both the periods of growth as well as the reversals have been driven by changes in the external demand for primary commodities.

Recent research reconstructing GDP per capita figures for Europe from the thirteenth century has illustrated that European history exhibits the same pattern before the mid-nineteenth century (Broadberry et al. 2012). The success or failure of export commodities stimulated both periods of rapid growth as well as periods of negative growth, resulting in long-term stagnation. This research also suggests that levels of per capita income in medieval Europe were substantially higher than previously thought, so that the medieval period should be seen as the starting point of the road to sustained growth rather than as the embodiment of all things backward (Britnell and Campbell 1995). The first transition to modern economic growth occurred in the North Sea Area (van Zanden 2009). The success of this transition was the result of institutional changes which allowed the North Sea economies to escape the pattern of growth reversals (North, Wallis, and Weingast 2009).

This paper uses European economic history to identify key levels of per capita GDP and relates them to the institutional changes which underpinned the transition to sustained economic growth. It then applies this framework to the African experience since 1950. This comparison suggests a less optimistic scenario for Africa, for three reasons. First, the necessary institutional changes have not taken place in most African countries. Second, per capita income levels today are at about the same level as in medieval Europe. Third, the pattern of growth followed by reversals can persist for very long periods of time, with no inevitable transition to modern economic growth.

Wasiq N Khan (Franklin College Switzerland)
Evaluating economic explanations for the transatlantic slave trade: labour productivity, relative exploitability, and transportation costs between the West Indies and West Africa: 1680-1830

The economic forces which drove the transatlantic slave trade are poorly understood and remain controversial. This paper aims to describe and test the competing explanations in the literature while making a contribution to a very nascent area of economic history – the empirical study of economic dynamics in Precolonial Africa. The study is conducted under the assumption that the transatlantic slave trade was a pareto-optimal economic equilibrium in the sense that it maximized the world’s net consumable surplus as compared to all available alternatives. The assumption that the trade was pareto-efficient is rooted in the belief that wasteful and inefficient transactions disappear in the long run; because the transatlantic slave
Academic Session II / A

trade lasted four centuries and involved the movement of at least twelve million captives, it probably was an efficient trade and an economic equilibrium – one that successfully minimized costs while maximizing net output.

Prevailing explanations for the transatlantic slave trade fall into three general categories: the labour productivity argument, the differential exploitability of slave labour in Africa versus the Americas, and the transportation cost argument of Stefano Fenoaltea (1999). The most common explanation that carries wide currency among economic historians of the Americas is based on labour productivity. Scholars such as Robert Thomas, and Richard Bean (1974, 1975) use an economic model for the voluntary migration of free labour to explain the causes of this forced migration of unfree labour. These scholars argue that labour productivity was higher in the New World than in Africa and that the differential was large enough to bear the high transport and mortality costs of the forced migration. Others, Africanist scholars, more familiar with labour scarcity and land abundance in Africa, including Philip Curtin (1975), Gemery and Hogendorn (1974), and Patrick Manning (1990) have explained the migration by reference to a differential in the relative exploitability of unfree labour. These scholars argue that using slave labour in Africa was difficult and costly because slaves in Africa were more likely to escape or be freed by kinsmen within their own continent – hence the need to move the labour very far in order to secure the slave owner’s property rights. Stefano Fenolatea (1999) has proposed a third explanation which claims that high transport costs from Africa and the continent’s dearth of mobile and exportable goods is the better explanation for why slaves rather than commodities were used to pay for African imports. Fenoaltea’s model, however, is almost entirely based on conjecture and is not tested empirically.

The first argument based on a labour productivity differential is tested by comparing labour productivity in West Africa and the West Indies while checking if this differential was sufficient to cover the high costs of the trade. The second model, based on a differential in the relative exploitability of slave labour, is rejected based on the ubiquity of slave labour in West Africa and the emergence of sugar plantations in West Africa prior to the development of a plantation complex in the New World. Historical study of slavery in West Africa and an empirical examination of labour productivity in West Africa leads to a rejection of both the differential labour productivity and differential labour exploitability arguments. Next, the paper analyses transportation costs within and from West Africa in order to test the empirical validity of Fenoaltea’s assertion that high transportation costs for non-slave exports were prohibitive prior to the advent of steam shipping and the export of captives was the only means available to finance the consumption of imported goods by the African elite.

As well as attempting to assess the validity of competing arguments for the economic causes of the transatlantic slave trade, this paper’s primary contribution is to attempt an empirical examination of economic dynamics in Africa prior to the arrival of European Colonial Rule – a crucial period for which there is very little empirical data and almost no quantitative economic history. Using secondary sources on slave hire rates and subsistence costs in the West Indies as well as conjectural data on population growth rates and anecdotal evidence from travellers’ accounts of dependency ratios, labour dues, and tax rates in pre-colonial Africa, this study provides the only available comparison of labour productivity of slaves working on plantations in the West Indies and free labour in West Africa from the seventeenth to the nineteenth century. Additionally, the paper enhances our understanding of pre-colonial African Economic History by providing a detailed empirical examination of overland and transoceanic transportation costs within and from West Africa by reference to data on transatlantic freight rates, cargo capacities and tonnage of ships at the time, voyage durations from West Africa to Europe versus the Americas, overland transport costs based on the speed and carrying capacity of porters, as well as the all-important issue of the value per unit of weight of various agricultural commodities and precious metals produced in West Africa in the era of the transatlantic slave trade.
References


Joerg Baten (Tuebingen University)

Long-run welfare development in Africa: an anthropometric study on the influence of colonialism and slavery

Assessing the long-run economic development of Africa in a quantitative way is one of the greatest challenges of our time. The amount of quantitative sources on economic development is small, and the measurement quality even for the period after WWII is not always high. On the other hand, stimulating African economic development is one of the most crucial issues for today’s economies, and the study of long-run relationships – and in particular the assessment of the influence of colonialism and slavery – can contribute to the understanding of long-term processes in Africa and other world regions. Anthropometric analysis offers important evidence in this situation, because human heights are more easily available in the African context than other sources of evidence, such as income data (although not without challenges, of course).

Recently, the scope of anthropometric studies has been expanded from today’s rich countries to the Developing World (Austin, Baten and Moradi 2005; Austin, Baten and van Leeuwen 2012; Baten and Blum 2012; Baten 2006; Brennan, McDonald and Shlomowitz 1994; Moradi 2005 and 2009; Salvatore 2009; Stegl and Baten 2009; to name just a few). The core idea of anthropometric studies is that average height is strongly influenced by the quality of nutrition, disease environment and parental care. While the influence of genetic height maxima at the individual level is strong, averages of large height samples seem to be not strongly influenced by genetic height maxima. In this study, we use a new dataset on 353 height values for African countries and birth decades, which was generated within the Baten (2006) and Baten and Blum (2012) projects and carefully checked for Sample Selection Bias (SSB). We include both Sub-Saharan and North Africa, looking at 47 countries in total. Our study starts with the birth cohort of the 1810s and ends in the 1980s, as we focus on adult height only.

The core questions are: was there an influence of colonialism on African anthropometric welfare? Were the colonized Africans shorter, even after controlling for a number of different variables? Secondly, did slavery have a sustained effect, reducing welfare in those countries that suffered most from slave-hunts? Were those effects visible in the nineteenth and twentieth century welfare measures even after slavery ended, as Nunn (2008) recently argued?

The majority of colonialism studies find negative effects for long-run economic growth. However, little is known about contemporary effects on the welfare of the population,
because evidence is mostly lacking or of uncertain quality. In order to close this gap, we will mobilize new evidence on anthropometric welfare.
II/B  Capital Markets

Nathan Foley-Fisher (Federal Reserve Board) & Eoin McLaughlin (University of Edinburgh)

Capitalizing on the Irish ‘land question’: Irish land bonds, 1891-1938

How did financial markets react to Irish Home Rule Crises, War of Independence, partition and Civil War? How did these same markets respond to an Irish ‘default’ in 1932? What are the financial implications when a sub-region declares political and economic independence?

The Irish ‘land question’, land purchase and ownership are seen as key components in the development of Irish national identity. However, given this importance, the financing of land purchase schemes via land bonds has yet to be fully explored. These sterling denominated sovereign debts arose during a period of Home Rule agitation when the possibility of Irish secession from the United Kingdom appeared ever more likely. However, it is unclear how the UK government or investors perceived this risk. The financial implications of Irish secession are key elements in the early economic and political history of the Irish Free State. These issues also have contemporary relevance to the Eurozone debt crisis and regions in Spain (Cataluña, Euskadi), the UK (Scotland) and Belgium (Flanders).

In the late nineteenth and early twentieth century, the UK government saw peasant proprietorship as a solution to the Irish ‘Land Question’, a conflict between landlords and tenants. Successive acts of parliament enabled tenant farmers to purchase land from landlords. From 1891 onwards these sales were financed via borrowing on bond markets; £94.5 million (£7.9 billion, current value) was lent to tenants under the 1891-1909 land acts. The UK also guaranteed land bonds issued to fund land purchase in the Irish Free State and Northern Ireland in the 1920s. In the 1920s and 30s the bi-annual repayment of land purchase loans, commonly known as ‘annuities’, was a politicized issue in the agrarian Irish Free State. In July 1932 the government of the day ‘failed to honour’ these repayments: effectively a default. This resulted in a retaliatory trade dispute between the Free State and the UK. At the same time conflicting signals were given to markets as efforts were made to honour $US denominated bond certificates issued by Irish Republicans to fund the Irish War of Independence.

The secession of Ireland from the United Kingdom is of interest to modern audiences as it gives an opportunity to explore the break-up of a politically, fiscally and monetarily integrated polity. This episode is particularly relevant given the precedent it sets for the possibility of Scotland seceding from the UK. This study will gauge the market response to these events by analysing a daily database of UK government bonds and Irish land bonds during the period 1890 to 1938.

Anand Swamy (Williams College) & Latika Chaudhary (Scripps College)

Protecting the borrower: an experiment in colonial India

The prevalence of predatory lending and the need to protect its potential victims have been extensively discussed since the financial crisis of 2008. The task is not simple because regulators have to be sensitive to another concern as well: rules to protect borrowers should not be so irksome to lenders that they prevent the efficient allocation of credit. It is therefore not easy to find the appropriate set of policy instruments. Economic historians can contribute to the discussion by providing information on previous crises and policy responses. We do exactly this, using an example from colonial India.

The Bombay Deccan, a region in Western India, saw the emergence of a ‘bubble’ in the second half of the nineteenth century. This was fuelled, in part, by the rise in the price of cotton during the American Civil War. Credit flowed in and borrowers took on too much debt, sometimes from many lenders, using Peter’s money to pay Paul. After the price of cotton declined and other adverse economic events occurred, the bubble burst, and credit dried up. Defaulting peasants lost their lands to their creditors, many of them immigrants from...
other parts of India. Riots broke out, with peasants attacking their lenders and seizing the documents that were proof of their debt. This was a famous event in Indian history: the Deccan Riots of 1875.

Colonial authorities interpreted the riots in ways that will be familiar to the contemporary reader: the lenders were sophisticated and unscrupulous, and the borrowers were naïve, unable to handle their access to credit prudently. The legal system had to be modified to protect the borrower. The Deccan Agriculturists’ Relief Act (DARA) was passed with this goal, in 1879. DARA tried to ensure greater transparency and better documentation. But most important, courts would no longer be bound by the written contract; judges would use their discretion to go ‘behind the bond’ and award repayments that they considered fair. This key regulation was passed in the face of severe criticism from large sections of British officialdom which viewed this as ignoring the sanctity of contracts and potentially undermining the useful function served by honest lenders.

DARA was initially introduced in only four districts (the ones in which the Deccan Riots occurred) and then extended to the rest of the Bombay Presidency in 1907. This gives us the opportunity to do a ‘difference-in-difference’ analysis, allowing for greater confidence in our statistical findings. We find that: (i) DARA did protect the borrower in the desired fashion, at least in court, and reduced interest payments; (ii) Lenders tried to evade its provisions by disguising loans as sales of land with re-purchase, with the interest embedded in the price differential; (iii) It did lead some reduction on the volume of lending; (iv) But there is no evidence that it had an adverse impact on economic activity. On the whole it appears that DARA struck a reasonable balance between protecting the borrower without overly restricting the lender.

Nicolas Degive & Kim Oosterlinck (Université Libre de Bruxelles)

Cholera and the effect of empire: the case of Indian ‘sovereign’ debts

The positive impact of colonial status on borrowing costs has been suggested for a long time (Cairncross 1953; Davis and Huttenback 1986). Obstfeld and Taylor (2003) measure this impact by including a colonial dummy capturing the ‘Empire Effect’ when analysing the spread between sovereigns and a risk free rate. They conclude that membership in the British Empire during the gold standard period was “neither a necessary nor a sufficient condition to get a preferential access on the London Stock Exchange”. On the other hand, and using a similar approach, Ferguson and Schularick (2006) find a substantial reduction in risk premium for colonies. Accominotti et al. (2011) attribute these contradictory results to a misspecification of the models. According to them, being a colony did not have a marginal impact but a structural one: as long as a country remained part of the empire its default risk was the same as the one of the colonial power. Pooling all countries (independent ones and colonies) in a unique regression would then lead to biased estimates. If colonial status had a marginal impact on borrowing then the Empire Effect can be captured by modelling the spread between colonies and colonial powers’ bonds using standard macroeconomic variables and a dummy variable reflecting the colonial status. If on the other hand being a colony implicitly implied that the colonial power would bail out the holders of colonial bonds in case of trouble, then using standard macroeconomic variables from the colony is questionable. Indeed in this case bondholders were probably more concerned about the financial situation of the colonial power than the one of the colonies.

This paper is in the line developed by Accominotti et al. (2011). It argues that colonial ‘sovereign’ bonds are only potentially sovereign: that is they may become sovereign once a country gains independence. To test this hypothesis, the paper compares a quiet and a turbulent period, when the colonial link was put under stress. If the imperial guarantee played a key role in colonial ‘sovereign’ bond valuation, then bondholders should have reacted strongly when independence became more likely.
On the basis of yields from British and Indian bonds this paper shows that the spread between the two bonds was more affected by fundamentals once Indian independence gained in credibility. The analysis distinguishes two periods. The first one begins in 1900 and ends at the outbreak of World War I. We argue that during this period independence likelihood was low as even some of the most preeminent Indian politicians envisioned India’s future within the British Empire. The second period ranges from 1919 to 1938. During this period the independence movement gained in power and Indian independence became gradually more and more accepted as an idea. The analysis shows that two fundamental economic variables played an important role for the second period, the changes in debt on revenues and the number of deaths from cholera epidemics. The latter variable is taken here as a proxy for large exogenous shocks affecting the Indian economy but not the British one.

On the basis of an event study the paper further shows the importance of political events on bond prices. The Salt March, a civil disobedience movement, instigated by Gandhi led to positive Cumulative Abnormal Spreads. Whatever the exact reason, all elements point in the same direction: the threat to the British guarantee played an important role in Indian bonds valuation. As a whole, the paper finds evidence of the role of the British guarantee on spreads supporting the views expressed in Accominotti et al. (2011 and 2012).

David Gill (University of Nottingham)

*Rating the United Kingdom: the British government’s first sovereign credit rating, 1976-78*

Thirty-five years of ‘triple-A’ ratings ended on 22 February 2013 when the credit rating agency Moody’s downgraded the United Kingdom. The country’s creditworthiness shifted downward one notch to ‘Aa1’ as rating analysts worried about weak economic growth. David Cameron became the first prime minister in history to suffer such a downgrade. While the government and the opposition drew different conclusions from the announcement, neither doubted its importance. Three years earlier, only months before taking control of the Treasury, George Osborne had made his position clear. ‘Our first benchmark is to cut the deficit more quickly to safeguard Britain’s credit rating. I know that we are taking a political gamble to set this up as a measure of success’. The relationship between credit rating agencies and sovereign states has become an increasingly popular topic for scholars as well as for politicians. Economists, lawyers, and political scientists have already conducted an impressive range of research. Curiously, however, historians have remained largely silent. Indeed, economists and political scientists have provided the only historical accounts of credit rating agencies and sovereign ratings to date. Although valuable, such efforts tend to be sweeping in scope or dependent on limited data. Such generalized assessments consequently threaten to obscure the importance of historical context.

This paper provides a rich, archival-based account of one relationship between a government and the two leading New York-based credit rating agencies. Moody’s and Standard & Poor’s provided the United Kingdom with its first sovereign credit rating in 1978. The Treasury and the Bank of England had decided to pursue a credit rating in order to secure better borrowing rates in the New York bond market, which reflected a broader strategy to manage external debt more effectively. Between 1979 and 1984, the government faced repayments totalling almost $20 billion. Borrowing from New York, in conjunction with the Euro-dollar market, smoothed a pronounced hump in the repayment schedule of maturing debt. The British government ultimately managed to secure two ‘triple-A’ ratings. This outcome was an impressive achievement. Indeed, only eighteen months earlier, the United Kingdom had required a bailout from the International Monetary Fund, usually only an option for Third World countries. The British government subsequently launched its first borrowing operation in the New York bond market. Aided by a triple-A rating, the $350 million offering met with high investor demand. Recognition of these successes, overlooked by historians and practitioners, complements the historiography concerning the United Kingdom’s improving economic performance in the late 1970s. In contrast to the *Wall Street Journal* editorial
headline, ‘Goodbye, Great Britain’, which had advised against investing on the other side of the Atlantic, American investors one again welcomed the United Kingdom with open arms.

Scrutiny of the British government’s pursuit of a sovereign credit rating also offers a rare glimpse into the process itself. Economists and political scientists have spent considerable amounts of time, and adopted a wide variety of methodological approaches, attempting to determine the causes of sovereign ratings adjustments. Archival research, however, reveals that existing analyses have tended to overlook the importance of individuals and governments in the decision making process. Despite improvements in the performance of the British economy and optimistic market insights from leading US investment banks, the rating agencies did not believe the United Kingdom to be an ‘open and shut’ case. The government therefore made every effort to ‘persuade’ and ‘convince’ their assessors. Senior officials in the Bank of England and the Treasury went to considerable efforts to influence the ratings process in early 1978. They employed external advisors familiar with the process and controlled the flow of information available to their assessors, obscuring political weaknesses and stressing economic successes. The small and inexperienced credit ratings staff involved in the process, operating many years before efforts by the agencies to ‘professionalize’ their sovereign debt teams, only complemented the efforts of the civil service.

The rating agencies’ decision to award the United Kingdom with ‘triple-A’ status reflected more than simply an objective analysis of the country’s improving economic fortunes. Such a conclusion is not a revelation. Many economists readily concede that qualitative influences remain underdeveloped in the extant literature. As Edward Emmer, former Executive Managing Director at Standard & Poor’s, explains, ‘Credit analysis is an art, not a science’. Credit rating agencies continue to rely on a range of qualitative and quantitative assessments in order to rate sovereign creditworthiness. Detailed case studies can help to shed light on the nuances of such a process. Historians can therefore make an important contribution to the study of sovereign credit ratings.
**II/C Gender and Economic Survival**

Jane Humphries (University of Oxford) & Jacob Weisdorf (University of Southern Denmark, University of Utrecht, CEPR)

*How much did English women earn in the past? Female wages from before the Black Death through the industrial revolution*

This paper presents a wage series for unskilled English women workers from c.1250 to 1850. The series is bookended by some familiar data compiled by authors such as Thorold Rogers, for the medieval period, and Joyce Burnette, for the nineteenth century. Data extracted from less well-known sources, including a number of estate and household accounts, supplements the established material and bridges several gaps in the series, which can then be compared with the authoritative evidence for men compiled by Clark (2007) and Allen (2001). The data are subdivided into weekly wages, which were by and large earned by married women, and annual wages, which were by and large the reserve of single farm and household servants, and separate time series computed by contract type. The two series exhibit secular differences in levels and trends, differences which are important in understanding the role of women in the economy. Our series cast light on long-run trends in women’s agency and wellbeing, revealing an intractable, indeed widening gap between women’s and men’s remuneration, but also inform several recent debates in economic history. First, the series bear on the question of whether ‘the golden age of the English peasantry’ allegedly inaugurated by the Black Death included women, and more particularly whether demographic disaster and the resulting shift to animal husbandry advantaged women whose wages and opportunities increased. This has subsequent ramifications for secular growth since, as argued by De Moor and van Zanden (2010) and Voitlander and Voth (2013), women who spent time as servants, delayed marriage and reduced fertility, the resulting Northern European Marriage Pattern (NEMP) raising incomes and promoting further growth. Second, the series enable the relationship between the age at marriage and women’s relative wages to be explored in a long-run context. Did a relatively high female wage deter marriage by raising the opportunity costs of childbearing as the seminal paper by Galor and Weil (1996) suggests? Third, the series inform recent interest in whether female celibacy was influenced by women’s ability to maintain themselves and so remain unmarried, see Froide (2007). Fourth, the series shed renewed light on the questions of the male breadwinner model and the size of women’s contribution to household income relative to that of men (Schneider 2013).

**References**


Amanda Capern (University of Hull) & Judith Spicksley (University of York)

Sex, science and economics: the problem of infertility c.1650-c.1750

For a number of years the changing construction of the female body, apparent during the shift to modernity, has been interpreted through a masculine lens. Much of this relates to the developing sphere of medical knowledge, in which men were the primary contributors. It is now nearly thirty years since Angus McLaren, in searching for the shift in the medical literature ‘from the picture of the sexually active woman of the seventeenth century to the passionless creature of the nineteenth’, argued that ‘the rights of women to sexual pleasure were … eroded as an unexpected consequence of the elaboration of more sophisticated models of reproduction’. 572 Five years later Thomas Laqueur extended this analysis by outlining his thought-provoking theory of a change in the way the idea of the body was understood. There was, he claimed, a move from a ‘one-sex’ to a ‘two-sex’ body model, which he too characterized as a consequence of developments in knowledge about reproduction. But such knowledge, in his view, became an instrument of male power, employed by men to ‘justify their dominance of the public sphere’. 573 The elaboration of new theories about the nature of conception certainly impacted strongly on the medical as well as the scientific community in the late seventeenth and early eighteenth centuries, as writers of midwifery treatises, medical books and other texts dealing with reproductive issues struggled to incorporate new knowledge into existing understandings. Change was neither swift nor linear, but the new construction of women that began to emerge in this period not only withdrew from the idea of women as overtly libidinous but championed a distinction between masculine and feminine attributes that rendered women naturally inferior to men.

Here we argue that shifts in the way the female body was represented were not a passive response to new forms of knowledge, nor – at least initially – a political response to modernity by a worried masculinity. Instead, they were encouraged by an expanding discourse of political economy that linked the nation’s economic strength to its population size, but driven by personal concerns that made individuals eager for advice on the best way to conceive, and desperate for remedies that would cure infertility. The heightened public profile of fertility becomes visible in a range of printed materials from the 1650s. The late seventeenth century saw a racking up of concerns in the wake of disease, conflict (at home and abroad), migration, and a perceived decline in marriage, just as the emergence of numerical calculation as a political tool, and a growing understanding of the value of trade as a route to national success, were underscoring the value of people as productive units. 574 James Harrington’s tract Oceana, for example, in unveiling a manifesto keen to promote a ‘commonwealth for increase’, advocated a programme of expansion that was to be achieved through the introduction of a fiscal incentive: fathers of ten children were to pay no taxes at all, while childless bachelors over the age of 25 were liable for double taxes. 575 But infertility was also an acutely personal concern. As many as 25 per cent of all marriages had no offspring in the long-term, with around 12 per cent failing to conceive on account of the sterility of one or more of the partners, and the remainder losing the children they had to disease or illness. 576 The problem was most acute after 1650. 577 To understand fully the cause


573 Thomas Laqueur, Making Sex Body and Gender from the Greeks to Freud (1990), 8, 194.

574 For concern over marriage and population see Carew Reynel, The True English Interest (1674), 59-67. For political arithmetic see for example the works of John Graunt, William Petty, Gregory King, Charles Davenant. ‘Mathematical Reasoning, is not only applicable to Lines and Numbers, but affords the best means of Judging, in all the concerns of humane Life’. William Petty, ‘An Extract of Two Essays in Political Arithmetick concerning the Comparative Magnitudes, etc. of London and Paris by Sr. William Petty Knight. R. S. S.’, Philosophical Transactions (1683-1775), Vol. 16 (1686 - 1692), p. 152.

575 J. Bonar, Theories of Population from Raleigh to Arthur Young, (1931), p. 53.

of the transition from the sexually active to the sexually passive woman we need then to invert the central theme: it was not so much the nature of conception that occasioned a reworking of the body, sexuality and gender after c.1650 as the problem of infertility.

Richard Zijdeman (IISH) & Tine de Moor (Utrecht University)

Making the household work: non-kin deployment as a survival strategy in the early modern household (Gilze and Rijen, The Netherlands, eighteenth century)

In our paper we will focus on the changing role of non-kin as part of the dynamics in households’ lifecourses in order to get a better understanding of the interaction between various types of household members and the labour market. Elsewhere Bouman and De Moor (The commercial household, 2012) have argued that non-kin, both in the form of servants and lodgers were integrated in early modern Dutch households to compensate for the absence of intergenerational support, as a secondary consequence of the emergence of the European Marriage Pattern. Though earlier results have demonstrated that these additional household members were only temporarily part of households, and can be linked to specific types of households, it remains so far unclear at which moment in time during the life-course of households they moved in and to what extent the nature of their relationship to the head of household – both servants and labourers came with lesser ‘strings attached’ than living-in kin – really created a greater flexibility for households. To tackle these issues we apply a life-course approach to the household. Households expand and decrease in size and as a result the need for, for example care related tasks, changes over time. Our article contributes to a better understanding of the mechanisms underlying servanthood and lodging and the role of non-kin in general in making the early modern household in an EMP-area work, despite the difficulties the high marriage age and nuclear composition of the household – also referred to as Nuclear Hardship – created in terms of intergenerational support. Our study builds on several sets of longitudinal data from family reconstitutions of Dutch villages for nearly the whole eighteenth century. In addition to the long time span, the data provide annual observations allowing for very detailed tests of our hypotheses on the role of non-kin over the life-course of the economic household.

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577 E.A. Wrigley et al., *English Population History from Family Reconstitution, 1580-1837* (1997), Table 6.21, p.295, for expectation of life at birth; Figure 6.9, 264, for infant mortality rates. For the peerage see T. Hollingsworth, ‘The Demography of the British Peerage’, *Population Studies*, 18 (Supplement to 1964), Tables 42 and 43, 56-7; Tables 47 and 48, pp.62-3.
II/D Migration and Identity

Costanza Biavaschi, Corrado Giulietti (IZA) & Zahra Siddique (University of Reading)

The economic payoff of name Americanization

Americanization, the process by which immigrants strive to assimilate into American society, encompasses several dimensions. One such element is the Americanization of migrants’ first names, a key aspect of the desire – or need – to conform to the American norm. The importance of first names has long been stressed by sociologists (Lieberson, 2000), and it could serve as a crucial marker to understand the returns and trade-offs from Americanization. In this paper, we provide the first evidence on the economic consequences of the Americanization of first names during a pivotal period in American history.

Most Americans have heard stories of migrant ancestors Americanizing their names in the early half of the twentieth century. However, such anecdotes are typically stored solely in familial memories, with no study having measured the extent and implications of name Americanization. Defined throughout as the custom of adopting a first name that was more popular in the US-born population than the original migrant’s name, we find that name Americanization was a widespread practice. Almost a third of naturalizing immigrants abandoned their first names by 1930 and acquired popular American names such as William, John or Charles. We also shows substantial variation in name Americanization by country of birth, highlighting that migrants from Italy, Russia and Germany were all very likely to abandon their ‘foreign-sounding names’ and adopt names popular among the US-born population.

Widespread name Americanization prompts the question of whether it had an impact on migrants’ economic success. Summary statistics show that name Americanization into the most popular names was associated with an occupation-based earnings increase of above 10%. These gains were larger than those experienced by migrants Americanizing into less popular names and even more so than those experienced by migrants who kept their original name or changed to a more distinctive name.

We devote much of our analysis to verifying that the positive impact of name Americanization on occupation-based earnings represents a credible causal effect and is not driven by observable and unobservable differences across migrants. We account for characteristics that are often unavailable, even in modern datasets, allowing us to control for time varying socio-demographic traits as well as nationality-specific and local labour market-specific time trends. More importantly, we examine the causal effect of changing names by exploiting the longitudinal nature of our data and using an instrumental variable approach. We instrument name Americanization with an index based on Scrabble points, which captures the degree of linguistic complexity of names upon arrival compared to the linguistic complexity of names at destination.

To understand the link between name Americanization and labour market outcomes we have digitalized a novel dataset in which we can observe an entire random sample of migrants who completed their naturalization papers by 1930 in New York City. We are able to follow the full set of individuals over time, due to the nature of the naturalization process and documentation procedure, which required migrants to first file a declaration and later a petition for naturalization. By exploiting this two-step procedure we obtain information on name Americanization and a wide range of migrant characteristics at different points in time, allowing us to examine economic outcomes following name Americanization. This strategy differs from the common methodology used in constructing historical panel data, which, resorting to record linkage based on name and age, only delivers partial matching and does not allow the detection of name changes.

Throughout our analysis and across numerous specifications, we find a substantial payoff of name Americanization. Further tests suggest that name Americanization was more common among migrants that were likely low skilled, more discriminated against, or with
less alternative means for socio-economic improvement. Therefore, our study adds to recent evidence provided in Abramitzky et al. (2012), which concludes that migrant occupational upgrading was rather limited for low skill migrants between 1900 and 1920, by interpreting name Americanization as a way of circumventing negative occupational shocks and climbing up the occupational ladder.

More generally, our results highlight the trade-off between maintaining one’s individual identity and labour market success, suggesting that the process of cultural assimilation at the dawn of the modern ‘melting pot’ was instrumental for migrants’ economic advancement. Therefore, such a trade-off is not only present in recent times (e.g. Bertrand and Mullainathan 2004; Fryer and Levitt 2004; Arai and Thoursie 2009; Algan et al. 2012) but was also in place during the early 1900s.

References

Matthew Gregg (Roger Williams University)

Inheritable traits and turn-of-the-century wealth inequality: evidence from an American Indian reservation, 1894-1906

Do intergenerationally transmitted characteristics explain wealth inequality within countries and, if so, how quickly do these traits affect wealth? Additionally, which intergenerational mechanism can be identified as causal? In this paper, I address these questions by exploiting the sharp difference in the pre-industrial rates of pastoralism between Scottish-Irish immigrants and southeastern US Indians to identify the role of long-lasting traditions on the economic behaviour of their descendants. I hypothesize that descendants of bi-racial (i.e. between Indian and European American) marriages held different skills or preferences towards animal husbandry than descendants of homogamous (i.e. solely between Indians) marriages. To test this hypothesis, I use data from two main sources. First, data on wealth and crop levels for the Cherokee Indians living in the Eastern Band Reservation in North Carolina are contained in newly recovered agricultural censuses over the years 1894-1906. Second, I create three-generational family trees with information on each ancestor’s race for every Cherokee household living during the census years. The names of each Cherokee and white ancestor are listed in the 1906-9 applications to receive reparations for past financial mismanagement by the US government. Given the migration patterns of US settlers and the secluded nature of this reservation, I can often identify when the first non-Indian entered the family tree. To estimate the causal role of intergenerationally transmitted traits, I combine two empirical approaches: (1) the epidemiological approach which compares economic outcomes of descendants of different ethnicities who face the same external environment and (2) the difference-in-difference approach which accounts for omitted variable bias. In the fully specified model, I find that the accumulated holdings of livestock were 43 per cent higher in
Cherokee households with at least one European American ancestor than households with only Cherokee ancestors, even after controlling for religious factors and township-level fixed effects. This effect explains roughly 18 per cent of the total variation in livestock wealth and operates only when the European American ancestors are located along patrilineal lines. Since pre-industrial Scottish-Irish and Cherokee societies initially depended on agriculture in identical magnitudes, grew similar cereal grains, and held similar governance structures, I conduct the same analysis using crop output as the outcome of interest to control for unobserved human capital differences. I find that the positive effect of European American ancestry on crop output is economically smaller and statistically different than the effect on livestock wealth. The significance of inheritable traits on wealth accumulation is robust to different model specifications and the likelihood of a spurious correlation is ruled out through a battery of falsification tests. While the causal channel is difficult to isolate, I can rule out institution, religious, and general human capital considerations, which leaves only cultural and genetic transmissions as feasible causal mechanisms. (JEL N31, N51, D03, O12.)

Drew Keeling

Reinterpreting pre-World War I mass migration by using travel statistics

One of the all-time greatest, most ethnically diverse and least fettered examples of transoceanic mass migration, the movement of over 10 million people between Europe and North America during the globalizing early twentieth century, has also been an episode heavily studied by scholars. Prior quantitative analyses of migration during the Ellis Island era, though considerable, have however been based on official US immigration statistics long and widely recognized as inconsistent and incomplete, and in many important respects significantly so.

This paper is based on comprehensive development of a ‘Voyage Database’ consisting of a day-by-day, shipping-vessel-by-shipping-vessel compilation of passenger flows in first, second and third class in both directions between the leading ports of Europe and North America between 1900 and 1914, broken down by route, and tracking many characteristics of over four hundred large passenger steamships and eighteen thousand transatlantic voyages. The resulting datasets and analyses enable much closer determination of the timing and intensity of those migration flows, and of causal factors affecting them.

Assessing this transoceanic movement in conjunction with traditional (and non-traditional) statistics from the US Immigration Bureau, yields as key results, first that this migration, consistently measured, is very closely tracked by shipping line tallies of travellers in second and third (steerage) class, and second, that these consistent migration flows can be broken down, at least semi-annually, into accurate and consistent estimates of the portions making first-time versus repeat crossings between Europe and America.

Consistently measured migration flows, by region and class of travel, and on a daily basis, make it possible to better pinpoint, and to much more precisely quantify, salient seasonal and especially cyclical aspects of the mass relocation, and in both directions. Underlying motives and constraints, notably steamship fares (which have also been extensively developed as part of this project, although not for all routes), can also be quantifiably examined in far greater detail than ever before.

The results here confirm and extend conclusions reached in my earlier research: that mass migration across the North Atlantic a century ago was more cyclical, and more bi-directional, and less impacted by the fluctuating cost of steamship tickets, than previously realized. This paper expands the data range and extends the analysis of those previous studies in order to focus more directly on these important findings concerning fundamental processes of mass migration, and to more clearly establish the statistical basis for those results and for future analysis. In contrast to traditional impressions of impoverished huddled masses barely able to afford a one time and one-way journey to the New World, these statistics put forth, and on a solid and detailed quantitative basis, a more historically valid view of this relocation
as a series of repeatable and two-way crossings shaped more by business cycles than by travel costs.

*Keywords*: mass migration; business cycle; globalization; long-distance travel.

**Marc di Tommasi** (University of Edinburgh)

*Hidden communities: a quantitative assessment of international migration to Edinburgh at the turn of the twentieth century*

In the age of mass migration, and especially after 1880, Europe experienced the greatest diaspora in its recorded history. An unprecedented number of workers left their home countries looking for better living conditions. Cities and villages that had grown largely insulated in a homogeneous culture had to confront the ‘other’, the foreigner, for the first time. The immigration was so massive that in many cities across Europe and America diaspora communities sprung up, each with its own customs and traditions. Many challenges that nowadays are at the centre of the public agenda were encountered during this period for the first time.

Despite the significance of the migratory phenomenon our knowledge of it is still incomplete and lacking both in details and scope. We still rely on official statistical surveys compiled on behalf of the government that often underestimate the scale of the migratory phenomenon, and are limited in scope both for practical and political reasons (Holmes 1988). Many categories that nowadays we would consider part of a migrant community, like the ‘Naturalized British Subjects’ and the second generation, the children of migrants born on British soil, at the time were simply considered British nationals while their original ethnicity was lost to the official statistics.

Moreover, the majority of existing research is concerned with a selected number of case studies as well as narrow data sampling across a number of years. A clear bias toward ‘visible communities’ (Tabili 2011) has been observed, which creates a skewed image of the migrant’s presence in that period.

Our study delivers a comprehensive and systematic analysis of the migratory streams directed to Edinburgh from outside the British Commonwealth in the period before the First World War. We compiled an extraordinarily rich dataset with almost 7,000 individuals after a review of approximately 32,000 entries, using as our main source the Census Enumerator Books (CEBs), which were the books where the census officials transcribed all the original household schedules. The CEBs contain all the unadulterated data that form the basis for the official statistics (Taylor 1951), including, in 1911, nationality. This source provided an unprecedented level of detail. The relational databases that we have constructed from the CEBs allowed us to perform a detailed meta-analysis at a household level across all ethnic groups of the immigrants present in Edinburgh in 1911, including data about their jobs, their living conditions, their population density and their family size.

We reconstructed their family structures, including also naturalized migrants and the first generation born on British soil, which up until now has been excluded from quantitative studies on historical migration. Our unique approach allowed us to move from the old indicator of ‘birthplace’ to a new one of ‘ethnicity’. Our preliminary analysis showed a new and very different estimate of immigration volume, revealing that the official numbers were inaccurate and underestimated, and so painting a picture surprisingly different from the one shown by the official sources.

This is the first analysis of this kind ever attempted on a British city. Moreover with the help of a GIS (Geographic Information System) all the data have been connected and compared across different ethnicities creating a series of maps detailing immigrants’ settlements. Kernel Density Estimation was used to evaluate the clustering of the various migrants’ communities in the different parts of the city of Edinburgh. This quantitative analysis of geographical data is normally used in biological sciences and constitutes an
innovative approach to historical data analysis. A meta-analysis including their occupation data revealed that the vast majority of the immigrants did not choose their settlement based on their ethnicity but rather on their job.

Our work demonstrates that the migrants’ communities were clearly a greater presence in Scotland than previously thought. The model of the “immigrants’ ghettos” (Pooley 1977), where the social and cultural pressures are the most significant factor influencing migrants’ settlements, is an exception that should not be applied to the whole of the country because, at least in Edinburgh, men and women from all over Europe led their own life directly alongside the local people with just a few episodes of tension.

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A strange thirst for tea: East India Companies, private trade, smuggling and the popularization of the consumption of tea in Western Europe, 1700-60

An enormous potential market for tea existed in the early eighteenth century, especially in England and the Dutch Republic. From the richest to the poorest consumer, they all aspired to drink tea, but there was a problem. The Dutch (VOC) and English East India Companies (EIC) for decades were unwilling to effectively respond to this clamour for tea, preferring high profits over expansion of trade. As the response of the EIC and VOC was insufficient to quench the thirst for tea, solutions were found beyond their control. Private traders on Dutch East India men initiated and expanded Dutch trade in Chinese tea to Europe, an example the VOC could only follow. The EIC returned to the trade in tea by establishing direct trade with Canton in 1713, but soon found it had opened a Pandora’s Box. New East India Companies were constructed and old ones revived with the help of British and Dutch investors. They aimed at profiting from high prices in England and in the Dutch markets, and there was no way of stopping them. Drawn in by high profits, smugglers from all over Europe soon evaded English taxation to supply the English market, while prices in the Dutch Republic also went down. Such behaviour positively stimulated the creation of a popular market for tea, but ran against any idea of monopoly. The VOC and the EIC had no other option and followed in the footsteps of the competition in the pursuit for market share. This paper will go beyond the traditional story of East India Companies and their trade in tea by asking: to what extent did these new competitors, private traders and smugglers popularize the consumption of tea in Europe?

Soon after the establishment of direct trade with China, strong competition brought down prices of tea in Europe. Monopoly in the tea trade had become an illusion and companies followed different strategies in the pursuit of the favour of the consumers. The VOC adapted to direct trade without losing the advantages of its trade in Batavia, while the EIC learned to use its empire without losing the advantages of direct trade. In both cases, the companies used intra-Asian trade to enhance the returns in tea beyond what would have been possible by simply exporting silver. The VOC even went a step further; in order to expand its market share it allowed private trade on its ships to import tea against the payment of a recognition fee. This venture gives us a rare insight into the extent of private trade in tea by VOC servants. During a period of 10 years, the private trade imports doubled the official trade of the VOC, whilst also augmenting VOC profits from the tea trade. Viewed in such a way, private trade in tea was used as a tool in the rivalry for tea and for the market in Europe.

This paper will take the argument of popularization a step further by distinguishing between different varieties of tea in the return cargos of the EIC and the VOC. Tea will no longer be treated as a single commodity, but as commodities consisting of different varieties. The difference between black and green tea already existed at the time of the East India companies, whilst distinction was also made between tea of lower, intermediate and higher quality. Just to name the most important varieties of tea, distinctions were made between Bohea, Congou, Singlo, Souchong, Pekoe, Hysom and Bing. These different varieties of black and green tea catered for different markets. Bohea especially is associated with the popularization of tea in Europe, whilst Souchong, Hysom and Pekoe are associated with more sophisticated and refined tastes. Distinguishing between them allows for an in-depth study of the development of the trade in tea of both companies, as well as of the tea trade in general. In this period companies specialized in different varieties of tea based on what markets they targeted. In view of the varieties returned to Europe over time, the continental East India Companies focused on both popular and refined markets 20 years before the EIC decided to step into the popular market for tea. This difference in timing, can be explained by the relatively high price of tea in England, caused by high taxation. In those 20 years, the lower
segment of the market in Great Britain lay open for the continental competition to grab. The combined efforts of different continental East India Companies, private traders and smugglers was so successful, they almost succeeded in pushing the EIC out of its own market. The EIC and the English state confronted the problems it faced in the competition for tea both in Europe and in Asia and effectively started to catch up with the competition in a ferocious attempt to reconquer its home market. These interactions between monopoly companies, empires, private traders, smugglers and different varieties of tea lead to new insights into why and how the consumption of tea was popularized in Western Europe.

This study is based on new and more detailed figures on the tea trade of both the VOC and EIC. The sources used in this study were retrieved from the official records of both Companies in the British Library and the National Archives of the Netherlands in The Hague. It will not only look at the different groups importing tea, Companies, private traders and smugglers, but also at the differences in quantities and qualities of tea imported. In this respect this study goes beyond the present historiography which mostly only differentiates tea from other commodities. The differentiation between varieties of tea, as the different varieties catered for either luxury, intermediate or popular markets, will help us to better understand how the consumption of tea developed.

Santhi Hejeebu (Cornell College)

Managerial sway within the English East India Company

For eighteenth century economists, European chartered companies exemplified the ‘negligence and profusion’ that resulted from the separation of the ownership of capital from its management. Given the inherent conflicts of interests between an employer and employee, Adam Smith (1776) argued that commodity trading between Europe and Asia under a joint-stock form could not have long survived without the protections and privileges granted by government charters. The argument – that the legal monopoly insulated corporate profits from external competition, thereby allowing inefficiencies to thrive within the early corporate form – continues to be debated among specialists. In the case of the English East India Company, received wisdom has echoed the views of Smith. Moreover, the foundation of British rule in India is often viewed as a direct consequence of the Company’s alleged inability to control overseas servants.

This paper explores the ways directors in London could sway the behaviour of their overseas employees prior to the firm’s imperial transition. It locates qualitative and quantitative evidence of managerial influence in specific business practices including, servants’ recruitment, skill development, promotions, rewards or privileges, and the allocation of authority. Many of these practices were official and appeared in the formal correspondence between directors and servants. Others were customary and were articulated in private correspondence. The study rests largely on official company correspondence and private correspondence available at the British Library, the Bodleian Library, and the Lincolnshire County Record Office. Additional administrative records, such as writers’ petitions, covenants of indenture, and service records, are also used.

A key aspect of employee management in the English East India Company, the allocation of decision rights across long distances, receives special attention. Patterns of decision authority granted to servants stationed in the Indian subcontinent are revealed through a close examination of more than 300 regulations of overseas servants between 1680 and 1730. We characterize the directors’ regulations in terms of their subject and their attributes, including their justification, verifiability, and consequences for non-compliance. We also determine if the regulations are imperative or advisory in nature. This approach enables a more nuanced view of the servant-director relationship. Rather than viewing overseas agents as narrow followers or breakers of orders emanating from London, we explore how the authority to make choices was shared, sometimes uneasily, between employers and employees.
Finally, the paper examines the factors that led to the directors’ loss of influence between the 1740s-1760s. As is well-known, the period is marked by contests for power among post-Mughal states and between Britain and its neighbours. Within the Company, the period marks a clear drop in the duration of employment and noted upturn in size of private fortunes. Both trends had devastating financial and managerial implications for the servant-director relationship. Servant remittances imposed unsustainable liabilities in London. Moreover, well-endowed servants and their patrons openly contested the authority of directors to dismiss servants, an unprecedented development in the firm’s history. By the end of the early 1770s, a widespread scepticism in the directors’ ability to control overseas servants formed a key part of the justification for Parliamentary regulation of the Company’s internal affairs. Adam Smith’s general disdain for the separation of ownership from the management of capital may have fitted the English East India Company during a narrow historical moment. Yet, his views poorly describe the longer history of managerial relations within the company.

Leos Müller (Stockholm University)
The business strategy of an interloper: the Swedish East India Company, 1731-83

The bulk of research on early modern chartered companies is based on the two cases: the Dutch (VOC) and English (EIC) East India companies. They dominated European trade with Asia and they created large colonial empires in India and the Dutch East Indies. The two companies, drawing on large human resources, and generating vast amounts of wealth, power and political influence, have become prototypes for chartered companies. This also means that the theoretical model of chartered companies as enterprises generally has been discussed with the big two as points of departure. A major problem with such perspective is the premise that early modern European trade with Asia was shaped by the big two. In fact, there were large numbers of smaller chartered companies that carried out their business parallel – and in competition – with the VOC and the EIC. The argument here is that small chartered companies, without (substantial) colonial empires and expansive local administration (and armies), played an important role in challenging the privileged trade. The small chartered companies had a number of competitive advantages, their overhead costs were lower and they were perceived differently by local rulers. One other key advantage was their role in the European market for Asian goods. They supplied illegal markets, e.g. in Britain, with cheap but competitive alternatives to goods imported by the EIC. In this sense they played an important role turning Asian goods into goods for mass consumption. The new much more socially inclusive consumer habits generated by the trade of the Scandinavian companies is one reason why the study of small chartered companies is crucial for the understanding of trade between Asia and Europe and the birth of early modern consumer society.

The Swedish East India Company (SEIC) and Danish Asiatic Company (DAC), both established in the early 1730s, are good examples of such insignificant/significant agents. For over fifty years (until the Commutation Act of 1783) the two companies were among the leading companies trading in Canton. The Scandinavian trade was largely based on tea. Chinese tea was by far the most valuable and profitable commodity, with other goods, most significantly silk and porcelain, playing a complementary role. Porcelain fitted perfectly as ‘ballast’ cargo to the tea, while silk could always find a market in Europe. The Danish company also traded with India where the Danes had two minor trading stations, Tranquebar and Serampore. Although the Danish trade in Indian Cotton was significant, it was not as valuable as the trade with Chinese tea via Canton.

Looking at the numbers of people and ships at first sight the Scandinavian trade with Asia might come across as insignificant. The Swedes sent out one or two, rarely three, ships per annum. The Danes sent a couple more, but only one or two with Canton as the destination.

Nevertheless, the four Scandinavian ships that regularly arrived in China accounted for one quarter, or more, of tea imports to Europe. Naturally their share varied over the years. Their tea trade was especially important in the 1730s and 1740s when the Dutch and English EICs were slow to react to demand shifts in Europe. Another period in which the Scandinavian companies played a major role were the years 1778-83 when the French and Dutch companies were out of the game; the French entered the War of American Independence in 1778 and the Dutch in 1780.

From the early eighteenth century tea trade expanded much faster than any other part of the European-Asian trade. In the 1770s tea imports exceed in value imports of Indian cotton textiles. The two small Scandinavian companies did play an important role in shaping European consumer markets for tea, primarily by supplying the illegal market for tea in Britain.

The paper will look specifically at the business strategy of the SEIC, originally set up as an off-shore enterprise by merchants previously engaged in the Ostend Company; the latter had been closed by the authorities in 1731. Many of the merchants, often of Scottish origin, had ample experiences from the Ostend and EIC trade with Asia. The paper will rely on private papers of the company supercargoes and merchants engaged in the re-export trade, as well as on the surviving sales catalogues from Sweden.

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II/F  Occupational Structure II

Osamu Saito (Hitotsubashi University)

*Economic development and structural change since 1700: new evidence in a global perspective*

This paper revisits a number of issues previously explored by Colin Clark, Simon Kuznets and Alexander Gerschenkron, but makes use of a larger body of newly available data of much higher quality than was available to these pioneering scholars. The paper is an early draft of a thematic chapter for an edited volume, *Occupational Structure and Industrialization in a Comparative Perspective*, drawing on the book’s ‘country chapters’ (whose datasets use a consistent definition of the labour force, are coded to the same occupational coding scheme [PSTI – developed by E.A. Wrigley] and distinguish between males and females).

Petty’s Law, which was first adumbrated by Colin Clark has sunk deep into the consciousness of economic historians and suggests a standard sequence of economic development from an original predominance of agricultural employment to a major growth in secondary sector employment and only at a later stage a major growth in the importance of tertiary sector employment. In reality this pattern is violated so often that it cannot serve as a general model. In Britain and also in Belgium, for example, the rise in the share of secondary-sector employment was much less spectacular in the classical industrial revolution period, while growth of tertiary sector employment was stronger than previously thought. In the USA secondary- and tertiary-sector growth proceeded in parallel during industrialization. Other countries experienced yet another pattern in which tertiary sector growth was not accompanied by industrialization but preceded it; Indonesia and Taiwan belong to this type. So far Germany is the only country we have examined which appears to ‘obey’ Petty’s law.

The theoretical basis of Petty’s law is that income elasticity of the demand for primary-, secondary-, and tertiary-sector products differs, being lowest for primary and highest for tertiary products. However, the paper examines whether other forces were at work. The degree of labour intensity varied within the secondary sector, between the sectors, and between the countries, while a country’s position in the world economy differed; all these must have determined – through intra- and inter-sectoral input-output relations – how the adoption of labour saving production methods affected labour force growth in the country’s secondary sector.

With this conceptual framework, the paper revisits Kuznet’s and Gerschenkron’s theses. Kuznets argued that the transition to modern economic growth is accompanied by major structural change. In England, however, major structural change appears to precede the shift to modern economic growth by at least one hundred years, while other findings question if it was really the case with nineteenth-century industrializers. For the latter issue Gerschenkron argued, on the basis of a small sample of European industrializers, that backwardness led to capital-intensive industrialization with emphasis on the most technologically advanced sectors. However, Asian industrializers have not conformed to this pattern and appear to follow a labour-intensive path to industrialization and in consequence achieved much lower increases in GDP per capita from a given level of structural change than nineteenth-century Western industrializers.

M Erdem Kabadayi (Istanbul Bilgi University)

*Economic transformation from the late Ottoman Empire to the early Turkish Republic: de-industrialization or urban economic growth?*

Based upon a quantitative analysis of the occupational data from two sets of sources (Ottoman tax surveys from the mid-nineteenth century and national population censuses of the early Turkish Republic from the first half of the twentieth century) this paper will question the validity of a generally accepted hypothesis of the Turkish economic history writing that, the
late Ottoman economy experienced a sharp decline in general and even de-industrialization in urban centres; and the economy of the Turkish Republic could not recover until the 1950s.

Using the diversification of employment in major economic sectors and the development of the occupational structure as proxies for industrialization and economic growth, this paper will firstly assess the levels of industrialization in three cross sections for the Turkish economy 1927, 1935 and 1945. Secondly for the late Ottoman economy the occupational structure of several urban centres will be analysed via coding individual occupational titles of household heads of the entire urban populations of chosen cities. The Ottoman occupational data will be coded by using the PST coding scheme. After converting the occupational data extracted from the Turkish national population censuses also into PST categories it will be possible to extend the period of analysis from the 1840s to the 1940s.

The economic history writing in, and on, Turkey operates on two very loosely connected levels: the Ottoman Empire and the Turkish Republic. This paper aims to explore the urban economic change from a long-run industrialization perspective via examining the occupational change from the Ottoman Empire to the Turkish Republic. The preliminary results of such an analysis firstly hint at a stronger economic performance of the mid-nineteenth century Ottoman urban economies and secondly for significant increases in the industrial employment of several Turkish cities in the 1930s.

Natalia Mora-Sitja (University of Cambridge)

Female employment, occupational structure and industrialization in comparative perspective

This paper will be an early draft of a thematic chapter for the book: Occupational Structure and Industrialization in a Comparative Perspective. It will draw on county chapters and datasets covering England and Wales, Belgium, Germany, the USA, Italy, Spain, Sweden, Bulgaria, Japan, Korea, Taiwan, Indonesia, China and India. The completed chapter will extend the treatment to cover France, the Netherlands and Turkey. A major theme of the paper will be the widespread problems of enumeration of female employment in the census. These are perhaps best known in respect of the nineteenth-century British censuses where under-enumeration of female employment is widely considered to vitiate the census as a reliable source on female employment. Recent work (Shaw-Taylor 2007; You [unpublished]; McGeevor [forthcoming]; and Potter 2013, [unpublished]) has suggested that the nineteenth-century British censuses reliably record regular employment, (characteristic of single women and making up the greater part of female market orientated labour) but that irregular work, characteristic of married women and, to a lesser extent of widows, was less reliably enumerated. However, over-enumeration may also be a problem. In all the case study countries, but especially in the early years of census taking, the censuses were enumerated in ways which are problematic for the economic historian. But the national problems are exacerbated when international comparisons are to be made because the enumeration problems differ between countries – for instance the early Bulgarian censuses exaggerate the participation of women in agriculture while the Spanish censuses understate female employment more in the Franco period than in either earlier or later periods. One substantive finding emerging from a consideration of the differing enumeration problems relating to female labour is that unless great care is taken with respect to data on female employment there is a serious risk that the accuracy of international labour productivity comparisons will be vitiated.

Despite all the problems, international comparisons can be made and these are greatly facilitated by the creation of new datasets, characterized by sub-sectoral detail and compiled using consistent labour force definitions and coded to the same classification scheme (PSTI a variant of a scheme created by E.A. Wrigley). One striking early finding is that in all the European economies female employment was insignificant in the building and transport sectors in the nineteenth and twentieth centuries, whereas in some Asian economies female employment was a significant component of these sectors which prompts some causal
questions which may be very revealing of the determinants of the gender division of labour. Other issues to be explored include Goldin’s ‘U’ shaped female labour force participation rates (FLPR) with economic development (Goldin 1995), which can be refined here by looking at the impact of sectoral changes – i.e. the types and speeds of structural change in the countries’ sample – on female employment, with particular attention to the dynamics that changes in manufacturing and the services have on female employment.
II/G  French Business and Weber

Guillaume Daudin (Université Paris-Dauphine) & Pierre Gervais (Université Paris-3)

Recording precision and tracking efforts in eighteenth-century bookkeeping

This paper offers a way to test to what extent double-entry book-keeping is the vector of rationalization of merchant activity that was described by Weber, and explores alternative possible motivations. It proceeds through the quantitative treatment of a newly completed database including four years’ worth of accounts for three large traders, two in France (the firms of Abraham Gradis in Bordeaux in 1755, and the Chaurand brothers in Nantes in 1774 and 1784), one in the early United States (the firm of Levi Hollingsworth in 1786). Covering more than 3,000 transaction records, this is the largest set of such recorded entries ever assembled in computable form available to historians.

The paper tracks the ‘effort’ invested in the record of transactions between pairs of accounts measured as the size of mean entry. If double-keeping entry was the vector of rationalization, this effort should be explained by the centrality of each pair of accounts in merchant activity. Significant residual unexplained variations in the amount of effort, or unexplainable variations in the practice of different merchants indicates that something other than the nature of the economic transactions explains the actual double-keeping practices of merchants.

The paper proceeds as follow. First, it presents our three merchants. Then, it identifies potential explanatory variables for the effort put in recording relations between each given pair of accounts: wholesale or retail, central or peripheral to the firm’s personal network, inside or outside the personal circle of the merchant, closely situated or far removed geographically. Finally, it exploits both the statistical relationships between effort and these variables and the unexplained variations to reveal personal preferences in the way each merchant tracked his transactions within his accounting system.

Cheryl McWatters (University of Ottowa)

Enemy mine: merchant networks, neutrality and wartime

The common proverb, ‘the enemy of my enemy is my friend’ has been used to describe links between Republican revolutionaries in the American colonies and their supporters (political and trade) in pre-revolutionary and decidedly non-democratic France. Many explanations for such alliances and the related issue of neutrality have been offered in the literature, contingent on whether the emphasis is political, economic, or geographic, amongst others. Regardless, these relations built on networks of actors, interconnected through social and business ties, seeking trade advantage or the maintenance of existing networks established through significant risk and effort. Sustaining these relations was preferable to forging new ones in light of the vagaries and dynamic nature of colonial politics.

This study adopts a case approach to examine merchant relations emanating from the port of Nantes during this period. Key to our purposes is the analysis of merchant accounts and related archives. The objective is not chiefly to calculate what might have been perceived as the returns from these clandestine and semi-clandestine operations (and their technical calculation), but more critically to investigate how these merchant networks were sustained during wartime, in part, through the accounts and accounting mechanisms in place.

Jean Pierre Dormois (Université de Strasbourg) & James Foreman-Peck (Cardiff University)

What drove (or choked) French entrepreneurship under Napoleon III? A department-level analysis

Systematic judgements about nineteenth-century French entrepreneurship have been limited by partial coverage of the data used in the analysis. French business historians have assembled evidence about the sometimes impressive achievements of prominent individuals and
reconstructed business communities at the local/regional level. However, the sample remains patchy: well-documented in some areas (Normandy, Alsace, Lyon, Paris), suspiciously absent in others (South of the ‘St-Malo-Geneva line’), the evidence seems to ignore most of the rank and file of French entrepreneurs.\textsuperscript{580} When nation-wide data sources have been employed, analysis typically is restricted in other ways.\textsuperscript{581}

In order to construct a more representative sample and thereby attain a more accurate picture, we draw on data that can be extracted from (supposedly) comprehensive nation-wide censuses of the Second Empire. We focus on manufacturing businesses in this crucial period by matching information gathered from three sources: the professional census of 1866, which provides numbers of business owners by sector; the ‘tableau C’ of the register of the patente (or business tax) and finally the industrial enquiry of 1861-65 which contains information on the ‘fundamentals’ of industrial firms (capital outlays, value of gross output, employment, cost of raw materials) in this decade, again at the department-level. In addition we include other variables available at the same level of disaggregation: the prevalent commercial bank (discount) rate, the agricultural-industrial wage differential, the literacy and crime rates, the cost of fuel, and the availability of railway service. Finally we bring in statistical indicators of religious practice – a previously untapped source – to test the strength of the ‘Weber thesis’ in the French context. These indicators are employed for an econometric analysis across France’s 89 departments in which we acknowledge that entrepreneurship is embedded in a wider social context that varies over space (as well as time). Consequently we take into account that entrepreneurial performance may be constrained or stimulated not just by state regulation but also by the size and accessibility of markets and by factor quality and supplies. Furthermore, the correspondence between France’s pre-1871 and post-1945 administrative division affords the possibility of bringing in indicators from the later period and identifying persistent regional and national features of entrepreneurship.

\textit{Keywords:} entrepreneurship; France; Second Empire; regional analysis.

\textsuperscript{580} See: http://eh.net/content/dormois-barjot-et-al-les-entrepreneurs-du-second-empire
**II/H Growth and Divergence**

*Robert C Allen (University of Oxford) & Ekaterina Khaustova (Presidential Academy of the National Economy and Public Administration Moscow, RF)*

**Russia in the world economy**

The debate about Russia’s place in the world economy during the nineteenth century has been one of the central controversies in Russian economic history. This paper assesses Russian economic development by using wage and price history from 1820 to 1916, the period when Russian industrialization took off. Russian conditions are compared to those in the most advanced economies (Britain and the USA) as well as two of the poorest (Egypt and India) in order to find Russia’s place in the world league table.

The paper is based on a new database for Russia collected from archives in Kursk and Moscow. Standard printed sources are also used. To understand the rapid growth in industry in the late Imperial period, we use wage and price data to measure the prices of industrial products and inputs. We examine the following indicators:

- Product prices are used to measure market integration and gauge the impact of Russia’s tariffs.
- Wage rates are used to compare the cost of labour.
- The price of capital services is constructed from interest rates and the prices of materials used for capital inputs as well as the wages of building workers. Was capital expensive or cheap in Russia?
- The prices of natural resource inputs are also examined. American growth has often been attributed to the abundance of natural resources. Resources were also abundant in Russia – but how did prices compare?
- Wages relative to capital using costs and energy prices are used to judge the incentives for using mature technology.
- Real wages in terms of consumer goods prices measure living standards.

By collecting systematic data on wages, food prices, and constructing consumption baskets from 1820 to 1916, the aim is to place Russia in a global perspective.

*Max Stephan Schulze, Paul Caruana-Galizia (London School of Economics) & Nicholas Crafts (University of Warwick & Cage)*

**Geography and the great divergence: market access and economic growth in the nineteenth century**

This paper draws on insights from the New Economic Geography to explore the changes in the location of economic activity that characterized the global economy in the nineteenth and early twentieth centuries. In contrast to much of the historiography, which, so far, has emphasized the role of institutions and endowments in driving these changes, we focus on market access. The hypothesis here is that some parts of the world (i.e. Europe and its western off-shoots) were better placed to benefit from changes over time in the cost of access to markets than others. Further, better access to markets made for higher incomes. Rather than examining these issues at the national level, we work with sub-national regions as units of analysis. This approach allows us to capture the spatial clustering of activity that is easily masked in national or supra-national aggregate data.

The analysis builds on a new dataset that includes GDP for more than 300 regions covering Europe, China, India, Australia, Canada and the US. This allows not only for a high degree of variation in the data across the globe, but also a high degree of within-country and within-continent variation. The regional product estimates, which cover the period c.1800-1910, are a key ingredient in the computation of regional market access (or market potential) as a measure of a region’s economic centrality. The market potential of a region depends on economic activity in that region and in other adjacent or distant regions (or countries) adjusted.
for their proximity. Proximity, in turn, depends on distance between localities over land and sea. Distances over land and sea are converted into equivalent measures using corresponding transport costs. Hence changes over time in a region’s relative market potential can result from either shifts in the spatial distribution of economic activity, changes in relative transport cost or a combination thereof. Market potential can serve as a measure of a region’s economic ‘centrality’ or ‘peripherality’. In the market access literature, the degree of regions’ centrality is expected to impact on firms’ location decisions – all else being equal, producers are likely to locate where they find least costly access to markets for their inputs and outputs. Here we approximate market potential as a Harris-type measure where the market potential of region \( i \) can be calculated as increasing in purchasing power or GDP of all regions \( j \) and decreasing in distance or transport cost between regions \( i \) and \( j \). Using GIS, we create a communications network that incorporates simple geodesic distances and shipping routes as well as, for the post-1840 periods, railway connections that allow us to estimate inter-regional (and trans-continental) transport costs. These estimates are then used to approximate regional market potentials. The next step involves using the new datasets on regional GDPs and market potentials to explore the extent to which differences in regional per capita incomes across the world can be accounted for by differences in access to domestic and international markets. We employ panel data analysis (including the use of instrumental variables), controlling for regional resource endowments, climatic conditions and state-level political regime types. In essence, the paper offers a challenge to the view that most of the differences in income between the ‘East’ and the ‘West’ were due to either institutions or endowments. Geography mattered (too).

Leandro Prados de la Escosura (Universidad Carlos III de Madrid)

Assessing negative freedom: economic liberty in the long run

The current recession provides an opportunity to take stock and address issues recurrently raised by social scientists: How has freedom evolved over time? Did all dimensions of freedom evolve alongside? A distinction can be made between ‘negative’ freedom (or freedom from), defined as lack of interference or coercion by others, and ‘positive’ freedom (or freedom to), that is, the guarantee of access to markets that allow people to control their own existence (Berlin 1958).

A tension has long existed between the view that perceives the extension of freedom as the most effective way to promote welfare and equality, and the one that stresses welfare and equality as prerequisites of freedom (Friedman 1962). In the former view an increase in negative freedom will deliver more positive freedom while, in the latter, an improvement in positive freedom will, by increasing welfare, provide more negative freedom. More bluntly, Sen (1999) asserts “every society faces a trade-off between adopting those institutions that preserve the innate freedoms exercised by individuals to enhance their well-being, and adopting those institutions that partially constrain these innate freedoms to produce opportunities for all individuals to enhance their well-being by exercising newly created freedoms”.

Does this trade-off apply necessarily to the long run? It is my purpose to investigate whether such a trade-off holds over time but, in order to do so, I firstly need to construct measures of negative and positive freedoms. Since a proxy for positive freedom, namely, a new historical index of human development, is already available (Prados de la Escosura, forthcoming), I will focus on negative freedom here. Economic liberty is a negative freedom in which the competitive markets play a central role. Personal choice, voluntary exchanges, access to markets, and protection of persons and their property from aggressions are its constitutive elements (Friedman 1962; Gwartney, Lawson and Hall 2013).

Research on economic liberty has been mainly restricted to the theoretical level and empirical studies emerged only in the last decades. The expansion of quantitative work has allowed the construction of economic freedom indices that exhibit wide spatial coverage but
limited time dimension (in the most comprehensive measure of economic liberty, that of the Fraser Institute’s, only goes back to 1970). The lack of a long-run perspective reduces the value of the lessons and policy implications derived from these empirical results. Thus, it is the purpose of this paper to provide a historical index of economic liberty. I construct time series for economic freedom indicators from which measures for the main dimensions of economic freedom as well as an aggregate measure of economic liberty will be derived for today’s advanced countries – more specifically, pre-1994 OECD countries. The period considered is that of the spread of modern capitalism, namely, the epoch covering from the emergence of free trade and laissez faire in the mid-nineteenth century to the current recession. The paper opens with a brief introduction to the concept of economic freedom and follows with a discussion of the construction of historical indices of aggregate economic freedom and its main dimensions. Trends in economic freedom across the OECD are, then, presented on the basis of a historical index of economic liberty [HIEL]. As a crosscheck, the new index is compared to the Fraser Institute’s, built on the basis of a much more comprehensive database, so the accuracy of the historical index is put to the test. Later, the main dimensions of economic freedom are examined and their contributions to the historical index of economic freedom assessed.

The main findings can be summarized as follows:

- An expansion of economic liberty, that reached two-thirds of its maximum possible, has taken place in the OECD during the last one and a half centuries. Its evolution, however, has been far from linear. After a substantial improvement since the mid-nineteenth century, World War I brought a major setback. A postwar recovery up to 1929 was followed by a dramatic decline in the 1930s and, by the eve of World War II, the level of economic freedom had shrunk to pre-1850 levels. Significant progress in economic freedom during the Golden Age (1950-73) fell short of the pre-World War I peak. A steady expansion since the early 1980s has resulted in the highest levels of economic liberty in the last two centuries.

- The four dimensions distinguished in economic freedom exhibited different trends confirming their complementarity in composing a complex image of economic liberty. During 1850-1914, sound money and international trade dominated aggregate economic freedom, but it was the improvement in property rights enforcement that was the main contributor to its progress. In the interwar period, the collapse of freedom of trade and regulation accounts for practically all the contraction in economic liberty, but from 1950 onwards liberalization of trade and factor flows has been the main force behind its advance. Over the whole period 1850-2007, the main contribution to the increase in economic liberty came from property rights and contract enforcement.

- The reduced approach to assessing long-run trends in economic freedom represented by the historical index of economic liberty (HIEL) matches closely the evolution of the Fraser Institute’s index of economic freedom (EFW4) over the last four decades and its country ranking at each benchmark. The historical exercise offered here provides, thus, a feasible option to weighing up economic liberty over space and time.
III/A Russia

Steven Nafziger (Williams College)
Understanding the process of Russian serf emancipation

The declaration of serf emancipation in 1861 is often viewed as a pivotal event in Russian economic history, despite the fact that this act was simply the start of a rural reform process that continued for decades afterwards. The enormous complexity of the multi-stage transition from an obligated peasantry to a landowning peasant class was acknowledged by contemporaries and later scholars such as Alexander Gerschenkron. However, relatively little analytical or empirical attention has been paid to the economic implications of the specifics of the reform, other than to note the possible efficiency implications of the resulting communal property rights and collective responsibility for associated land payments that the peasants faced.

This paper helps fill this gap in the literature by focusing on a small number of clauses, conditions, and revisions that appeared in different parts of the reform process and have important implications for understanding the economic impact of the end of serfdom. The goal is not simply to summarize the details, but to provide an analytic and, where possible, empirical evaluation of particular aspects of the sequence of reforms. The paper investigates three specific features of the reforms: the possibility of opting out of the land settlement process and acceptance of so-called ‘gift allotments’ by the peasantry, the distinction between communal and household land rights in the property settlements that did occur, and the lowering of the subsequent land payments of the former serfs that took place by decree in 1881.

Although these three aspects of emancipation and the accompanying land reforms may seem unconnected, each reflected a possible channel through which emancipation may have affected subsequent economic outcomes. The existence of the gift allotment possibility created an outside option for peasants, which may have improved the settlements they did receive through the reform process. The legal character (and geography) of peasant communal and household property rights over the land transferred in the settlements was made explicit in the reform statutes, but how the two differed in practice is not well understood, and whether the peasantry’s liability for associated land payments differed between the two variants remains unknown. Finally, the reduction in ‘redemption’ payments that occurred in 1881 differed across communities based on how well they were fulfilling their land obligations. Thus, understanding the motivations and variation in the reduction sheds light on the medium-term impact of the entire reform process.

Our starting point for considering these three features of the emancipation process is a careful consideration of the applicable laws, including the discussions that occurred in the lead-up to their writing. We then move on to provide new empirical evidence on the geographic variation in the extent of gift allotments, the distribution of communal and household property rights, and the size and amount of payment reductions. This effort is based on a descriptive and econometric study of new district-level data for European Russia that we collected from a variety of published and unpublished sources. Based on our legal analysis and consideration of the available empirical evidence, we then offer a conceptual framework for understanding how these features interacted with other dimensions of the reforms, and we speculate as to the overall implications for Russian economic development.

Amanda Gregg (Yale University)
Factory productivity and the concession system of incorporation in late Imperial Russia

When credit markets are imperfect, incorporation could be a crucial prerequisite for productivity-enhancing investments. In late Imperial Russia, commercial credit was scarce. Because the Empire had no general incorporation law, all firms wishing to incorporate needed to obtain the Tsar’s signature on their charters, a time-consuming and expensive process. Yet,
over four thousand firms incorporated between 1700 and 1914. In this paper, I identify the characteristics of firms choosing to incorporate and measure the gains to productivity and growth in machine power enjoyed by factories owned by corporations.

This paper contributes to several literatures in economics and economic history. First, it considers the effect of legal institutions on economic growth by making an explicit connection between business law and factory productivity. A recent literature in development economics attempts to explain and quantify the effect of the high variance in the performance of factories in developing countries; I point out how productivity dispersion in the Russian Empire related to enterprise forms. Finally, few studies of Russian economic history have devoted attention to the manufacturing sector, which by the end of the nineteenth century was growing rapidly but still lagged behind that of Russia’s European neighbours.

These results come from a novel panel database of manufacturing enterprises I compiled from Imperial Russian factory censuses conducted in 1894, 1900, and 1908, the first large-scale effort to digitize these sources. Each year of the sample contains information on approximately five thousand factories throughout the Russian Empire (in 1894 or 1908) or European Russia (in 1900). The 1894 volume lists a description of what each factory produces and the factory’s name; street address; type, number, and horsepower of machines; types and values of fuels; number of workers by gender and age; and total annual revenue. The 1900 and 1908 volumes list the factory’s name, industry, street address, total number of workers, and total annual revenue; and the 1908 volume also includes total machine power. Because these volumes list the factory’s complete name, address, and industry, I have been able to match these factories across years in the sample. Furthermore, to identify the enterprise form of the firm that owns each factory, I match factories to a list of all corporations formed in the Russian Empire, the RUSCORP Database.

The data reveal large cross-sectional differences between corporations and other forms: factories owned by corporations have higher average revenue, bigger machines, and more workers. While the distribution of total factor productivity for partnerships and single proprietorships has a long lower tail, the distribution for corporations does not. Within the sample, several factories switch forms from partnerships or single proprietorships to corporations. Before incorporating, these factories have higher average revenue per worker, but the distributions of machine power for these factories and factories that do not incorporate are identical. After incorporating, however, factories have higher average revenue per worker and larger machines, suggesting the importance of incorporation for capital accumulation in this context. Furthermore, factories owned by corporations grow faster both in terms of revenue and in terms of total machine power than factories owned by partnerships or single proprietorships.

I present a number of robustness checks in the paper. First, I ensure that differences between partnerships and corporations are not merely due to the fact that corporations are longer-lived: partnerships dissolve whenever a partner leaves or dies, but corporations are legal persons and can survive beyond the movements of their founders. I compare factories that appear in one, two, or three years in the sample. There are great differences between corporation-owned factories and others no matter how many years they appear in the sample. I also check that results are not merely due to the measuring of the outcome in terms of revenue, not value added or gross output. I construct a measure of value added for certain factories in 1894 and for the 1900 and 1908 aggregates, since the few 1894 manuscripts I have list the total value of materials, as do the 1900 and 1908 aggregates. There is no systematic relationship between being a corporation and the value of materials. Furthermore, estimating value added production functions rather than revenue production functions does not change the production function results. Finally, I perform some analysis at the level of the firm rather than the factory, and I find that controlling for firm size does not change the results.
What would we observe had the Russian Empire lowered the barriers to incorporation? On one hand, had incorporation been easier, less productive firms might have incorporated, and it is likely that we would not observe such differential good performance for corporations in these data. However, there is no doubt that restricting the access to capital markets provided by incorporation kept the smallest firms small. The concession system of incorporation, then, may have been one of many forces constraining Russian economic growth before the First World War.

Andre Markevich & Paul Castañeda Dower (New Economics School Moscow)

Did property rights matter in Russia? The case of the Stolypin Reform

The 1906 Stolypin reform was one of the largest property rights reforms in Russian history. The reform introduced a set of policies to address rural poverty and low productivity of agriculture, affecting almost 13 million peasant households in the European part of the empire. The main components of the reform granted peasants an opportunity to exit the commune, switching from communal to individual land ownership, and, in addition, an opportunity to consolidate their land strips into one allotment. We study the effect of these improvements in peasants’ property rights on agricultural productivity.

Historical literature paid huge attention to the Stolypin reform because it represented the last attempt of the tsarist regime to modernize the Russian economy and society before the 1917 Revolution. According to conventional view, the reform failed because peasants were against the innovation in agrarian organization and, as a result, few peasants took advantage of the opportunities initiated by the reform. In contrast, the reform supporters underline its positive impact on peasants’ incentives that should have led to the rapid economic development of Russian agriculture during the years before the First World War. They argue that the low take-up of the reform was limited by the supply of the reform rather than the demand.

This paper undertakes an econometric approach to this debate. We use province level data, regularly published by imperial authorities, to evaluate the effect of the reform on agricultural productivity. While the authorities encouraged peasants to take advantage of the reform, participation was voluntary. As such, the variables of interest that track the reach of the reform are potentially endogenous. We take advantage of the bureaucratic red tape associated with the reform as a source of exogenous variation in the take-up of the reform. We find that the enclosure component of the reform indeed caused an increase in land productivity, as supporters of the reform believed. We argue that this effect is mainly driven by better usage rights and not because of economies of scale or better tenure security. At the same time, we find that the net effect of exits from the commune, represented by land title conversions from communal to individual tenure, onto land productivity is non-positive, as reform sceptics expected. We present evidence that this negative effect is driven by the transaction costs of exiting and the outflow of labour from the countryside. We also investigate a criticism of the reform – that it increased tensions and conflicts in the Russian village – to explore whether conflicts limited the positive effect of reform.
III/B  Money Markets

Joost Jonker & Oscar Gelderblom (Utrecht University)

Smoothing the flow: currency circulation and payment techniques in the Low Countries, 1500-1800

Cash payments are often taken as a sign of economic modernity and, conversely, their paucity for backwardness. Based as it is on the old German idea of societies evolving from a Naturalwirtschaft to a Geldwirtschaft, that is to say from barter-based to money-centred settlements, this view assumes one main function of money, means of settlement, to take precedence over the two others, gauge of value and store of wealth.

Preindustrial Europe forms a key example for this interpretation of economic modernity, offering as it does highly illuminating contrasts between fully monetized centres and partially monetized peripheries. However, cash payments were a problem everywhere because coin circulation remained highly defective. Recurrent debasements and devaluations made good large coins scarce, while a fear of counterfeits supposedly reduced small coin production to a trickle (Sargent and Velde 2002; see however Volckart 2008). Historians have linked these deficiencies to the widespread use of credit to conclude that the scarcity of cash forced people to rely on credit (Muldrew 1998; Willems 2009), the forms of which were mostly shaped by the social networks in which creditor and debtor functioned and some, but not all, characterized by economic dependency (Lambrecht 2003; Fontaine 2008; Matthews 2009; Vickers 2010; Ogilvie, Küpker and Maegraith 2012).

The underlying assumption of both the link between money and modernity and a deficient circulation and credit is that people prefer cash if they can. However, this is not true even in societies with nearly perfect currency systems today, and the newer numismatic literature throws doubt on the idea of a link between cash payments and economic modernity in the past (Bolton 2012; Munro 2012; Spufford 1988, 2008). Moreover, the sheer variety of credit forms uncovered by the recent literature suggests that people carefully chose between the forms of payment and credit available to them. Different kinds of money formed complementary circuits that did not necessarily overlap (Kuroda 2008).

Consequently, treating cash and credit as substitutes for each other makes no sense, they complemented each other. They formed a fairly flexible continuum of closely related options from which people picked whatever suited them best at a given moment in time. If we accept this, it follows that any investigation of a given financial system ought to start with an examination of how and why forms of payment evolved over time. The paper does this for the Low Countries during the period 1500-1800. Using a wide array of secondary literature, we analyse the evolution of payments and show how money of account, a convention which spread throughout the entire area from the fourteenth century onwards, eliminated most of the problems associated with paying cash by enabling people to settle transactions in a fictional currency accepted by everyone. As a result two functions of money, standard of value and means of settlement, penetrated easily, leaving the third one, store of wealth, to whatever gold and silver coins available. Since most transactions could be settled in money of account, the poor coin circulation is unlikely to have affected whether or not people took credit. Moreover, money of account gave people a means to price the credit which formed part of so many transactions, so if they did not do so this must have been choice rather than force of circumstances.

Christiaan van Bochove (Radboud University Nijmegen)

Ferries and finance: the financial infrastructure of the Dutch Republic

The rise of banks has traditionally been explained along the model of the eighteenth-century British country banks. By providing payment services these banks came to occupy a central role in the trade in bills of exchange and subsequently ventured into deposit banking and lending. Meanwhile we have come to realize, however, that the British model of organizing
financial markets was determined by local circumstances. It was not typical for the evolution of financial markets elsewhere: banks operated differently in, for instance, Germany and the United States and financial services were also provided by alternative intermediaries such as notaries in France. While the literature has so far pointed to asymmetric information and government behaviour for explaining this it has largely overlooked the importance of geography. This paper therefore aims to show that the geographical context in which financial services evolved could crucially influence the evolution of financial markets.

The Netherlands are an ideal case study to demonstrate this. From the British perspective the Netherlands was a latecomer as regards financial development: deposit banking only emerged during the 1870s and outside the province of Holland financial intermediaries were little specialized and near absent. This is all the more remarkable because during the seventeenth and eighteenth centuries economic growth and financial sophistication characterized the world’s ‘first modern economy’. Using a variety of sources – including town regulations, business ledgers, notarial deeds, and private correspondence – this paper will show that the Dutch geography determined a unique pattern of financial services.

The high level of urbanization coupled to a dense intercity transport system put barge and ferry skippers, who carried people and goods, in a unique position to offer additional services once opportunities presented themselves. They consequently carried both small and large sums of cash, collected interest and dividends paid out by the government and East India Company, and provided all kinds of additional financial services, though not deposit taking and lending. While skippers enabled people to surmount distance and provided direct financial access to markets all over the Netherlands at low costs, they thus also reduced the scope for banking to arise on the back of payments services.

The crucial importance of the transportation infrastructure in determining the shape of the Dutch financial system has not been recognized in the literature, and this paper proposes to remedy this. By showing how, in the leading European markets of the seventeenth and eighteenth centuries, geography and transportation infrastructures shaped the pattern of financial services, this paper challenges present conceptions of the origins of modern banking systems. Deposit banks in the English mould were one way to organize financial transactions, not the only or, necessarily, optimal way.

Clemens Jobst (Oesterreichische Nationalbank) & Stefano Ugolini (University of Toulouse)

The coevolution of money markets and central banks

Money markets are a fundamental pillar of the financial system, as they provide banks and capital markets with the liquidity back-stop that is necessary for long-term lending for both private and public purposes. Central banks are prominent players in the money market and crucial supporters of market functioning. While central banks shape money markets, their decision to operate in particular markets in turn depends on the set-up of the financial system and structural characteristics of short-term markets in particular. Influence therefore goes both ways. While the existing literature has mainly dealt with country cross sections and histories of single countries, this paper aims at tracing the coevolution of money markets and central bank operations in an innovative panel setting encompassing the experience of several countries over the last two hundred years, arguing that the interaction between market and central bank is crucial for understanding both how monetary policy is done as well as how financial markets work.

The structure of our paper is the following. In an introductory section, we discuss the theoretical aspects of the issue at stake. We ask what kind of assets central banks are willing to operate in, review the reasons why this is the case, and discuss viable alternatives. Then, we investigate both directions of interaction between central banks and money markets, i.e. (1) how the design of money market instruments affects the way central banks provide liquidity, and (2) how liquidity operations affect the way money markets evolve.
The core of the paper consists of a number of sections corresponding to the main periods of the co-evolution of market structure and monetary policymaking that we identify. Each period is characterized by a particular combination of domestic and international factors. The most important among domestic factors are wars and the concomitant increases in government debt. In terms of international factors periods differ according to the extent of international trade and capital flows and the accompanying international standardization of instruments and practices. Within each period it is useful to distinguish core countries with well developed, competitive and integrated markets and countries with rudimentary or non-existent markets. It is within these domestic and international constraints that central banks can foster and direct the development of markets and adapt the techniques it uses to implement monetary policy.

The main contribution of the paper is the comparative analysis of money market functioning and central bank practices both over time and space that allows us to identify general trends vs. idiosyncratic country-specific developments and to document structural relationships between markets and central bank operations. In addition to contemporary literature and historic accounts, the analysis relies on a mix of on balance sheet data from central banks and other financial institutions as well as data on prices and quantities from financial markets.

Anne Murphy & Jennifer Basford (University of Hertfordshire)

**Britannia as a symbol of credible commitment**

Since the publication of North and Weingast’s ‘credible commitment’ thesis there has been debate about the relationship between the political changes and institutions that were the consequence of the Glorious Revolution and economic and financial development. One outcome of this debate is that we now understand far better the process of establishing credibility. In this respect, scholars have both asserted the importance of financial development and innovation prior to the Glorious Revolution and have shown that the rewards for the establishment of sound institutions were by no means as swift as was suggested by North and Weingast. Indeed, it was not until the mid-eighteenth century that the British state’s borrowing costs became significantly lower than those of its European rivals. This implies that convincing the investing public to place their trust in the British state’s financial promises was both a much more complex and a much longer process than has hitherto been suggested. Yet, the relationship between the public creditors and the state has been neglected and, most problematically, there have been no systematic discussions of how credible commitment was communicated. This paper responds to this gap in the literature through an examination of one of the key ways in which images of credibility were communicated to eighteenth-century investors: the Bank of England’s use of the image of Britannia.

The Bank adopted the symbol of Britannia at its foundation in 1694 and since that time she has appeared on all banknotes, on a variety of other documents issued by the Bank and in statuary and images within the Bank’s public spaces and on its external architecture. Britannia with her strong and warlike iconography and close associations with trade, industry and profit offered a clear statement of the Bank’s aims and indeed the goals of the British state during the long eighteenth century. She also provided a stark contrast with the vapid and vacillating ‘Lady Credit’ images generated especially during the early eighteenth century by writers such as Addison, Steele and Defoe. Arguably ‘Lady Credit’ represented the worst aspects of an economy becoming more and more reliant on credit, whilst Britannia represented the security offered by an institution which appeared to resist the temptation to speculate and which, in the aftermath of the South Sea Bubble and numerous later financial crises, provided the means for restoring stability to the markets and the economy. Moreover, at the same time that Britannia was becoming a recognized symbol of the Bank, it was also...
becoming a common and much used symbol of an increasingly wealthy and powerful Britain and indeed of the nascent British Empire.

This paper will, therefore, explore why and how the Bank of England used the symbol of Britannia and it will consider the ways in which the investing public witnessed and understood Britannia as representative of a credible commitment on the part of the state to honour its financial promises.
There is a widespread belief that since the 1960s there has been a breakdown of family life in this country without historical precedent. However, lone motherhood and boys growing up without a male role model in the home has a long history. The major reason was the death of a parent. In the late 1730s, 24 per cent of marriages were ended by the death of a partner, more often the male, within 10 years and 56 per cent within 25 years. For the same reason, complex families of step-parents and step-children were commonplace. As health and life expectancy improved in the twentieth century, so did the survival chances of marriage. Thereafter separation and divorce replaced death as the primary reason for the ending of marriages.

Divorce rates have increased fastest since the Divorce Reform Act, 1969, established irretrievable breakdown as a valid ground for divorce. Also since the early 1970s rates of open cohabitation of couples, often with children, have risen as have the numbers of children born outside wedlock, up to a third of all births by the end of the 1980s. These practices are seen as a break from those of the previous generation, from the end of World War Two, which are represented as a long-term historical norm. In fact this was historically an abnormal period, with much higher marriage rates and lower rates of non-marriage than at any time before or since. High rates of non-marriage had long been normal. After 1945 marriage became almost universal and most marriages produced children. Average age at marriage fell to historically low levels while that of life expectancy rose and divorce remained difficult to obtain, so marriages tended to last longer. How contented they were is less certain, though the rapid increase in divorce among these very couples after 1969 and the lower marriage rates, at later ages of many of their children may call into question the success of many of these marriages.

Before 1969, in England and Wales it was hard, particularly for women and poorer people, to escape from unhappy marriages, despite amendments to the law from 1867. Difficulty of gaining custody of their children also trapped women in unhappy marriages. Only in 1973 did they gain equal rights with men. It was always very difficult for women to support themselves and their children. An important reason for marriage breakup was domestic violence. Despite feminist protests in the later nineteenth century, it did not become a legal offence until 1978.

Legal difficulties did not stop marriages breaking up and new unions being formed. The law left many people with no alternative to illicit, secretive cohabitation. The numbers are unknown since there are no official statistics for England and Wales until the 1970s. Often these illicit couples lived respectable, committed lives, regarded as married by their neighbours and would willingly have married had it been possible. Concern at this situation led the Royal Commission on Divorce and Matrimonial Causes in 1912 and successive enquiries and campaigners until 1969 to advocate divorce reform to remedy this situation.

As this suggests, extra-marital sex also was not invented in the 1960s, though it became more open. In 1939, for the first time, there were official statistics of pre-marital conceptions. These revealed that 30 per cent of all first-born children in the UK 1938-9 were conceived out of wedlock. Similar numbers continued through the 1940s and 1950s.

It is also often assumed that that younger people no longer look after the old as they ‘used to’, that in the modern ‘runaway world’ they have no time, abandoning them to public welfare. But, until the twentieth century many older people had no children: they were unmarried, or infertile, or their children died, when death rates were high. Or, if children survived, many migrated far away in search of work in pre-industrial England and after. Now almost every older person has at least one surviving child and there is much mutual support across the generations: grandparents – fitter in later life than ever before – care for grandchildren while their children work; many give them financial support and are supported
in return. If children live at a distance, modern technology – motor and air transport, telephones, the internet – make contact easier than ever before, when communications were poor and slow and illiteracy widespread. There are lonely and neglected older people, but, very probably, fewer than in past times.

Families have changed over time, but there has not been a shift from one extreme, of secure, happy marriages and cozy extended families, to another of ‘broken’ dysfunctional families and neglect of older people.

Maxine Berg (University of Warwick)
Skill, craft and histories of industrialization in Europe and Asia

Today globalized industry and manufacturing have led to the creation of China’s huge factory regions, where whole cities manufacture buttons or zips. The unregulated clothing factories, such as those in Bangladesh, feed the cheap clothing consumer cultures of the West. Historians in the 1970s and 1980s debated the rise of the factory system and artisan industry. They did so in their separate fields of European History; Asian Studies, and Colonial and Imperial History. The rise of globalization from the 1990s onwards saw the resurgence of Asia as a manufacturing powerhouse as manufacturing in Europe and the US declined. It also forced us to rethink our own histories of industrialization: they were not a separate European miracle, but connected to wider world trade and Asian industry. This paper will address the place of craft, skill, small-scale and labour-intensive processes in histories of industrialization in Europe and Asia. It will also place these concepts within changing historiographies from the 1960s to the present. It will address frameworks such as ‘the rise of the factory system’; ‘proto-industrialization’; ‘flexible specialization’; ‘East-Asian development paths’; ‘globalization and the great divergence’; ‘knowledge economies’; and ‘cycles of production’. It will show that crafts and skilled labour have survived over our long world history of industrialization and global transitions. They challenge our models of industrialization. They have survived because they have innovated and adapted to new markets.

Pat Hudson (Cardiff University)
The rise and fall of the Welsh woollen industry: some questions for historians

The history of the woollen industry in Wales is something of a puzzle. The ubiquity of local wool supplies and an agricultural society with limited commercial development, dictated that domestic manufacturing for subsistence purposes, and associated indigenous skills in the trade were widespread, especially after water-powered innovations in fulling and the widespread use of small Pandy (fulling mills). Production for subsistence and localized barter, taking place in households and in small manufactories, often associated with Pandies, was common in all parts of Wales from the thirteenth century into the twentieth.

The earliest serious commercial activity occurred, largely in the south and west of the country, in the late medieval period with significant exports of friezes to the European continent and beyond. The industry expanded further in the eighteenth and early nineteenth centuries, based on the production of webs, ‘cottons’ and flannels for transatlantic, including slave, markets. At this time the commercial industry was concentrated in mid and West Wales, principally in Monmouthshire and Merioneth, with trades, for over a century, dominated by the monopoly of the Shrewsbury Drapers. By the early nineteenth century, the monopoly was broken and manufacturing came to be centred in Newtown and Llanidloes where Cloth Halls were built and where carding and spinning began to be mechanized in small workshops and factories. But the industry suffered from declining international competitiveness that resulted in mill closures and fires, emigration and immiseration.

The Welsh woollen industry nevertheless had its most dynamic phase of development in the late nineteenth century, at which point the hub of textile enterprise moved back to the south and west, where success was based on the domestic market for flannels, shawls and blankets. This market was boosted by the rapid growth of proletarian consumers in the
coalfield regions and a rational preference for welsh woollen garments, given their occupational, climatic and economic advantages, well into the twentieth century. The industry was also aided by a national revival that carried with it a campaign to support welsh industry by buying welsh flannel, and by the invention of a tradition of Welsh national dress that extended beyond the picturesque imaginings of the gentry and tourists, endorsing particular sorts of welsh woollen garments long after similar fabrics and styles had ceased to be fashionable elsewhere in Britain.

The industry flowered late by British standards, in the last few decades of the nineteenth century, but by the 1920s and 30s it was again in decline. What had been the cause of its success eventually turned into a burden marked by conservatism and out-dated organization and methods which various public initiatives and measures were unable to reverse. Temporary boom periods of demand for military uniforms during both world wars only aggravated conservatism by providing rewards for narrow specialization which collapsed in the aftermath of the wars. Government war time contracts sometimes included grants for mechanical re-equipping but this frequently involved technologies unsuitable for civilian products. At the same time the labour intensive heavy coal-based and metalliferous industries of Wales embarked upon their long twentieth century malaise reducing demand for occupationally specific welsh woollen clothing at the same time as the domestic market became increasingly flooded with fabrics and fashions made elsewhere. Today the industry survives only in a few pockets of specialized production in small ‘heritage sector’ mills (some within museums), largely serving the tourist market.

What can an economic historian make of this? Will the usual explanations based upon locational factors, the availability of raw materials, labour, capital, and transport links suffice? Does the proto-industrialization model fit? Given that many mill owners in the early phase were part time clerics or poets, was ‘entrepreneurship’ a variable, particularly regarding technology and product-mix decisions? Did culture, including labour protests, matter? Can an institutional or relative factor price argument be made? Was the earlier colonial status of Wales important? And is a globalization perspective useful?

In considering the industry in the twentieth century, there are points of similarity and difference with the history of textile production elsewhere in the world including those parts of Asia which are the subject of another paper in this session. Both world regions had a long history of textile manufacturing and skills extending over centuries and the fortunes of the textile industry in both places have fluctuated in long cycles in response to shifts in global, and more localized, markets. Additionally, factors such as state intervention, colonial and post-colonial conditions, labour supply, capital shortages, and openness to new technical designs and business training have been important.
III/D  Mortality Transitions in Urban Populations

Richard Smith (University of Cambridge)

The law of ‘urban natural decrease’: interpreting baptism:burial ratios and infant mortality rates across the English urban hierarchy c.1540-c.1840

When John Graunt published his Observations on the Bills of Mortality in 1662 he noted for a period extending from 1603 to 1644 an excess of London burials over baptisms. He pondered the relative influences of possibly lowered fertility and enhanced mortality in London relative to rural areas in accounting for this pattern. He was certainly alert to the influence of the metropolitan setting in depressing fertility but was also inclined to the view that as a city became more populous it became more ‘unhealthful’ and that in 1662 London ‘was more unhealthful than theretofore, partly for that it is more populous, but chiefly because I have heard that sixty years ago few Sea-coals were in London which are now universally used’. In emphasizing the combination of population size and environmental deterioration associated with such growth Graunt specified an urban handicap that has remained essential to the paradigm that views mortality levels as positively related to population density which was also central to William Farr’s famous investigations of the health of towns in the nineteenth century. The positive relationship between urban size and population density and mortality might be supposed to be such a remarkably robust empirical observation that it requires little questioning. However, Graunt’s observation that the situation he found in 1662 might have been less evident in 1600, combined with more recent discoveries that English towns (including London) which were growing significantly in size and residential density over the eighteenth century had after c.1770 begun to show notable excesses of baptisms over burials suggest that the urban mortality handicap was not necessarily so clearly and invariably evident in urban settings before the onset of the sanitary revolution and improvements in urban mortality generally associated with large scale improvements in urban public health in the latter part of the nineteenth century. Such changes suggest that the link between population density and life chances in urban contexts may have been too unstable to constitute the status of a ‘law’.

This paper reassesses the evidence bearing on the extent of urban burial surpluses in London revealed in data extracted from the earliest surviving metropolitan parish registers and the Bills of Mortality. Particular attention is paid to burial: baptism ratios as well as the changes in age-specific mortality rates from partial reconstitution of parish registers of parishes with very different levels of per capita wealth. Analysis is extended to a number of larger English towns each of which experienced a rise in mortality c.1650-1750 and a fall in mortality c.1770-1840, from the onset of burial registration c.1540 to c.1650. The focus will be on non-plague years before 1665 as well as the period after 1665 when plague was absent from English urban populations in order to assess the extent to which burial totals relative to baptism totals were such as to enable natural growth in urban populations.

Finally smaller market towns will be assessed. Such settlements, possessing populations well below 5,000, have been susceptible to the exploitation of their parish registers using the techniques of family reconstitution unlike most London parishes and parishes in larger provincial towns. Nominative linkage using such a technique reveals that these smaller market towns, even those with populations as low as 2,000 persons, had particularly high levels of infant mortality (exceeding 250 per 1000) over the late seventeenth and early eighteenth. Such places showed striking declines in the probabilities of infant and early childhood mortality after 1750 that far exceeded any declines in predominantly agricultural areas where such declines in infant deaths rates were minimal or entirely non-existent and in newly emerging rural industrial areas where mortality worsened significantly.

The paper also considers the extent to which these changes were fundamentally epidemiological in character, focusing in particular on the immunity status of urban residents and immigrants as well as their implications for the possibility of urban growth that was not
fundamentally dependent on large flows of migrants to counteract the demographic deficits created by high and unchanging urban death surpluses. Some consideration will also be given to evidence that may be used to assess the extent to which similar trends were detectable in urban centres elsewhere in north-western Europe over the same time period.

**Romola Davenport, John Black** (University of Cambridge) & **Jeremy Boulton** (University of Newcastle)

*The first stages of the epidemiological transition in British cities: a comparison of Manchester and London, 1750-1820*

The period 1750-1820 witnessed the transformation of British cities from demographic sinks to centres capable of natural population growth. This period also witnessed a dramatic restructuring of the urban hierarchy, with the explosive growth of northern manufacturing and industrial cities. While it has been argued that the rapid and insufficiently regulated growth of these new cities depressed urban and therefore national life expectancies in the period 1820-60, it appears from the limited data hitherto available that rapid growth before 1820 did not necessarily result in a worsening of survival chances. This paper presents the first evidence from a Leverhulme-funded investigation of the sextons’ burial books of Manchester cathedral, and compares new estimates of life expectancy and infant mortality for Manchester with comparable evidence derived for London from previous Wellcome Trust and ESRC-funded work on the large Westminster parish of St. Martin-in-the-Fields.

London was already a mature metropolis of perhaps 675,000 by 1750, with a complex system of parochial and urban institutions. While its population continued to expand rapidly after 1750, this was probably not accompanied by a net rise in population density, and average population density was well below that of Manchester or Liverpool in the mid-nineteenth century. Moreover London had long surpassed the theoretical population thresholds at which the major infectious diseases of the period could establish themselves in endemic form (for example, the so-called ‘Bartlett threshold’ of c.250,000 in the case of measles in twentieth-century populations). By contrast Manchester experienced a rise in population densities to average levels well in excess of London in the mid-nineteenth century, and may have crossed various epidemiological thresholds in the process of expansion.

This paper will present first estimates of life expectancies for the 1770s and infant mortality levels and trends in Manchester 1750-1820, and compare these with new estimates for London, derived from current work on St. Martin-in-the-Fields. It will compare the structure of mortality by age and cause, and high-frequency variations in mortality from specific epidemic diseases, to determine the common causes of mortality decline in the two cities. Initial evidence indicates that smallpox, the single most lethal disease of the eighteenth century, circulated with higher frequency and was more lethal in Manchester than in London in the mid-eighteenth century, despite the enormous disparity in population sizes (c.20,000 compared with c.675,000). Estimates of the built-up area indicate that Manchester was more densely populated in 1750 than London, suggesting that population density may have been key to smallpox transmission and case-fatality rates. The peculiar lethality of smallpox in the smaller city may help to explain the exceptional mortality levels experienced in even very modest urban settlements in the eighteenth century. Smallpox remained a major cause of death in both cities until the advent of vaccination, implicating other types of epidemiological change in the rapid fall of infant mortality before c.1800.

**Alice Reid** (University of Cambridge) & **Eilidh Garrett** (University of St Andrews)

*Death in town and country: Scotland, 1861-1901*

This paper will compare age, sex and cause specific death rates for a selection of urban and rural communities over the start of the nineteenth-century mortality transition. The influences of registration, medical certification, social class, industrial structure and disease environment
will be compared to draw conclusions about the reasons behind and consequences of the variations in mortality profiles.
Hanna Hodacs (University of Warwick)

Asian silk in eighteenth-century Scandinavia: quantities, colour schemes and impact

In this paper I explore the trade and consumption of Asian textiles in Scandinavia between the 1730s and the 1760s. The first part of the paper outlines quantities of silk pieces imported from China by the Swedish and Danish East India companies and how they shifted over time in response to import bans, developments in the European market for silk and changes in the Canton market. Compared to, for example, Chinese porcelain the number of silk pieces imported to Europe varied greatly from year to year. One reason was price developments of other goods; take for example the sharp increase of imports in the second half of the 1750s (in 1755 the Scandinavian companies bought 1,300 pieces in Canton, two years later more than 9,000 pieces). The increase in the silk imports coincided with a decline in the price of Bohea tea, by far the most significant Chinese goods (both in terms of volume and value) in the eighteenth century. Lower tea prices left the Scandinavians with more silver to purchase silk with.

It is likely that the lower tea prices reflected changes to the competition, with fewer European ships arriving in Canton due to the outbreak of the Seven Year War, but competition alone cannot explain all the fluctuations, including the great amounts of silk imported by the Swedish company in 1748 (17,000 pieces). In fact, the Swedish silk import was surprisingly large. The magnitude of the Swedish import is best illuminated by a comparison with the English East India Company’s orders of Chinese silk textiles, all in all 191,000 pieces were ordered by London between 1733 and 1753. The (incomplete) material surviving the Swedish company suggests it brought at least 109,000 pieces of silk (not including smaller and cheaper piece goods) to Gothenburg (the headquarters of the Swedish company) during the same period. It is hard to imagine the Swedish market being able to absorb such large quantities of silk. Moreover, at company auctions in Gothenburg there was a great overlap between merchants who bought silk and merchants who bought tea. The tea was largely destined for the British market (as contraband) and it is quite possible that the Swedish imported silk also ended up on the British market via the same distribution channels as the tea.

In the paper I also discuss how we can trace the influence of European fashion changes in the purchases of Chinese silk. Silk consumers in Europe were accustomed to annually changing designs and colour schemes, reverberating from centres such as Lyon, Paris and London. The expeditions to and from China took at least eighteen months, making it impossible for the East India companies to follow the wheel of fashion closely. Nonetheless, the attention to what types of textiles to buy and what colours the ordered goods should have in company order-lists suggests an awareness of the shifting European consumer demands. This observation is supported in comments by agents operating in the Canton market dealing with silk privately. Some notable changes over time can also be detected. Quantitative analysis based on the volumes of Swedish import of Poesies Damask, the type of textiles the company imported the largest quantities of, is illustrative. Poesis Damask was probably used for dress making and it was usually imported in a wide variety of colours (the largest assortment, from 1758, included 18 different shades). What colours were imported on a year to year basis varied however. While the silk cargo included a great diversity of red colours at the beginning of the period (Crimson, Poppy, Scarlet, Incarnat, and Cherry) by the end almost all red pieces were Crimson, which was also the single most common colour on the Poesis Damask. Some other popular colours, such as Sky blue and Bluemerant were very frequent in the 1730s, 40s and early 50s, only to almost disappear by the beginning of the 1760s, making way for Light blue, Millan blue and Dark blue.

In the final part of the paper I discuss how we can trace a response to the imports of Asian textiles in Scandinavia, drawing on eighteenth-century ‘manuals on dyeing’. The
effects of the Eurasian colour schemes (generated by e.g. French fashion and re-produced in
Chinese products) are for example visible in advice on how to use home grown dyes, such as
berries from elderflower and juniper bushes, to produce global colours. The growing
references to piece goods made from silk and cotton (in addition to traditional material such
as wool and linen) also illustrate how Asian textiles became everyday objects in Sweden. One
could summarize this section by saying that although the Scandinavian market for East India
goods was relatively small, Asian silk and cotton made an impact, firstly in an immaterial
sense (as colours) and secondly, and increasingly over time, in a material sense (as fibres).

Ben Marsh (University of Stirling)
‘The silk manufacture has a claim to particular attention’: silk consumption and the
American Revolution

This paper is taken from a larger book project, a history of attempts to grow silk in the
Americas under the three major European colonizing powers and the early United States,
exploring their various successes and (mostly) failures, and putting them in conversation with
wider patterns in the global history of sericulture and developments in both European
colonialism and early modern silk industries.

Between the 1730s and the 1760s, the Atlantic silk trade to North America was
beginning to thrive. It was one of the more luxurious slices of a larger pie-chart of
consumption that was growing to unprecedented size as the colonies increased in scale and
refinement over the course of the eighteenth century. American purchases of European-made
silks and of Asian-made silks transported by European trading companies were reaching new
heights, heights which have been documented in research on merchant records, probate
inventories, correspondence, advertising, and studies of portraiture and material culture. In
this paper I consider the impact of events in revolutionary North America on the consumption
of silk textiles. The American colonies’ adoption of mercantile boycotts and turn towards
republicanism in the late 1760s forced something of a reconsideration of silk’s meaning and
purpose. As recent scholars have shown, fashion during the revolution was an awkward mix
of the ideological and the economic, where political protest and the onset of war converged
with the worlds of textile consumption and production. By focusing on one commodity long
associated with luxury and European fashion, this paper explores silk’s journey from
desirability to victimization and back again during the Age of Revolutions.

The paper begins by sketching out the patterns of trade and consumption, using
customs data, before turning to qualitative sources. It argues that between 1765 and 1775 silk
began to be opportunistically repudiated for its connotations of Old World opulence and
frivolity during the Revolutionary Era. Silk’s moral value fell as it was identified with
monarchical extravagancy – an antithesis to republican homespun. But while silk’s reputation
plummeted along with imports, the story was nonetheless complicated by two enduring
challenges. Firstly, the theory of exclusion was always more earnest than the practice of
exclusion. Secondly, a range of protagonists sought to rehabilitate silk by linking the fibre to
independence: attempts at silk cultivation repositioned the commodity as an article to be
embraced rather than ostracized.

The distinctive history of Pennsylvanian efforts at sericulture in the later eighteenth
century illustrates how silken ambitions were reshaped to fit new political and economic
environments. Pennsylvanian silk swung from being a dutiful imperial pursuit, albeit one with
particular local characteristics, to being an objective very much in step with American
independence. It constituted a unique kind of homespun that came to embody not only
domestic elegance but also provided ammunition for broader debates over political economy
and the future identity of American industrial development. Philadelphia was the site of the
mid-Atlantic’s first silk filature, and in 1771 reeled the cocoons of approximately 690,000
American silkworms. These efforts to raise silk in pre-revolutionary Pennsylvania were better
connected than earlier attempts, and reflected a sense of colonial convergence. They were
rendered distinctive by both the political climate and the peculiar role of Quakers in pursuing local production. But if some features were markedly different from earlier attempts at silk production, the importance of female labour was a noteworthy continuity.

The independence of the United States blew apart the projected formula for silk production that had held sway for over a hundred and fifty years – namely, that raw silk might be produced on the western side of the Atlantic and then manufactured on the eastern side of the Atlantic. Though not entirely separable, it is nonetheless ironic that this occurred at the point when more British Americans than ever had been engaged in attempts at silk raising, and when sericulture had gained real traction in new regions beyond the south. As a consumer good, silk continued to experience something of a tug-of-war, inhabiting a new homespun republican world that remained heavily influenced by old cultural, commercial, and sartorial practices. But really, as of 1776, people pursuing silk cultivation no longer needed to fixate upon exportation to Britain. Rather, either the goal of sericulture might itself fall away, discarded onto the same scrapheap as monarchy and an established church, or the goal of silk production now needed to be repackaged for an American economy. In the final quarter of the eighteenth century, political economists and silk producers alike made important strides towards ensuring a future for silk production, and they largely did so by linking it to American manufacturing and new prospects in the Atlantic market.

William Farrell (Birkbeck College, University of London)

Smuggling silks in eighteenth-century Britain: supply, distribution and product design

This paper uses the illegal trade in silks during the 1700s to present fresh evidence about the nature of smuggling and the role of luxury goods in the pre-industrial economy. By 1782 Parliament had prohibited the distribution and use of over 20 types of imported silk and silk mix textiles in Britain. A whole range of goods fell under the scope of protectionist legislation, from East India painted silks and French brocades to silk stockings, ribbons, laces, gloves and braiding. What had begun in 1690 with new duties on Asian and other silks imports had developed over the eighteenth century to an outright ban on almost all types of imported silks. These restrictions developed at the same time as controls on imported cottons and aimed to shield domestic textile producers from foreign competition. Although historians such as Beverley Lemire and Giorgio Riello have thought that bans on imported textiles were widely broken, there has been no systematic study of smuggling operations and their place within consumption in Britain. Using records of seizures made by Customs officers and public auctions of confiscated goods, this paper shows what the most popular kinds of smuggled silks were, how they arrived in Britain and their impact in the home market. Unlike the contraband groceries such as tea or brandy, the illegal trade in silk was a diverse one, bringing in a variety of products from Asia and Europe. Paying attention to these differences reveals smuggling to be a more complex activity than simple ‘fraud’. Smugglers served and encouraged several different sections of consumer demand. The different tastes in contraband silks are strongly linked to the different geographical origins and styles of the textiles.

The evidence presented here suggests a clear divide between a large, popular taste for India silk handkerchiefs and a smaller, elite one for French and Italian silks. India silk handkerchiefs were worn by British consumers as neckerchiefs and scarfs; they appealed to an audience wider than that of more expensive silk fabrics used for gowns or suits. The handkerchiefs were popular due to the pattern effects achieved by hand painting or tie-dying. These were styles which British manufacturers found hard to imitate, as painting directly onto silks or tie-dying were uncommon finishing techniques in Britain. India silks were brought into Britain by East India Company ships, filtering out of the docks into the retail sector. Evidence from the courts and newspapers suggest that consumers regarded British made silk handkerchiefs as drab and of poor quality. By contrast, the more exclusive end of the market was served by fine silks from France and Italy. Embroidered fabrics used to make up gowns or waistcoats were particularly popular. French producers became admired for their especially
fine embroideries using gold and silver thread. Again this was a technique that British manufacturers were not adept at, and their products were regarded as inferior to imported alternatives. These more expensive silks came into Britain in more informal and personal ways than the bulk orders from India. Customs officers saw commercial travellers, grand tourists and diplomats as the main culprits. The relatively high status of these ‘smugglers’ made it difficult to enforce the law effectively. Diplomats were effectively untouchable and the courts often sympathized with aristocrats who deployed a ‘personal use’ defence at trial.

Finally, the paper turns to the effects of smuggled silks on domestic manufacturers. Given that a viable silk weaving sector within Britain lasted into the nineteenth century, an argument can be made that protectionism did achieve its aims. What is clear is that the Customs was a very professional body This revises some of the early work on the military-fiscal state that saw the fiscal branch of the revenue service as the more effective. Officers collaborated well with silk manufacturers in implementing regulations, to the mutual advantage of both parties. Customs officers handed over seized goods to the silk industry so that merchants and designers could use contraband silks as inspiration for new products. This allowed them to keep up with demand in some areas. For example, a new sub-branch of the silk industry emerged producing printed silk handkerchiefs, in direct imitation of Indian fabrics.
III/F  Re-evaluating the English Land Tax

**John Broad** (University of Cambridge)

*The Land Tax of 1798 and patterns of landownership and farm tenancy: a county case study, Buckinghamshire*

This paper will use databased 1798 assessments for the whole county of Buckinghamshire, to show how these can be used to assemble data on the structure of landownership at the parish level, and also to assemble tenant profiles. The potential for linkage to other social data such as parish land valuations for income tax, occupational structure, and poor relief expenditure will be examined. It is hoped to be able to show the GIS mapping potential of the data.

**Richard Hoyle** (University of Reading)

*A new approach to the Land Tax: the Redemption Certificates and the structure of landowning and tenancies in Yorkshire and Essex*

Using the IR24 series of Redemption Certificates in the period 1799-1802, this paper will compare data from around 20 parishes in two contrasting areas of England, a highland area of Yorkshire, in the north, and a lowland pastoral area in north Essex, to the east of England. It will demonstrate how the Redemption Certificates provide substantially greater detail of the type, variety, and valuation of holdings, and how the information about the residence and status of landowners given in the IR24 series, enables us to see landownership patterns across parishes, and to overcome many nominal data linkage problems.

**Stephen Hipkin** (Canterbury Christ Church University)

*Land ownership and land occupation in the wider hinterland of the Romney Marsh region during the mid and later eighteenth century*

Remarkably informative sewers commission evidence has facilitated recent studies of the structure and evolution of land ownership and land occupation in the Romney Marsh region from the mid-seventeenth to the early nineteenth centuries. Building on the results of that research, this paper will exploit the unusually detailed, mostly double-columned and, it will be argued, broadly reliable Land Tax assessments that survive for many Kent parishes from the early eighteenth century onwards to extend analysis of trends in land ownership and occupation for the period 1746-90 to encompass a consolidated area of some quarter of a million acres lying within a 20-mile radius of the heart of the marsh. Contrary to much received wisdom, it will be suggested that Land Tax assessments, or at least those surviving for mid and later eighteenth-century Kent parishes, can be productively deployed to analyse trends in land ownership and land occupation across the marsh hinterland, rather than merely within the boundaries of the individual parishes that comprised it. Indeed it will be argued that regional analysis demonstrates the misleading consequences of discrete parish-by-parish analysis.
III/G  Modern Scottish Economy

Jim Tomlinson (University of Glasgow)
The economic basis of Scottish nationhood, c.1870-2014

In the final chapter of his Nations and Nationalism, Eric Hobsbawm observes that: “‘The nation’ today is visibly in the process of losing an important part of its old functions, namely that of constituting a territorially bounded ‘national economy’...”. But a little later on he concedes that “this does not mean that the economic functions of states have been diminished or are likely to fade away”, above all because “their growing role as agents of substantial redistributions of the social income by means of fiscal and welfare mechanisms, have probably made the national state a more central factor in the lives of the world’s inhabitants than before”, (pp.181, 182-3).

These contending processes are the starting point for this paper, which analyses the historical economic background to the rise of Scottish nationalism. It examines some of the analytical problems in talking about a ‘national economy’, especially in a context where, as in the Scottish case, that nation is not also an independent state. It goes on to argue that in the years from c.1870-1914 Scotland became one of the most globalized economies in the world, measured by the scale of international trade, capital and migratory flows. However, since the First World War, and especially after 1945, the country has been subject to both globalizing and de-globalizing forces. This paper analyses the relationship between these forces and the evolution of Scottish economic nationhood. It suggests that insofar as nationhood is grounded in the existence of an economically-grounded national ‘community of fate’, Scotland has become more of a nation in the years since de-industrialization, beginning in the 1950s, fundamentally reshaped the economy.

The paper concludes that discussions of modern Scottish nationalism have placed too much weight on issues of culture and identity disconnected from economic matters, and that the balance needs to be redressed.

Duncan Ross (University of Glasgow)
The Scottish experience of foreign direct investment, 1945-97

In the period after 1945, the Scottish economy was understood to have a particular set of difficulties rooted in the prewar dominance of the staple industries and the slow pace of structural change. Attraction of Foreign Direct Investment was one of the key strategies adopted for development and diversification of the Scottish economy. This was highly successful, particularly in terms of attracting American manufacturing companies, though there was some European success also. The paper explores a number of elements of this experience. First, it will consider the extent and sectoral distribution of FDI in Scotland in the period from 1950 until the 1990s. Second, it will examine the attractiveness of Scotland as a location for overseas-owned manufacturing and consider the implications of the reasons for investing in Scotland. Third, the paper carries out a more detailed analysis of the ‘jewel in the crown’ of Scottish manufacturing in the postwar years, the electronics sector. Scotland was particularly successful at attracting large electronics manufacturing plants, but it is widely agreed that the hoped for spin-off and supply-chain benefits were few and highly constrained. In the end, most of the literature comes to the conclusion that, though there may have been substantial industrial and employment benefits, the hoped-for transformation of the Scottish economy was not effected by FDI. The two periods of retreat – in the mid-late 1970s and again after the Asian financial crisis in the late 1990s – reflects Scotland’s continued vulnerability to fluctuations in the global economy. The paper considers some of the explanations and implications of that vulnerability, and concludes by exploring the role of industrial policy. A number of competing conceptions of the Scottish economy and its position in the UK context began to emerge in this period. Analysis of the FDI experience and policy sheds some light on how these were these were formed and developed over the period.
Jim Phillips (University of Glasgow)

The moral economy of deindustrialization in post-1945 Scotland

This paper contributes to the debate about Scotland’s distinctive economy by examining the post-1945 employment effects of deindustrialization. It explores the connection between two issues, one empirical and the other more abstract: the changing distribution of industrial employment by sector from the 1950s to the 1990s, within the broader contraction of industry’s overall employment share; and the ‘moral economy’ arguments attached to these changes in employment.

The paper develops from a study of the coal industry where job losses were accepted because two moral economy criteria were satisfied: colliery closures were generally secured through negotiation with the workers; and economic stability for individuals, households and communities was guaranteed, with redundant miners transferring to higher productivity ‘cosmopolitan’ pits, and alternative industrial employment created in the coalfields, encompassing opportunities for women also. This process was phased. Following coal’s postwar employment peak in 1957 there was a period of contraction and restructuring, 1958-67, followed by a decade-plus of stabilization, 1968-79, and then accelerated contraction until 1990. Small remnants of deep coal mining survived in Scotland, but only until 2002. The moral economy framework was developed in the restructuring phase, and shaped the period of stabilization, as the growth of industrial alternatives significantly slowed, but in the 1980s was rejected by policy-makers and coal industry management.

The paper applies this moral economy framework and the phased model to the broader process of post-1945 deindustrialization in Scotland. The process resulted chiefly from changing public policy priorities in the UK as a whole. The distribution of employment by industrial sector was deliberately altered by policy-makers seeking more rapid rates of economic growth: labour and capital resources invested in assembly goods manufacturing – especially in consumer goods, electrical-mechanical and then electronic engineering – would yield higher rates of return than in coal and other ‘heavy’ industries. This was seen as especially desirable in Scotland, where growth was persistently below the UK average from the 1950s to the 1980s. Regional policy was the main mechanism applied by UK governments from the 1950s to the 1970s, with incentives to manufacturers, including US multinationals, to locate in areas of lower economic growth and higher unemployment. So the employment problems of inward investment in the 1970s and 1980s – ‘branch plant syndrome’, ‘screwdriver jobs’ – were at least partly related to the moral economy expectations of Scottish workers, which had been raised by policy-makers in the 1950s and 1960s. Subsequent disinvestment and capital flight further transgressed Scottish moral economy expectations of stable employment and economic security.
The gravity of information: the rise of global communications systems and their impact on the first globalization

“The inhabitant of London could order by telephone, sipping his morning tea in bed, the various products of the whole earth, in such quantity as he might see fit, and reasonably expect their early delivery upon his doorstep; he could at the same moment and by the same means adventure his wealth in the natural resources and new enterprises of any quarter of the world, and share, without exertion or even trouble, in their prospective fruits and advantages.”

Although John Maynard Keynes characterized the time period before the First World War this way in ‘The Economic Consequences of the Peace’ close to 75 years ago, the contemporary debate over globalization expresses similar sentiments with slogans like ‘The World is flat’ or ‘Distance is dead’. This paper reviews firstly the evidence about the current state of globalization and since the world is not yet fully integrated, the main focus will be on the sources of resistance, explaining differing levels of trade intensity. Covering the whole globe the focus is on trade between nation states. Methodologically this is approached by focusing on the Gravity equation framework commonly used in the empirical trade literature. As Head and Mayer (2013) point out there remains a substantial gap to full globalization today not explained by standard trade cost proxies like the cif/fob difference. Importantly these however do not include information and localized taste, which are difficult to measure yet recognized to be a very important part of total trade costs.

The nature of information and communication, in particular global flows and history, play an important role in shaping trade pattern. This paper provides an overview about the history of communications, reviews the evidence about information flows and most importantly introduce a new dataset on global information flows during the First Globalization designed to understand the exact nature of communication’s impact on global trade.

This starts with an overview about the historical development of formal communications networks, in particular focusing on the First Globalization. This chronological emphasis is based on the critical role this era played for the development of global trade and the related institutional framework. This historical overview focuses on the emergence of the modern postal services originating in Europe in the fifteenth century. By the nineteenth century transformational changes occurred, in particular the concept of universal access arose. The idea of enabling access to the mail system for everyone this approach shaped the organizational structure of the mail as well as the general understanding of the mail as a public service. Further changes are the introduction of uniform, distance-independent pricing and associated developments like stamps and post boxes, pioneered by Rowland Hill in Britain in the 1840s.

Additionally technological improvements are described including their impact on the development of trade infrastructure like coaches and transatlantic shipping. A particular aspect is the emerging forms of electric communication like the telegraph and subsequently the telephone. The third emphasis is on the emergence of multilateral cooperation with a shift from bilateral postal treaties to the foundation of the International Telegraph Union and the Universal Postal Union in the second half of the century. These two institutions were the first important multilateral trade institutions, harmonized the global exchange of communication, improved technological coordination and furthered the diffusion of best practices between members.

The UPU also collected statistical information about the respective member state services. National postal statistics in the late nineteenth century were often already of high
quality, especially in comparison to other public statistics, supported by the nature of postal services as public monopoly enterprises. Their public nature usually implied the publication of annual reports, inclusion in parliamentary budget processes and other public procedures. Their monopoly status implied a full reach in terms of geography and sector coverage. Their independent, often business-like organization implied that for internal administrative purposes certain divisions and regions within these services had to collect information and produce statistical reports.

The UPU collected two relevant sets: starting in 1880 statistics about the domestic service in terms of outputs, inputs and financial results and starting in 1886 the volume of items sent internationally. These collection efforts, especially the international flow numbers, form the core of a dataset currently under construction. It contains annual flows of various items from some member states to a set of destinations globally, in particular the number of letters sent, total mail items (combining letters, postcards, printed matter, commercial samples and business papers), ordinary parcels, number as well as value of money orders transmitted through the postal system and the number of newspapers sent through international subscription services. The set focuses particularly on the First Globalization period including an extension into the interwar. Currently the respective, reported sets of destinations are being harmonized. Additionally the UPU collected information about domestic service indicators, a select few of these will be included in the set allowing us to address a number of research questions. The flow data are also extended using data directly reported by national service which allows us to fill gaps in the UPU set and provide more detail improving accuracy and enabling further research designs.

Utilizing these datasets this paper further demonstrates that information flows similar to trade as documented by the similar gravity patterns found in communication and trade flows. This is demonstrated not only for international flows and economic relationships but also for information flows within countries.

The final section concludes by outlining how the dataset can and will be used to establish the relationship between information and other flows like trade, capital and migration. Additionally further research trajectories are detailed, an important example is explaining the effect of colonial legacy, which investigate the role historical information and communications infrastructure played, and still plays, in shaping information flows and thereby trade patterns then and now.

Liam Brunt (Norwegian School of Economics) & Edmund Cannon (University of Bristol)

Variations in the price and quality of grain, 1750-1914: quantitative evidence and empirical implications

Brunt and Cannon (2013) argue that interpretation of historic grain price data is hazardous owing to systematic variations in grain quality – both cross sectionally and over varying time horizons (intra-year, inter-year and long-run). We quantify these four aspects of grain quality variation in England, 1750-1914. First, we show that grain quality is approximated by bushel weight. We then show that cross sectional and long-run variation in bushel weights are substantial and problematic, possibly generating erroneous inference regarding market integration and cost of living changes. We examine international quality differentials and plot their changes over time. By contrast, intra-year and inter-year variation are relatively small and may be controlled for more easily.
West versus East: early globalization and the great divergence

This paper expands on our previous work on grain market integration across Europe and the Americas in the eighteenth and nineteenth centuries (Dobado-González, Garcia-Hiernaux and Guerrero, 2012).\footnote{Dobado-González, R., García-Hiernaux, A. y Guerrero, D. (2012), ‘The Integration of Grain Markets in the Eighteenth Century: Early Rise of Globalization in the West, Journal of Economic History, 72, 3, pp.677-701.} We found that, contrary to conventional wisdom, an early stage of Globalization – defined in the same way by O’Rourke and Williamson – had already started in the West in the first half of the century. It was interrupted during the French Revolutionary and Napoleonic Wars and resumed at some point in the first half of the nineteenth century, which initiated the canonical period of globalization. Thus, in contrast to the claim by Shiue and Keller, the industrial revolution followed, not preceded, the beginning of the globalization process in the West. Therefore, exploring the connections between intra- and intercontinental market integration and modern economic growth in both West and East over the eighteenth and nineteenth centuries becomes a promising area of research in economic history since it brings together two important strands of literature (i.e., Globalization and Great Divergence).

In order to do this, we present: 1) A rigorous description of the main characteristics of our econometric methodology for the analysis of market integration with annual data in the light of alternative approaches (coefficient of variation, cointegration, error correction models, etc.); 2) A search for statistical evidence in the East of an ‘Early Globalization’ comparable to the one found in the West, before or during the start of the great divergence between the two extremes of Eurasia by means of studying the international integration of grain markets in China and Japan; 3) A study of the domestic integration of grain markets in China and Japan and its functioning in comparison to Western countries; 4) A discussion of the relevance of our findings for the debate on the great divergence.

Our main conclusions are:

1) Despite the geographical proximity and easiness of transportation between China and Japan, no statistical evidence of grain market integration between them has been found. This finding contrasts with the increasing intra-continental and inter-continental integration of grain markets observed in the West before 1792 (‘Early Globalization’) and after the 1840s (canonical globalization). Historical evidence confirms that the two large Eastern markets for grain were disconnected: no significant trade in rice between China and Japan, on a permanent basis, has been recorded. That neither Korea was integrated with its neighbours is the most likely outcome of the policy of seclusion adopted by the Choson dynasty from mid-seventeenth century until late into the nineteenth century. ‘Early Globalization’, then, turns out to be a form of Western exceptionalism. In other words, expanding the argument proposed by Acemoglu et al. (2005), the institutional framework established in early modern Europe permitted, if unevenly, a widespread diffusion of the positive effects of trade on economic growth.

2) However, in neither China nor Japan domestic markets were disintegrated. At some point during the period under consideration, many markets (e.g., the Yangtze River delta or western prefectures of Honshu) were roughly as integrated as many advanced European regions (e.g. Southern England). However, we also find that market integration decreased from the mid-nineteenth century in China and a similar trend (albeit less intense) was observed from the 1830s to the early 1860s in Japan. The decreasing efficiency of the Qing rule across the nineteenth century might have something to do with the counter-intuitive evolution of market integration in China during the second half of the nineteenth century. In Japan, evolution of prices suggests that the ‘feudal-Dojima’ integration was unsustainable by the mid-nineteenth century. These long-term dynamics are opposed to those followed by most
national markets in Western countries before the late nineteenth-century ‘protectionist backlash’ (Federico and Persson 2010).

3) The state played a central role in the functioning of grain markets in China. Besides restricting foreign trade, it mobilized a significant amount of the grain supply through the tribute in kind levied on some provinces. Moreover it accumulated significant stocks to be distributed through the vast network of ever-normal granaries, occasionally sold at below-market prices or gave tax relief to some provinces, etc. In Japan, apart from restricting foreign trade and controlling the means of transportation, the state performed a less active role in grain circulation. On the contrary, daimyos and the biggest merchants in Osaka were the main agents operating in a sophisticated market that was ultimately based upon the collection of feudal rents, in kind, and its distribution for sales across the country. Market forces were generally more important in the West as a whole throughout the eighteenth and nineteenth centuries. Thus, domestic market integration may be achieved through different combinations of agents and policies. In turn, each of these combinations has specific effects on economic growth.

4) We identify some important differences between West and East regarding market integration: geo-economic scope (intra-continental and inter-continental versus national); evolution over time (secular progress versus reversal in the nineteenth century); and agents and policies (market forces versus state and others as leading factors). As a result, East and West were dissimilar in terms of market integration before and after the industrial revolution. This dissimilarity had implications for the appearance of modern economic growth. In our interpretation, the above-mentioned differences support the notion that the level of intra- and intercontinental of market integration encapsulated by the term ‘early globalization’ preceded the industrial revolution in the West and contributed to the ‘Great Divergence’ between East and West. ‘Early Globalization’ soon started to deliver direct and indirect economic benefits that were not shared by the East. A higher integration of grain markets between China, Korea and Japan in the eighteenth century would have been mutually beneficial, and furthermore technically and economically possible. It did not happen because of political reasons. By closing their economies in the Early Modern Era, the Eastern governments might have committed one of the biggest economic policy mistakes ever made.

References
IV/A Economic Nationalism

Xavier Duran (Universidad de los Andes)

*The colony strikes back: the case of Colombia, Jersey Standard and the United States*

Why do empires subsidize home firms to enter into colonies? Scholars debating on the nature, direction and magnitude of imperial action on colonies overlook the empire’s internal conflicts over imperial action and how the colony may behave strategically to exploit these conflicts and reduce net transfer to the empire.583

In 1921 the US paid Colombia $25 million and Jersey Standard played a key role in the process. The event represents a unique window to examine informal commercial imperialism because it was a payment from the empire to the colony. It was also voted in Congress and allows observing the conflicts of interest over imperial action and its costs.

In 1913 Jersey Standard competed with the British firm Pearson for an oil concession in Colombia. Jersey won the concession in 1919, after lobbying the US Department of State to pay reparations to Colombia for America’s involvement in the secession of the Colombian province of Panama in 1903. Before 1913, the US government showed little interest in paying reparations despite repeated demands by the Colombian government. After that year, however, the American and Colombian cabinets signed a treaty offering Colombia $25 million reparation (3.5% of US federal expenditure and 9% of Colombia’s GNP, 1913). The US government pressured Colombia’s government not to sign a concession with Pearson. By 1921 Jersey was ready to pump oil out of the fields, but the treaty had not been ratified by the US Congress. Previously overlooked archival material identified by this project shows that Colombian cabinet members and the ambassador in the US reacted by indicating to Jersey and some American Congress and cabinet members that no concession contract would be granted for an oil pipe from the oil fields to the coast unless the treaty was ratified. Under Colombia’s pressure Jersey lobbied the American Congress to ratify the treaty. Colombia behaved strategically and managed to reduce the net transfer to the US by $25 million.

Analysis of the Congressional vote to ratify the treaty reveals the conflicts of interest within the US for granting Jersey what amounts to a subsidy to exploit oil in Colombia. Probit analysis of the vote reveals that: 1) support for the treaty came from the Republican Party and from states where refiners were located, and 2) opposition came from states where farmers used intensively vehicles consuming oil.

Cost-benefit analysis indicates: 1) the NPV of Jersey’s project in Colombia was about $53 million. 2) American crude oil refiners derived profits. Colombia’s oil increased world supply, crude oil price declined, and refiners saved at least $27 million (if the price elasticity of demand was lower than 5). Refiners operated a tight oligopoly (including Jersey) and did not pass crude oil price reductions to the final consumer. In sum, refiner’s profits were higher than the subsidy they received; voluntary taxes could have offset the subsidy, but were not paid. The US was better off after the treaty, but gains were concentrated in a few oil refiners and congressmen.

Valerio Cerretano (University of Glasgow)

*Autarky and the building up of technological capabilities in Italy: rayon firms and the domestic production of wood-pulp, 1934-44*

This paper will examine the move that the leading Italian rayon firms, most notably Snia Viscosa, made in the production of wood-pulp under the shelter of autarky in the 1930s. Italian rayon and paper firms traditionally imported wood-pulp from Scandinavia; hard pressed by rising international prices and scarce foreign currency from about 1934 they began

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583 For instance, while some scholars focus on the impact of imperial action on colonies abstracting conflicts of interest within the empire and strategic action from the colony [(Berger et al (2013), O'Brien et al (1999)], others do acknowledge the role that conflicts of interest within the empire play in determining imperial actions but overlook strategic action from the colony [(Maurer and Yu (2010), Cain and Hopkins (1993)].
however to consider the possibility of embarking on its production. One crucial factor in this process of vertical integration was state support: in an attempt to save foreign currency reserves and to achieve economic self-sufficiency the Italian government prohibited imports of Scandinavian and American wood-pulp thus creating a market for lower quality wood-pulp, which was employed mostly in the making of staple fibres (i.e. rayon yarns cut at regular length), and facilitating investments in this new line of business. In line with what the majority of the observers have said about the social and economic costs of autarky and more generally of import-substitution policies, the paper will show that autarky in relation to cellulose-making was a total failure and waste of resources, as Italian output of wood-pulp remained ridiculously low and its quality very poor in the time period under consideration. Confirming however a point made by most recent Italian historiography, it will also show that autarky stimulated inventive activity and the launch of innovative products that came to be fully developed and exploited after the Second World War. Snia Viscosa, for example, became a major wood-pulp and cellulose producer from the 1950s, selling the proprietary cellulose technology that it began to develop in the 1930s to its international partners. The history of these investments serves then the purpose of discussing the broader implications of trade policy, autarky and import-substitution policies on technological and industrial development. In connection with this, the paper will first seek to carry out some comparison with other countries adopting autarky in the 1930s, namely Japan and Germany, while attempting a discussion about the often used notion of armament industries, as the cellulose and rayon industries, in particular, were only tangentially involved in the war effort but greatly benefited from autarky. This is one major reason why these sectors, more than the heavy and armament industries, can offer rich insights into the economic and technological reverberations of import-substitution policies.

Eva Fernández (Universidad Carlos III de Madrid)

Political regimes, ideology and protection in western agriculture, 1920-80

This paper looks at the political economy of agricultural protection in eleven developed countries during the period 1920 to 1980. A number of political factors are explored to understand why protection to agriculture substantially increased during the twentieth century and governments were reluctant to reduce assistance to farmers despite its high budgetary and economic costs.

Recent economic history studies on the evolution of public transfers (Elu 2012; Espuelas 2012) only explore the economic determinants of welfare policies. However, economic literature has emphasized the importance of political systems for policy making (Persson and Tabellini 2003, 2004, 2005; Blume et al. 2009; Olper and Raimondi 2009). Literature has also considered the role of political institutions on the patterns of agricultural protection for the period after 1980. Most authors have emphasized the positive effect of electoral democracies on the level of support to farmers (Lindert 1991; De Gorter and Tsur; Swinnen et al. 2001; Olper 2001, 2007), but some studies have also analysed the effects of federalism, electoral systems or party fragmentation on protection (Thies and Porche 2007; Beghin and Kherallah 1994; Olper 2001, 2007; Dutt and Mitra 2005).

The paper measures protection to agriculture for the period 1920 to 1980 in Belgium, Denmark, France, Germany, Italy, the Netherlands, Norway, Spain, Sweden, the United Kingdom and the United States. Protection is quantified by using the Producer Support Estimates that includes both price distortion and direct transfer to farmers.

Long-term quantitative studies of agricultural policies in developed countries have focused on individual countries: Japan (Anderson et al. 1986; Anderson and Tyers 1992), the United States (Gardner 1987) and Belgium (Swinnen et al. 2001), or in the most recent period: Inhwan (2008) on the industrial countries during the period 1986-2004. Only Swinnen (2009) has studied agricultural protection from the 1870s to the 1960s in five European
countries, although this study fails to include a quantitative analysis of the political determinants of agricultural protection.

A new time series of political governance and ideology is presented. This new database includes variables such as federalism, types of constituency, types of regimes (presidential or parliamentary), electoral systems (majoritarian or proportional) and the timing of elections. Data on political regimes and elections were collected in Elections in Europe: A data handbook, edited by Nohlen and Stöver in 2010 and Elections in the Americas: A Data Handbook, edited by Nohlen in 2005. The econometric analysis also controls for economic factors such as the size of agriculture, land distribution, the relative comparative advantage of the sector, or farmers’ relative incomes.

Nikolaus Wolf & Marvin Suesse (Humboldt Universität zu Berlin)

Market integration and the origins of economic nationalism

The ‘Age of Empire’ (Hobsbawm) was characterized by a paradox: a previously unseen integration of markets and a noticeable rise in national conflict and protectionism since the 1880s. In economic history, the dominant narrative for this paradox is centred on the idea that a decline in trade costs creates losers as well as winners within a country, and may therefore lead to a political backlash against liberalization. This has been well developed in the literature following Stolper and Samuelson’s famous insight. We propose a different mechanism through which market integration can lead to internal and external political conflict, one that is related to conflicts over scarce resources such as land or capital, rather than the pattern of specialization.
IV/B Financial Bubbles

Richard Kleer (University of Regina)

Riding a wave: the Company’s role in the South Sea Bubble

It is widely believed that officials of the South Sea Company deliberately engineered London’s stock market bubble of 1720, hoping in the process to line their own pockets. In this paper I consider the available evidence on director trading in Company assets, drawing upon documentation generated during the parliamentary investigation of 1721. I find that it offers little support for the standard view. Company officials did not buy large quantities of shares ahead of the debt-conversion project first announced in January or any of the three main surges in market prices during the Bubble. There is little evidence to support contemporary claims that Company insiders bought forward and options contracts at very high prices, presumably with a view to drawing in unwary outsiders. And the main bouts of Company lending to those interested in buying South Sea stock occurred only after market prices attained new heights. Only two practices have some fit with the thesis that Company officials had schemed to raise prices: a) a spate of options contracts purchased in mid-June with very high strike prices; and b) the decision in three of the four money subscriptions (issues of stock for cash rather than in exchange for public debt) to price South Sea stock well ahead of the going market rate. And there remains the question what the Company was doing lending at all, whatever the timing of that lending.

To account for the two practices in question, and the decision to lend in large quantities, I offer an alternative hypothesis as to the motivations of Company officials in spring and summer 1720. The Company’s principal objective was to get investors to agree to convert their holdings of public debt into new South Sea stock. For this in itself would bring the Company large new flows of specie upon which, in partnership with the Sword Blade Bank, it could build a lucrative business lending short-term to the crown. On account of the vast quantities of debt involved, the conversion would have to be carried out in stages rather than all at once. Any declines in the price of South Sea stock while the conversation was in mid-stream would have been fatal to the success of the enterprise. Investors subscribing their public debt later in the process would observe early converts suffering a large capital loss and so refrain from offering their own holdings for conversion. The infusions of cash needed to cover a large one-time payment to the Exchequer was likewise scheduled over a series of months; any interim decline in the price of South Sea stock while those instalment payments were under way would have caused further instalment payments to be withheld. But the Exchequer payment was a precondition for the entire project and so could not be allowed to fail. On both counts, Company officials were worried about bear raids and so prepared measures early on to support the price of South Sea stock should it come under attack. Close examination of the historical record shows that all of the money subscriptions were timed to generate cash resources after a period of significant downward pressure on share prices. By pricing most of these issues well ahead of the market, the Company provided very public exhibitions of widespread confidence that its share prices were destined to rise higher. Typically the subscriptions by themselves were therefore enough to buoy share prices. The Company proceeded to lend out cash only when if the market again came under downward pressure.

The most significant pressure point in the operation came in June, after the market had taken its most dramatic leap of the year. As the second instalment on one of the money subscriptions approached, the market began to fall back. Company officials became highly aggressive at this point, acting very expressly to keep the stock above a floor of £700 per share. This was also the period during which it entered very aggressively into the market for refusals, buying at a strike price of £1,000. Lending and other support operations halted the moment the stock transfer books closed on 22 June. Similar tactics were pursued in August after a long decline in share prices and the transfer books re-opened. This time Company
officials also acted directly by buying South Sea shares outright. But on this occasion the market collapsed despite their best efforts.

On this reading, far from being a welcome development that the directors actively encouraged, the Bubble was an exogenous event that threatened the success of the financial project upon which they had embarked for other reasons.

Stefano Condorelli (London School of Economics)  
*The Mississippi and South Sea Bubbles, 1719-20: a European perspective*

Contrary to what is usually believed, France, Great Britain and the Dutch Republic were not the only countries that experienced a financial bubble in 1719-20. Lorraine, Hamburg, Hannover, Brunswick, Ireland, Austria, the Austrian Netherlands, Denmark, Switzerland, Geneva, Portugal, Spain, Venice, Milan and even Russia were also affected by the contagion of speculation and schemes. Some of these schemes have been studied (essentially the Hamburger and Irish ones), whereas the others have not yet caught historiography’s attention.

This paper will start with an overview of all the known economic and financial projects that were promoted that year in Europe outside France, Britain and the Dutch Republic. To identify them I have used many different sources, including gazettes, pamphlets, business letters, diplomatic correspondence and other official documents.

Only a few of those schemes gave rise to a stock market boom. In Lorraine, for instance, in November 1720, the shares of a new trading company (supported by the state) were oversubscribed, and their price rose more than 20 per cent in a few days thanks to inflows of foreign capital. Other ventures did not manage to take off. In mid-September 1720, subscriptions in a new Venetian trading company had already started and the first shares had been bought, when the scheme suddenly aborted. Presumably, the stream of increasingly bad news from the London stock market had, in those same days, triggered a shift in Venetian investors’ confidence.

The paper will then address two questions: Did the various bubbles have any common features? Why did they start happening around the same time?

Each national bubble was clearly related to a specific economic and political environment. However, in each country (including Britain, France and the Dutch Republic, but with the exception of Geneva and Switzerland) some if not all the new stock issues were geared, in one way or another, to the government’s efforts to increase its income and reduce its debts. There were other common features, but this one was probably the most significant. To understand why the bubbles took place around the same time, we should look, on the one hand, at the mechanisms of financial contagion, and on the other at the international context. It was probably no coincidence if the bubbles occurred during the War of the Quadruple Alliance (1718-20). Practically all European powers were then struggling with unprecedented debt loads (mostly accumulated during the previous wars) and simultaneously needed fresh resources for the new conflict (or for old ones still going on). In France, for example, the crown took one of the most decisive steps in the process that led to the Mississippi Bubble (i.e. transforming John Law’s private bank into a royal bank) on the eve of invading Spain, in December 1718.

In summary, the paper’s main findings are: a) that the number of bubbles in 1719-20 was greater than what is usually believed; b) that almost all of them were at least partially geared to some form of public debt management; and c) that their onset was connected to the outbreak of a new European war in 1718-19.
**Carlo Taviani (Yale University)**

*San Giorgio and the Mississippi Company: a hypothesis on the origins of John Law’s Scheme*

One of the rare abstracts of economic historian Earl Hamilton’s never written book on John Law reports: “Law [...] was powerfully influenced by the Compere of Saint George and their Bank of Saint George at Genoa. [...] he was thoroughly familiar with the advances by the Bank to the city of Genoa, the huge indebtedness of the city to the bank”. For decades in the mid-twentieth century Earl Hamilton had studied John Law’s life but the abstract, taken from his private archive, did not provide evidence in support of this statement. This quotation thus remains the only hypothesis that connects John Law’s schemes to the financial system of Genoa and to the Casa of San Giorgio (1407-1805), the main Genoese bank (1408-44, 1530-1805) and the organization entrusted with the public debt of the Genoese Commune. One of the reasons for the lack of studies on this topic is probably the fact that no documents on the period John Law spent in Genoa (1708-12) have thus far been identified.

The paper presents new archival evidence on the years John Law lived in Genoa and on his unknown business with Genoese bankers. A few years before the Mississippi bubble blew up some Genoese bankers exchanged hundreds of letters with Law; later they also paid close attention to what happened to him between 1719 and 1720. An analysis of an archival Genoese find offers a view on the important period that preceded the elaboration of John Law’s schemes.

I also offer a new hypothesis on the connections between the schemes of the Mississippi Company and the model of the Casa of San Giorgio. San Giorgio held public debt and a bank, but it was also a corporation with powers resembling those of a medieval Commune, or of an early modern Republic. Historians of Genoa had considered more the financial dimension of San Giorgio rather than the political and the territorial one. If – on the other hand – we look at the territorial powers of San Giorgio, we can understand the process that led the Genoese corporation to absorb progressively not only the finances of the Commune, but also part of its governing functions, rights and even lands (such as Corsica and some cities near Genoa and in the Mediterranean Sea).

I propose that this process and its fortune may have influenced John Law’s proposed schemes in France. In support of this perspective, the paper compares economic and political features of San Giorgio with those of the Mississippi Company in the final phase of the bubble and presents new evidences of the knowledge Law had of San Giorgio.

**Koji Yamamoto (King’s College London)**

*Behavioural foundations of financial speculation during the South Sea Bubble*

This paper uses historians’ skill of archival reconstruction to rethink micro foundations for market speculation during the South Sea Bubble of 1720. Alongside the Dutch Tulipmania, the Bubble has been treated as euphoria or a gambling mania – something almost ‘irrational’. Newspapers and some economists as well as traditional accounts of Carswell, Sperling and Dickson in the 1960s provided such views. These have been challenged by more recent studies of Neal, Shea, and Paul. The Bubble was, it is argued, based on fundamentals and hence essentially rational. Historians are not uncritical of such a perspective. Yet, recent studies of early modern commerce, finance and political economy by Glaisyer, Murphy and Pincus stop just before the Bubble. The mechanism of the boom and bust has thus been examined almost exclusively by economists drawing upon the concept of rational choice – a key element in classical economics.

As Akerlof, Kahneman, and Rabin have argued, however, rationality cannot adequately explain the market. We badly need an account of market behaviour over and above rationality. How can we explore subjective and cultural biases that shaped market behaviour during the Bubble? This is largely uncharted territory despite a recent monograph by the economist Paul.
This paper contributes to this larger task by presenting preliminary findings of my ongoing project on the behavioural foundations of the Bubble. It will use the well-documented case of James Brydges the first Duke of Chandos to show an unexpected role that friendship between investors and brokers played in shaping investment strategies. Like other large-scale investors, Chandos too spent most of the summer of 1720 in his rural mansion away from London, thus relying heavily upon brokers stationed in London, Paris and Amsterdam for managing his portfolio. Chance survival of a series of ducal out-letters sent to these brokers thus affords us a rare insight into contemporary investment strategies at a crucial moment in the history of financial capitalism.

His letters will reveal that Chandos was seeking to ‘ride the bubble’ (Temin and Voth), but that his use of given brokers depended on his perceived ‘friendship’ with them. Understanding the principal-agent relation in such an intimate term, it will be argued, served as a means to handle risks due to physical distance, due to resulting information asymmetry, due to market volatility, and due to the need to find brokers at once financially credible, and personally trustworthy so as to guard investors’ own personal reputation from the unwanted charge of stock jobbing. Yet Chandos’s account books will also show that, despite his wish to exist before the collapse, his choice of agents was skewed towards incompetent ‘friends’ over more knowledgeable strangers. Trust upon such ‘friends’ was renewed and strengthened, rather than withdrawn, after the collapse by attributing their loss to the unpredictability of price movements. Friendship provided an essential, yet imperfect, means to manage risk and evaluate competence in the emerging financial market. The conclusion will bring out some theoretical implications.
**IV/C  Women and Work**

**Jesús Carro, Matilde P Machado & Ricardo Mora** (Universidad Carlos III de Madrid)

*The onset of female labour market participation and the role of mothers*

Female labour participation has increased in most countries during the last century. Although the literature has advanced several explanations for this fact, the reasons for the onset of female labour market participation are not well understood. Among other factors, technological changes at work and at home and human capital accumulation have been proposed as fundamentals to understand the trends in female work status. Recently, economists have established that culture differences affect economic outcomes and in particular the levels of female labour force participation. The received literature also shows that culture, understood as a common set of preferences and beliefs, is transmitted from parents to children and, therefore, transitory shocks to preferences or beliefs may have long-run impacts on female labour force participation. Our paper fits into this group with a focus on the mother-daughter transmission channel but uses a novel approach to provide direct evidence on the intergenerational transmission of preferences and beliefs. Our approach consists of using church registry data from several Portuguese settlements to estimate the effect of a mother’s labour force participation status on that of her daughter’s during the eighteenth and nineteenth centuries. Importantly, we address the problem of missing values, which so often affects historical records by adapting the methodology recently proposed by Ramalho and Smith (2013). Preliminary results show a large, positive and statistically significant effect of the mother working status on the daughter’s probability of working across different model specifications. We interpret such an effect as evidence of intergenerational family transmission of preferences and/or beliefs.

**Keywords**: female labour market participation; historical family data; non-ignorable missingness; intergenerational transmission of preferences and/or beliefs; econometric methods for missing data.

**Classification**: J22, J24, J16, J12

**Paolo di Martino & Jennifer Aston** (University of Birmingham)

*Risk and success: re-assessing female entrepreneurship in late Victorian and Edwardian England*

This paper contributes to the on-going debate on the role of women in the late Victorian and Edwardian British economy by investigating the level of success of female entrepreneurs. In the last decade a number of path-breaking contributions successfully challenged the established view that women operated in the ‘private sphere’ and only had a marginal role in the ‘public sphere’ and the economic arena.

Starting from these premises, this paper uses original qualitative and published quantitative sources on female bankruptcy to approach the debate from an unexplored perspective. Specifically, we investigate whether businesswomen tended to fail more often, and under worse conditions, than men, something that in the business literature is commonly used as a basic proxy for success or lack of it. This analysis, in turn, allows exploring wider aspects of female entrepreneurship and shedding new light on the way women managed their firms, approached risk, and raised financial resources. Further, the study of bankruptcy also offers a new perspective on the way contemporary institutions and culture looked at the role of women in the economy and society.

Preliminary results indicate that, apart from smaller firm’s size, a female model of business did not exist as such. Little, if anything, suggests that women operated in less risky sectors or in closer and more protected markets than men, or that relied on different types of financial intermediation. The result is a similar degree of success among men and women; the percentage of failures among women is consistent with their share of firms, and their
businesses at the opening of bankruptcy procedures had ratios between assets and liabilities in line with the rest of the population.

These results support the view that women were simply a structural component of the British economy, with no outstanding specificity. Socio-cultural biases about their role were extremely limited, suggesting that, by and large, contemporaries too looked at women as ordinary economic agents.

Beatrice Moring (Universities of Helsinki & Cambridge)

Women, well-being and the female industrial inspector

While there are still economists who believe in the invisible hand, many Victorians realized that without regulation the weakest will suffer. In the face of considerable opposition Britain introduced the first factory acts in the 1830s and 40s. It soon transpired that legislation without control had little impact and a system of factory inspection was introduced and brought under central administration in the 1870s. The same decade also saw the first proposals of employing women as inspectors for workplaces with women and children. While initially it was suggested that women with experience of industrial work would be suitable candidates, this proposal never became reality. When after decades of resistance from the male inspectorate the Liberal government employed the first female inspectors in the 1890s, these were both in name and substance ‘Lady Inspectors’ (Martindale 1938, 50-3).

In an article from 2004, Ruth Livesley convincingly argued against theories about the existence of so called ‘sisterhood’ between the female factory inspectors and working class women. To support her criticism she demonstrated the dependency of these female civil servants on their protectors within the aristocracy and the civil service. She also underlined how the formation of a female inspectorate was linked to active resistance against working class women entering this sphere. The lady inspectors were to be the actors and the factory girls the objects. The creation of the female inspectorate gave middle-class educated women the first access to recognized positions within the administration (Livesley 2004, 236-45).

There is little doubt that Livesley was correct in her analysis that we should stay clear of romantic concepts like ‘sisterhood’ in Victorian society. Undoubtedly the female industrial inspectors stayed true to their origins and socially well placed sponsors. It would also seem that a reason for their employment was the chance for the administration of having the work done cheaply while supporting ideals of moral standards. However, the question that does arise is, were these women only a part of the system or did their activity have real impact. Undeniably they found themselves in the crossfire between different political factions and had to work quite hard to gain respect. How do we measure the effect of their work?

The datasets used for the study are the statistics of accidents before and during the time of the female inspectorate, the information on number of interventions with positive outcome, such as recommendations for improvements to the workplace or machinery and prosecutions. In addition the accounts of activity in relation to specific problems such as lead poisoning, unhealthy environment and working hours in laundry work and the garment trade and of employment of children in unsuitable tasks are used. The data have been collected from the annual reports of the inspector of factories and workplaces for the period 1893-1914.

It would seem that the work the inspectors did had a positive impact on the situation and the workplace for a number of women and that, as women, they could tackle issues outside the scope of their male counterparts.
Tobias Karlsson (Lund University)

Work attendance, gender and marital status: evidence from the Swedish tobacco industry, 1919-50

Time discipline was an important feature of the industrial revolution (Clark 1994; Landes 1983; Rifkin 1987; Thompson 1967). With the introduction of more capital-intensive technologies, new types of employment contracts emerged that not only rewarded output but also behaviour in the workplace. Regular work attendance turned into a virtue. Coordination of factors of production became even more urgent towards the end of the nineteenth century (Chandler 1977). Electricity and combustion engines replaced steam as the main sources of power and made it possible, and highly profitable, to achieve a higher and more even pace of production. Workers who did not show up when the factory bells rang or deviated from the job gave rise to costly interruptions of the production process. It was in this context that the punch card-clock was invented, which gave employers better opportunities to keep track of the attendance of their workforces.

During World War I and the following years, characterized by tight labour markets, absenteeism was defined as a serious problem (Frankel 1921; Jacoby 2004, 100; Murray 2007). Somewhat later, during World War II, when many women temporarily filled jobs that previously had been done by men, gender differences in absenteeism were discovered (Patton and Johns 2007; Weatherford 2009). Academic studies and anecdotal evidence showed that women were more often absent from work than men (Myrdal and Viola Klein 1956). Surprisingly, the gender gap in absenteeism has not been a central theme in the economic history literature on gender and work in the first half of the twentieth century. Although male-female gaps in absenteeism have been established in numerous studies from the 1940s onwards (c.f. Paringer 1983; Mastekaasa and Modesta Olsen 1998), it is not obvious that the pattern has been time-invariant. Pre-modern male work cultures, including huge alcohol consumption and the habit of frequently taking days off, lingered on in some trades throughout the nineteenth century, and possibly beyond (Cooper 1987; Gutman 1973; Kirby 2012).

Knowledge about gender differences in absenteeism has fundamental implications for our understanding of the operation of labour markets in the twentieth century. If women had higher inclination of being absent from work, employers would have had incentives to undertake various kinds of statistical discrimination and exclude women from rewarding jobs.

This paper presents evidence on rates of absenteeism for men and women employed in the Swedish tobacco industry during the period 1919 to 1950. The tobacco workers were employed by a public-private monopoly that undertook considerable rationalizations of production while at the same time having to live up to social constraints (Karlsson 2008). The managers of the Tobacco Monopoly became increasingly interested in monitoring work attendance and sick leave. Throughout the period of investigation, and in contrast to the situation two decades earlier, women had about twice as high rates of absenteeism than men. The number of hours lost due to sickness and other causes became significantly higher towards the end of the period, probably as a consequence of increased work intensity. Further investigations initiated by the management at the end of the 1930s showed big differences among women. Married women were more often absent, both due to own illness or non-illness related causes, than unmarried women, even if absenteeism associated with childbirth was discarded.

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IV/D Survival Strategies in Europe

Arie van Steensel (Utrecht University)

Complementary institutions? Guilds and social provision in medieval urban Europe

The persistence of trade and craft guilds in pre-modern European cities and towns is well documented. In spite of the different economic explanations, whether they regard occupational guilds as efficient institutions in a context of imperfect markets and states or as rent-seeking institutions that hampered economic development, the resilience of these corporations is still a subject of lively debate among historians. There seems to be at least some agreement about the institutional characteristics of medieval and early modern occupational associations. First, a distinctive institutional feature of these corporations was their flexibility; the line between their core economic functions and secondary religious, social or political roles was often undefined. This feature also reinforced the social ties between guild members. Second, occupational guilds were embedded in a broader institutional environment constituted, in the first place, by the urban community, as well as sometimes by wider political, economic and urban networks. In other words, the guilds’ activities were to a certain extent influenced by strategic choices made by individuals and institutions in other domains.

By exploring the interrelatedness of occupations guilds and other urban institutions with regard to social provision (hospitals, pensions, charity), this paper seeks to examine these assumed institutional features. Despite the vast literature on medieval and early modern trade and craft guilds, the social arrangements organized and financed by them are rarely studied from a comparative perspective. The first aim, therefore, is to analyse and compare the charity provided by occupational guilds in at least three major late medieval urban centres, namely Florence, Ghent and London. What kind of welfare was exactly provided and who were entitled to assistance? Secondly, assuming that these cities constituted a more or less coherent institutional whole, it will be determined to what extent the mutual interaction between the institutions therein shaped the guilds’ social responsibilities. Was guild welfare, for example, embedded in a wider system of urban poor relief? Finally, the empirical findings will be discussed in the light of the concepts of institutional adaptive and exaptive capacities and institutional complementarity, in order to evaluate the presumed organizational features of pre-modern occupational guilds.

This paper is based on existing literature and new data derived from archival research in Florence, Ghent and London, in particular from guild statutes and accounts among other sources. In short, this research sheds new light on the practice and organization of corporate charity in a number of medieval European cities and towns. Moreover, it offers insights that may be relevant to understanding and explaining the prevalence and longevity of occupational guilds in medieval and early modern Europe.

Keywords: guilds; institutions; medieval cities; solidarity; poor relief.

John McCallum (Nottingham Trent University)

Poor relief in seventeenth-century Dundee

Poor relief in pre-industrial Scotland is conventionally portrayed as ‘weak and mean’ (Christopher Smout). This is primarily due to the widespread failure to implement the legislation of the 1570s which provided for statutory relief underpinned by compulsory contribution, roughly along the lines of the English Poor Laws. In the absence of this statutory system, relief was primarily provided by the church. This paper arises from a wider project seeking to test the general assumption that this ecclesiastical poor relief was necessarily weak, informal and insubstantial. It focuses on the relief efforts of the church in the city of Dundee during the middle decades of the seventeenth century. Dundee provides a useful case-study not least because from 1640 onwards there survive uniquely detailed accounts of the church’s
fundraising and distributions to the poor (incidentally giving the lie to the myth that Dundee’s status as the least studied of Scotland’s urban centres is due to a lack of surviving archives). Dundee is also a useful case-study because in the late 1640s and 1650s it suffered particularly badly from plague and warfare, enabling us to assess the effectiveness of relief during times of particular stress.

The paper will demonstrate that the church in Dundee operated an extensive and formal system of poor relief, despite the absence of compulsory contributions. Significant sums were raised through collections, rents on properties, fines for moral offences, and individual donations and bequests. Accounting and auditing were detailed and careful, reflecting a bureaucratic system of relief which did not resemble the common perception of ecclesiastical relief as haphazard and ad hoc. The paper will therefore contribute to the recent shift in the wider historiography of poor relief away from an excessive focus on Poor Laws as the defining and central element in relief, and away from the English secular/compulsory model as normative. Indeed, the one aspect of relief in Dundee for which secular rather than ecclesiastical authorities were responsible, the hospital for the poor, will be shown to have operated on a much more limited scale, and to have focused on a relatively small and select group of respectable burgesses who had fallen on hard times.

The church accounts provide rich detail on the recipients of poor relief, and while time will not permit a full prosopographical examination of Dundee’s poor, the paper will examine the range of causes of poverty, and the identity of those who received relief (in terms of issues such as gender, age and occupation, and place of residence both within and beyond the burgh). The recipients were highly diverse, suggesting a system which was focused on necessity rather than targeting specific groups such as poor widows, orphans, or the sick. The paper will also reflect on the wider possibilities for studying lived experiences of poverty, as well as its institutional relief, through the church’s records in Dundee (and beyond).

Samantha Williams (University of Cambridge)

Mother, father or parish? The maintenance of illegitimate children in Southwark in the late eighteenth and early nineteenth centuries

Despite recent scholarship, notably by Nutt, Lyle, and Levene, historians still know relatively little about the maintenance of illegitimate children under the old poor law. Legislation of 1576, 1609-10, 1662, 1733, 1809, and 1810 established and strengthened the legal mechanism of the affiliation of putative fathers. Nutt has argued that the mothers of illegitimate children were expected to nurse and care for their children, while putative fathers were to bear the cost of their maintenance.

This paper examines the maintenance of bastard children in Southwark parishes in the late eighteenth and early nineteenth centuries. Registers of bastard children, bastardy adjudications, and workhouse admission and discharge registers allow for an analysis of parental and/or parish provision for illegitimate children. It is possible to explore whether fathers paid a lump sum or a regular weekly amount, and for how long. In many cases no money was forthcoming from a putative father but the parish nevertheless paid an allowance. Although affiliation bonds or orders were generally generated before or just after the birth of an illegitimate infant, some children did not become the responsibility of the parish until later. Some children were maintained for many years until they were apprenticed, while others ended up in the workhouse. Evidence is also available on the place of birth and whether the mother or a parish nurse nursed the child. This paper will reflect upon the extent to which mothers nursed and cared for their children, fathers paid for their maintenance, and the role the poor law played – either in facilitating these roles or in standing in for fathers and/or mothers.
Julie Marfany (University of Oxford) & Montserrat Carbonell (University of Barcelona)

*Gender, lifecycle and family strategies among the poor: Barcelona, 1762-1803*

Poor relief in southern Europe is a neglected topic in historical research, compared to studies of northern Europe. It is often still assumed that kin bore the brunt of caring for the poor and thus that poor relief institutions catered predominantly for those without kin, especially migrants to urban areas. From this perspective, indoor poor relief in workhouses is usually characterized as a last resort for those who entered such institutions. This paper aims to provide a case study of poor relief in a southern European context and to challenge some of these assumptions. It is based on a study of the 6,176 women who entered the Barcelona workhouse, the *Hospici* or *Misericòrdia*, between 1762 and 1803, who have already been the subject of previous work by Montserrat Carbonell, combined with a new dataset of the 4,085 men who entered during a shorter period from 1780-1803. The registers of the inmates will be used to compare the age profile, marital status, place of origin and family circumstances of the men and women, whether they entered the workhouse voluntarily or not, alone or with other family members, the length of stay and frequency with which they re-entered and whether they died in the workhouse, were reclaimed by family or entered the labour market. A significant feature is that those aged 10-19 were the largest age group in both sexes, reflecting a deliberate choice by families to place adolescents in an institution which could smooth their entry into the labour market, especially for women, and also into the marriage market. While those who were widowed and elderly were a significant presence, they were actually under-represented relative to their weighting in the population overall. Among those over 20, married men and women outnumbered those who were single or widowed suggesting that absence of kin was not necessarily a factor in entering the workhouse. In this regard, comparison will also be made between those inmates whose place of origin was Barcelona compared with those who were immigrants to see if the latter displayed differences in terms of gender, age profile or marital status. The period 1762-1803 corresponds to rapid change in the Catalan economy, with the growth of the cotton industry both inside and outside Barcelona and the commercialization of viticulture across the region. Both affected the demand for labour, the first particularly for female labour. At the same time, however, there were periodic crises as the result of poor harvests, war and blockade, coupled with rising prices. The paper will thus also examine how the size and composition of the workhouse fluctuated over time and how such changes can be related to changes in the wider economy. It will show that, even in this southern European context, families often made strategic use of the poor relief options available to them as part of their ‘economies of makeshift’, combining a ‘mixed economy of welfare’ with the support of family, kin and neighbours in ways that were mutually reinforcing rather than mutually exclusive.
IV/E Innovation and Energy

Michelangelo Vasta (University of Siena) & Alessandro Nuvolari (Sant’ Anna School of Advanced Studies)

The geography of innovation in Italy, 1861-1913: evidence from patent data

In this paper we examine the localization of innovative activities across Italian provinces during the early stages of Italy industrialization (1861-1913). We make use of a new dataset comprising all Italian patents granted in Italy in five benchmark years: 1864-65, 1881, 1891, 1902 and 1911. As indicators of innovation at provincial level we employ both the ‘raw’ numbers of patents and two other more refined quality-adjusted indicators based on renewal fees. The first quality-adjusted indicator is based on the planned duration of the patent at issue (this indicator may be regarded as a proxy of the ‘ex-ante’ perceived value of the innovation). The second indicator is based instead on the real duration of the patent measured looking at the yearly renewal fees that were actually paid by each patentee (this second indicator is instead a proxy of the ‘ex-post’ value of the innovation). We carry out two exercises. First we provide a reconstruction of the historical evolution in the geography of innovation looking at the variation in the patterns of spatial auto-correlation of patents across provinces. This allows us to identify the areas in which agglomeration advantages and clustering effects were more significant. Second, by means of a regression analysis, we assess the factors accounting for the concentration of innovative activities at provincial level. In particular, we consider the role of transport (railways), urbanization, education, the structure of industrial employment in the province and the different legislations adopted by the pre-unified states.

Luis Angeles (University of Glasgow)

The great divergence and the economics of printing

This paper offers an economic analysis of the choice of printing technology in early modern China and Europe, and links the outcomes to the subsequent divergence in economic development between these two regions – what is known as the great divergence.

Despite its technological precociousness, China adopted xylography over movable type as its preferred printing technology. Europe, which discovered both printing technologies considerably later, only employed movable type. While this did not lead to more expensive books in China, it had the more pernicious effect of limiting the variety of printing therein: new book titles produced in Europe outnumbered those produced in China by about two orders of magnitude.

This paper makes several contributions to the literature on global and comparative economic development over the long run. First, it formalizes arguments explaining the choice of printing technology in China and the West. I show how this choice is fully compatible with standard economic behaviour and ultimately stems from the differences between the European and the Chinese script.

The analysis is made using a formal model where differences in writing systems translate into different costs for printing. Crucially, the analysis is not left at the purely theoretical level. The model is simulated by estimating the value of its cost parameters from the historical literature. Magnitudes such as the cost of producing woodblocks, the cost of producing a full set of types, the cost of paper, and so on enter into the calculation.

The model not only rationalizes the choice of printing technology in China but also endogenously determines the number of book titles that will be produced. This is made by considering the demand side of the market for books alongside its supply side under an assumption of profit-maximizing behaviour. Thus, the paper explains how the characteristics of the Chinese script and the choice of printing technology led to less book variety.

Finally, the paper also links the outcomes in the printing world to overall economic development by embedding the analysis of the book market into a model of economic growth. The idea that printing revolutionized the West is an old one, but not much attention has been
directed to how differences in printing could lead to differences in long-term economic development between China and Europe. In the model, new books are the carriers of new ideas, and new ideas the ultimate engine of growth. Thus, while China was able to put books in the hand of its people at low prices, the overall number of ideas thus disseminated was rather small given the limited variety of its book production.

**Jack Pezzey, David Stern** (Australian National University) & **Astrid Kander** (Lund University)

*Malhut to Solow with coal: modelling the industrial revolution as if energy mattered*

Since 2000, ‘unified growth theory’ has sought to extend the ability of mainstream growth economics to explain historical data from previous centuries. Galor and Weil’s (2000) and Hansen and Prescott’s (2002) mathematical models represented some features of the eighteenth-nineteenth century transition from traditional (Malthusian) stagnation, with very slow growth in output per capita and population, through the industrial revolution, to a modern (‘Solow’) economic growth regime, with sustained growth in output per capita, and initially faster then much slower population growth (the demographic transition). However, such modelling has so far included only physical and human capital, labour and technology as inputs to production, omitting any role for energy, in particular coal, in powering the British industrial revolution, though Hansen and Prescott also included a fixed land input that implicitly represents the role of renewable energy. Unified growth theory also cannot explain the historical transition from renewable to fossil energy. Hence it cannot explain the likely transition back to renewable energy in the twenty-first century, or the historical decline in the energy value/GDP ratio seen in Sweden and to a lesser degree in the UK that Kander et al. (2014) hypothesize was a key driver of the modern economic growth process. Stern and Kander (2012) took some steps towards modelling the role of energy in the industrial revolution and modern economic growth using 200 years of Swedish data. They found that a capital-labour aggregate and energy were poor substitutes (elasticity of substitution < 1) and that energy-augmenting innovations were more important than labour-augmenting innovations in the nineteenth and early twentieth centuries; but the supply of energy and most other variables were exogenous in their model. Unified growth theory, in contrast to economic history, gives little scope for regional variations and actual historical developments. It aims at capturing the common features across many nations. But it is clear from Kander et al. (2014) that the transition from traditional to modern energy regimes differed, especially when it comes to coal, where there were three clubs of countries, clustering at the time of their energy transitions. Having access to domestic coal or not played a large role in the timing of the transition. In this paper, we will take further steps by combining Stern and Kander’s empirical insights and mathematical model with Hansen and Prescott’s multi-sector model. This may enable the model to more realistically incorporate differences among nations’ energy and industrial revolutions. In Hansen and Prescott’s model output in the traditional sector is constrained by a fixed supply of land, while modern industrial production uses only capital and labour. It is economic to reallocate capital and labour to modern production only once exogenous technical progress reaches a minimum level. Our key modelling steps that will make this model somewhat more realistic include:

(i) Treating capital-labour as a poor substitute for land in traditional production, and, as in Stern and Kander, adding energy as a production input in the modern sector for which capital-labour is also a poor substitute;

(ii) Allowing for good (elasticity of substitution > 1) substitutability between renewable energy (mainly wood) and fossil energy (mainly coal);

(iii) Treating endogenously chosen wood input to energy-producing as a use of traditional output that competes with consumption and capital investment;

(iv) Adding new technical factors which reflect innovation in energy or land use efficiency.
The challenge will be to endogenize as many variables as possible, and to calibrate the model so that it reproduces the broad ‘stylized facts’ of the British industrial revolution, insofar as these can be estimated from historical data, for example in Allen (2012) and Kander et al. (2014). The model should also make sense when used to simulate growth in catching-up peripheral countries like Sweden. If not, we will need different models for leaders and laggards, and for countries with and without a domestic coal supply, which will make the model(s) less unified, but more accurate historically.

References


*Keywords*: British industrial revolution; energy; coal; economic growth; mathematical modelling; demographic transition; substitutability; innovation

**Peter W King**

*Charcoal consumption by the iron industry in early modern England and Wales*

In early modern England and Wales, iron was made with charcoal as fuel, but coal was used to make it into consumer goods. Estimates of iron production can be used to estimate the amount of charcoal used by the industry, using factors collected by Hammersley. Except in the Weald, charcoal consumption reached a plateau in the 1610s, which lasted until the transition to coke, 150 years later. This may be due to the available woodlands being exploited to their sustainable limit. Increasing home demand for iron was met by imports from Sweden and later Russia. This availability of imports controlled the price of English iron, which in turn limited the price ironmasters could afford to pay for charcoal.

Albion claimed that charcoal production for ironmaking restricted the amount of timber available for shipbuilding, but accepted that coppice wood was used for domestic fuel. Ironmaking actually used coppice wood, not the large timber needed for ships. Thomas’ calculation apparently showing high prices in the mid-seventeenth century is built on irrelevant data: prices for charcoal from areas that made no iron and sales of finished (not bar) iron. The effect he observed due to the effects on trade of the English Civil War, not a long-term trend.

While iron production estimates for the Weald are less robust, its trajectory is different. The absence of local coal meant that the manufacture of bar iron into ironware required coal imported coastwise, either to London or nearby ports, but this coal was expensive due to a coastal duty and transport costs. This placed the Weald at a competitive

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disadvantage, compared to Sheffield and the Black Country. Midland ironware was being sold in London by the 1610s. Conversely, those areas had cheap coal, because their coalfields were landlocked, a factor that had a significant effect on their economic development. Distant sales from a landlocked coalfield inevitably depended on expensive road transport, and the ability of the supplier to increase the price he charged the consumer with distance. In contrast, coalfields close to the coast or navigable rivers concentrated on selling coal to distant towns, using cheaper water-born transport.
IV/F Rural Economies

David Celetti (Università degli Studi di Padova)

Spinners, weavers and hemp growers

The paper presents an empirical, small-scale and comparative study of the economic and social transformation of two rural communities, Montagnana in Italy and Mammers in the French department of the Sarthe, whose productive structure was based both on agriculture and large-scale proto industrial activity. The two communities presented striking similarities. Traditional crops (wheat, corn and grapes) were integrated by hemp, which was then transformed into cloths and ropes. Widespread hemp cultivation and the work of hundreds of spinning mills and looms, auto consumption and market oriented activities, agriculture and manufacture granted for centuries high revenues for landlords and a relative well being for peasants, artisans, workers. Different productions and activity overlapped each other contributing to the overall family revenue. Yet both societies maintained essential rural characters and remained culturally and economically deeply embedded in the countryside.

All of this rapidly changed within the first decades of the nineteenth century. The growing internationalization of the hemp market, the concurrence of English finished products, the mechanization of spinning within the first industrial plants dramatically altered this situation, disrupting economies, societies, cultures. The reactions of the two communities to these destabilizing forces, however, were very different and reached in the long term opposite results. If Mammers endured an everlasting crisis that ultimately led to widespread emigration, Montagnana became the centre of one of the largest Italian hemp factories.

The paper argues that these results have to be linked, more than to the local peculiarities, to the different economic policies followed in France and in Northern Italy after the Napoleonic wars.

Starting from the late eighteenth century, the work traces the history of two communities and highlights the different paths of economic and social development by combining the analysis of the major global processes of the period (i.e. state intervention and regulation during the Napoleonic period through protective tariffs, social control; inclusion of hemp, ropes and hemp cloths the ‘strategic products’ for military consumption; the market liberalization after 1815; the growing concurrence of imported goods; the path of transition to industrial capitalism; … ), transnational comparisons over a long span time and detailed analysis of local communities (every day life; labour conditions; division of labour between agricultural and non agricultural work; gendered division of labour and the subsequent unequal relations of production within rural households; transition from home-based work to factory work; … ).

Finally, passing from the historical dimension to the methodological analysis, it will be pointed out how this case study can be regarded as a demonstration of the value of approaches that combines empirical research at local level, transnational comparisons and the study of major economic and social transformations like the emergence of industrial capitalism.

Dave Postles (University of Hertfordshire)

Capital accumulation and formation in provincial society: ‘non-agrarian’ activity

Since J.U. Nef introduced his concept of a first industrial revolution between 1540 and 1640, concentrated upon technological innovation and exploitation in the coal industry (expanded by the official history of the British coal industry and recently revisited in a social context by Wrightson and Levine at Whickham), a number of other paradigms have been adumbrated about rural industry and industry in the countryside. The conceptualization of dual occupations, considered by such as Thirsk and Hey, has mutated into proto-industrialization (and its discontents). The characteristics of this sort of industry in the countryside encompassed perhaps these aspects: seasonal organization (pastoral economy); high labour
input (household economy); and low capitalization (low cost of machinery and technology); although also an improved aggregate household income (de Vries, Muldrew). There is, perhaps, sufficient reason to reconsider industry in the countryside in terms of capital investment, accumulation, and formation: low capital and capital intensive. The existence of these occupations in the countryside engendered capital accumulation and stimulated liquidity in credit and exchange.

When Leslie Clarkson investigated the leather trades, he revealed the high significance of this industry and its commerce, but commented only obliquely on the capital requirements. He indicated the potential of probate inventories for further elucidating the impact of the industry. Much of the industry was still situated in rural hinterlands. Although not all tanners were successfully capitalized, probate inventories indicate a generally higher level of capital investment and accumulation by tanners, not in the technology, but in the raw materials and the quantity of production involved. Whilst agrarian capitalism (Brenner and his antagonists) has been attributed to tenurial dislocations in the countryside, this capitalization of the leather industry was also a distinctive feature. (In view of their substantial economic status, we might presume too that tanners in England did not belong to the social outcasts, the impure in society, a [non]-status which has been attributed to butchering in some parts of western Europe [Stuart, Defiled Trades] or to tanning prevalent among and confined to some dalit castes.)

The source material is probate items (wills for acknowledgements of debts and inventories for capital investment) in the diocese of Coventry and Lichfield (hereafter Lichfield), comprehending Staffordshire, Derbyshire, half of Warwickshire, and half of Shropshire and in Wiltshire (diocese of Salisbury).

The data (acquired to date) are summarily presented at:
http://www.historicalresources.myzen.co.uk/EQUAL/lichA.html
http://www.historicalresources.myzen.co.uk/EQUAL/lichB.html
http://www.historicalresources.myzen.co.uk/EQUAL/salsinv.html

The more expansive information from the inventories is not included there (in MS notebooks).

**Philip Slavin** (University of Kent)

*The beginning of the end: sheep panzootics and the fortunes of the wool industry in England, 1250-1330*

Between 1258 and 1317, England (and other parts of the British Isles) experienced a number of severe sheep pandemics, most likely liver fluke, which decimated local ovine populations and reduced the overall number of sheep. To make things even worse, several short-term exogenous shocks, most notably the Great Famine of 1315-21, had depressed the volume of available biomass and reduced the available pasturage considerably. On top of that, the crisis was aggravated by the ongoing warfare between England and Scotland (the First War of Scottish Independence, 1296-1328). The war, which was characterized, inter alia, by frequent livestock raids of Scottish marauders into northern English counties, decreased the number of sheep even further and practically paralysed wool industry and wool trade in that region. The paper will examine the extent, nature and environmental and economic consequences of the recurrent outbreaks of sheep mortality, in the wider context of the climatic and biological shocks and institutional crises of the late thirteenth and early fourteenth century. In particular, it will consider the impact of sheep mortality, through panzootics and warfare depredation, on wool production and the fortunes of the English wool industry.

The traditional historiographical narrative, still reigning unchallenged for a fair number of decades, connects the beginning of the decline of the English wool industry to the outbreak of the Hundred Years War in 1337, which provoked increased royal intervention, and commanded renewed taxation and higher transaction costs. My paper will test the
hypothesis whether the outbreaks of ovine panzootics and the ongoing warfare may have been
other factors contributing to the decline in wool industry. The paper will, therefore, reconsider
not only the causes and nature of the decline of English wool industry, but also re-date the

Another methodological problem the paper will tackle is the frequent scholarly
reference to English wool export figures as a reflection of wool industry and sheep numbers. I
shall argue, on the basis of the primary sources and their analysis, that wool export figures do
not, in fact, provide a reflective and accurate yardstick to measure the state of the wool
industry. After all, one has to account for both the international and domestic wool market and
consumption.

The research is based on several thousands of archival documents. The documents fall
into two main categories: (1) annual manorial accounts, recording, in great detail, annual
numbers and management of demesne livestock; (2) tithe receipts, providing a unique glimpse
into the peasant sector of economy (in particular, into sheep rearing); (3) contemporary
chronicles, depicting sheep panzootics and Scottish raids; (4) contemporary state papers,
reflecting the state of the wool trade.

Elizabeth Gemmill (University of Oxford)

Valuations of ecclesiastical property in inquisitions post mortem

This paper presents the outcome of research into the valuations of ecclesiastical institutions
found in the inquisitions post mortem (ipms) undertaken on the orders of the royal
government in England in the thirteenth and fourteenth centuries. Since the value of churches
was made up in large part of tithes, in turn related to agricultural productivity, these
valuations have the potential to indicate economic prosperity generally, and not only the
wealth of the individual ecclesiastical institution. The paper explains the process by which the
valuations were made and their purpose, and assesses the extent to which they may help us to
understand regional variations in wealth and economic trends in this period.

Ipms were carried out following the death of tenants in chief. The inquiries were
initiated by writs issued from the chancery, which could also follow up with further writs if
more information were needed. The information was provided, in theory at least, by local
jurors, who were asked a series of questions by the escheator or his subordinate at county
level. The questions were based on the instructions in the royal writ, and on the escheator’s
own understanding of what ought to be included when carrying out a survey. Essentially the
government wanted to know the value of the deceased tenant’s real property, how it was held,
who the heir was and his age. Ecclesiastical patronage rights were included in ipms because
they were a form of property, heritable and transferrable along with land. In particular,
lordship of a manor often included the patronage (or advowson) of the church within it.

When reporting on rights of patronage, ipms often recorded the value of churches and
religious houses. The point of this was to enable the king (and his advisers) to know how rich
a benefice was. This would inform any decision about whom to present if the church fell
vacant during the period of royal custody of the estates; and knowing the relative value of
churches and religious houses was of great importance when it came to partitions of estates
between co-heirs or assignment of dower.

Much doubt has been cast by historians on the usefulness of the valuations of land in
ipms, on the grounds that interested parties exerted undue influence; that escheators relied on
the evidence of previous inquisitions; that the jurors’ own knowledge was uncertain; that
stock answers were available to questions. There has, however, generally been more faith in
earlier ipms, and the present paper seeks to refine the picture in relation to valuations of
ecclesiastical property before and after the Black Death. It is argued that, certainly in the
thirteenth and early fourteenth centuries, the valuations of ecclesiastical property can be a
useful guide to actual values and to economic change. In fact, the objections outlined above to
using the source are less applicable to the valuations of church property. The heir and his
family had no reason to undervalue churches in their gift (as they may have wished to do in respect of the proceeds from their own lands). Far from wanting to undervalue the importance of their patronage rights, heirs will actively have encouraged the king to take them seriously and to exercise them, since by doing so he confirmed them.

Nor were church valuations habitually lifted from existing valuations, although such information existed. In the thirteenth century a number of papal assessments of ecclesiastical property were made, including the so-called ‘Valuation of Norwich’ of 1254, but most importantly the ‘Taxatio’, made in 1291-2 on the orders of Pope Nicholas IV. This assessment became the definitive basis for both papal and royal taxation of the clergy for the remainder of the medieval period. It is true that a few valuations of churches in East Anglia of the later thirteenth century claimed to be based on the valuation of Norwich. However, there is very little to suggest that, later on, escheators relied on the information in the Taxatio but that they generated fresh data for the purpose of their inquiries. For example comparison of a substantial sample consisting of 87 valuations from inquisitions of the fourteenth and fifteenth centuries with those in the papal assessment of 1291-2 shows that information was not simply lifted from that source.

Another source of information was valuations made in previous ipms on the same estates. In the thirteenth century (when the valuations of ecclesiastical property were in any case more copious than was later on the case), the values do not seem to have been habitually lifted from earlier ones, but were generated afresh each time. By the later fourteenth century, however, the practice of lifting valuations from earlier inquisitions does seem to have become more prevalent. The paper explores possible reasons for the changes in practice (or decline in assiduousness).

Even if later figures tended to be fossilized, the more reliable valuations from the thirteenth and early fourteenth centuries are a most useful source of information about the value of churches and hence to patterns of economic prosperity. They are a guide to the regional distribution of wealth. There are some parts of the country where the value of churches tended generally to be low. Of course, there is also a relationship between the value of individual churches and the size of parishes in a given area, which in turn is related to the economic base and the settlement of communities locally and regionally. The fact that ipms deal primarily with the estates of tenants in chief does not skew the evidence unduly; comparison of the values of churches in the gift of tenants in chief with the values of those of their subtenants – which are, on occasion, also included in ipms – suggests that the social status of lay patrons was not in itself a determinant of the value of the benefices in their gift.
Producer-driven supply chains for the interwar US radio equipment sector: were dealers ‘over-sold’ on marketing?

Marketing new consumer durables to the American public during the early twentieth century involved the coordination of downstream distribution by leading manufacturers. This process has been most thoroughly studied for automobiles, where manufacturer-dealer relations were ‘marked by often bitter conflict’.\(^{588}\) Leading auto producers used their market power over dealers to impose franchise contracts, which could be cancelled with little if any notice and without which continued activity in the sector was often not possible. This in turn assisted them in pressuring firms into both accepting close monitoring and coordination of their activities and in taking on various costs, which they would otherwise have borne directly.

This paper looks at early distribution networks for home radio sets. Leading firms had lower market dominance than in automobiles, reflecting weaker scale economies, in turn associated with the unpredictability of demand and the danger of sudden technical obsolescence. Moreover, the need for frequent after-sales service required very large numbers of outlets, in close proximity to customers. Leading manufacturers thus coordinated distribution via developing links with independent wholesale and retail distributors, who were assigned exclusive dealerships and provided with various incentives to follow the company’s marketing policy.

Yet by the late 1920s dealers increasingly perceived that the level, and mix, of marketing activities advocated by the manufacturers was not optimal from their perspective. Door-to-door canvassing presented a particular grievance; many retailers found that this acted to boost sales, but not profits, while incurring significant managerial problems in monitoring and motivating their salesmen. Furthermore, the small catchment areas of typical radio retailers proved unsuitable for directly employed outside sales forces, whose efficient utilization required a much larger territory than most stores could efficiently service.

We examine the distribution systems developed by leading radio manufacturers (particularly the market leader, RCA); how they coordinated downstream distribution; and the growing divergence between the policies recommended by the manufacturers and retailers’ perceptions of what actually constituted their optimal marketing policy. We then test whether radio retailers were persuaded to take on an inefficiently high level of direct sales and other promotional activities, using store-level returns to a 1928 survey of radio retailers’ operating costs and profits. We find that direct selling was much less profitable than other forms of marketing – increased sales being largely negated by higher costs. However, it did act as a barrier to entry for the value chain, by reducing the potential market available to firms that did not engage in this activity. Indeed dealers’ attempts to reduce retail operating costs during the depression, by switching to the new ‘midget’ radio format – typically produced by firms outside the established industry – fatally undermined the competitive advantage of the specialist radio dealer and resulted in a major contraction in this sector relative to home radio sales.

Radio broadcast technologies and African consumers: the puzzling case of the ‘Saucepan Special’, c.1947-53

During the 1950s, most colonial dependencies of the British Empire experienced the rapid take up of radio broadcast technologies. African colonies were, by contrast, laggards, and low levels of income per se fail to explain this outcome (Bowden, Clayton and Pereira 2012).

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This paper argues that policy and geographic constraints peculiar to British Africa were also of significance.

From the late 1920s to the 1960s, private firms and public authorities made large-scale investments in the communication and energy infrastructures of the British Empire. For strategic and social reasons, broadcasting was given priority, and some British colonial dependencies in Africa made early investments in this mode of mass communication. The administration in Northern Rhodesia was a pioneer. During the 1940s and 1950s the state-run Central African Broadcasting Station based in Lusaka entertained and educated Africans living in modern day Malawi, Zambia and Zimbabwe. This station, which broadcast in the main regional vernaculars, formed part of a state propaganda apparatus shoring up support for colonial rule during a period of rapid social change; hundreds of thousands of Africans were taking up paid work in mining, small-scale industries and on commercial farms, and many were espousing radical ideas. Bureaucrats in central Africa and London perceived radio broadcasting therefore as a way of bridging social divides between the literate and illiterate, as a means of providing the masses with useful knowledge, and as a tool for defusing political tensions.

The inflection of demand curves for radio receiving sets typically requires small-scale product and process innovations to complement large-scale investments in energy and communication infrastructures. And, in the 1940s and 1950s, the British metropolitan state and some colonial administrations sought to facilitate such supply-side shifts by collaborating with the radio manufacturers based in Britain. These interventions, it is argued, reduced information costs for British radio manufacturers but their effects were bounded. An attempt to ‘pick a winner’ – the central problem addressed in this paper – had mixed results. The Northern Rhodesian colonial administration provided Ever Ready with time-limited subsidies for a cheap, battery-powered ‘tropicalized’ set, the ‘Saucepan Special’. Although colonial and metropolitan sources are fragmentary and subject to strong survival bias they show that, even before the mass uptake of transistor radios from the late 1950s, this firm did not secure first mover advantages in colonial markets; and British firms failed to dominate central African markets for radio receiving sets. As such the paper debunks a persistent myth in African media history – that the iconic ‘Saucepan Special’ revolutionized broadcasting in Africa. It also argues that there is an alternative lesson to be learnt from state interventions to promote the uptake of radio broadcasting in the Empire: that it paid economically, socially and environmentally to subsidize consumption by communities rather than by households.

References

Michael French (University of Glasgow)
‘Slowly becoming sales promotion men’: negotiating the career of the sales representative in Britain, 1930s-60s

Among the expanding literatures on selling and marketing in the past twenty years, greater attention has been paid to the careers, commercial functions and attitudes of commercial travellers or sales representatives in particularly in Britain, the United States and Europe (Friedman; Spears; Strasser; Church; Business History Review, special issue 2008) . It was an expanding, diverse and often highly insecure profession from the 1850s to the 1920s which contributed to the growth of new marketing practices as well as providing a stock character in popular culture (French and Popp). This paper examines the attitudes and responses of salesmen in Britain, particularly in the confectionery and drapery trades, to developments in marketing practices, trading conditions and their status between 1930 and the 1960s. There were continuities in certain aspects of their insecurity and in the uneasy mix of innovation and conservatism that characterized the ‘modernization’ of marketing in Britain. More broadly,
the changing business environment rewarded some salesmen and penalized others and the resulting pressures were reflecting in the efforts of professional associations to defend the status of salesmen. A recurring concern was that salesmen were being transformed into ‘mere order takers’ or ‘sales promotion men’ serving major advertising campaigns rather than being recognized as key sources of commercial knowledge with the entrepreneurial skills required to clinch sales. In practice the force, and rewards, of changes in marketing were experienced differently depending on the sector, firm and territory served by each salesman. This paper uses material from trade journals, business records, and archives of commercial travellers’ local and national associations to examine how different groups negotiated the challenges to their sense of personal and occupational identity.

**Keywords**: marketing; sales careers; professional identity.

David Churchill (Institute of Historical Research/Birkbeck College, University of London)

*Product design and public competitions in the lock and safe industry of Victorian Britain*

This paper presents initial findings from research on the nineteenth-century lock and safe industry, based on records from the Chubb business archive. It explores certain factors which informed changes in product design in nineteenth-century industry, focusing in particular on public lock-picking and safe-breaking contests as a structured system of inter-firm competition. It further discusses the implications of this regime of competition for the product lifecycle and public understandings of risk and security, as well as its uses as a marketing tool.

The nineteenth century was a period of great innovation in the design and manufacture of security commodities, yet these developments have attracted almost no scholarly attention thus far. This period witnessed the rise of a collection of leading, brand-name lock and safe firms, which marketed their products nationwide. Each sought to establish the pre-eminence of its own products over those of its competitors through a variety of strategies, and to substantiate before a potentially sceptical public the grand claims made about their products in marketing materials and other public pronouncements. In this regard, lock-picking and safe-breaking competitions were crucial: these events allowed individual companies to assert their superiority over their rivals, before the scrutiny – direct or mediated – of the general public.

After explaining the basic structure and format of public competitions, this paper will analyse the substance of these challenges. Over the course of the century, the public were successively preoccupied with various criminal risks; manufacturers were thus eager to assure potential customers that their latest products guaranteed unparalleled protection against the latest hazard. Those methods of felonious access which featured prominently in contemporary comment included the use of lock-picks, drills, wedge-tools and explosive charges. Lock and safe contests evolved to simulate these criminal tactics, and hence to test the latest products against risks of contemporary concern. In this way, competitions allowed rival manufacturers to demonstrate the relative merits of their products, and specifically the extent to which they provided protection against the most sophisticated criminal techniques of the day, with locksmiths acting on these occasions as proxy-thieves.

After discussing the nature of lock and safe contests, this paper relates the evolving perception of risk and the content of competitions to innovation in the design of locks and safes. This section deploys patent records, design drawings and the reports of newspapers and specialist technical journals. The analysis of such sources links the appearance of new products – and the various modifications applied to old designs – to the course of public contests. As a rule, such contests exerted a more direct influence on product innovation in this sector than actual criminal breakings. Indeed, leading manufacturers felt disposed to boast not only that lock and safe contests were ‘experiments’ of considerable scientific merit, but that such events were embedded in the noble struggle, waged collectively by locksmiths and safe-makers, against the prodigious and advancing talents of the ‘modern’ burglar. In due course, enthusiasts would celebrate the work of entrepreneurs in this ‘arms race’ against the criminal
class, while marginalizing the intense and often bitter commercial rivalries which underpinned it.

This paper offers insights into a collection of subjects in business history. Firstly, it provides a case-study of product-based competition within Victorian manufacturing industry. Through this particular example, it further demonstrates how connections can be drawn between product design and marketing exercises. Secondly, it casts light on the significance of exhibition and spectacle in the marketing of unfamiliar and, in some senses, fantastical products. However, this raises further questions about how such public displays were communicated to a nation of readers, and hence the role of the press in mediating and extending the publicity of these events in an authoritative fashion. Lastly, it draws attention to the problematic relationship between consumer sentiments and marketing strategies, and poses troubling questions about the extent to which public anxieties concerning particular modes of violating locks and safes were the by-product of competitions between locksmiths, rather than of the tactics deployed by thieves. This raises further issues concerning the formation of the product lifecycle in this sector, and particularly how obsolescence was determined. Did the sophisticated techniques deployed by locksmiths at contests undermine products which were still fit to meet the ‘real world’ risks presented by serious criminals? Hence, this paper engages critically with the role of private enterprise in the construction of public sentiments, and invites a fuller consideration of the historical role of simulation, of various kinds, in marketing and the product development process.
IV/H Institutions and Education

Sascha Becker (University of Warwick), Markus Nagler (University College London) & Ludger Woessman (University of Munich and ifo)

Education promoted secularization

From grand social scholars to modern psychological experimentalists, scientists have tried to understand the determinants of religious involvement. But little hard evidence is available to explain the decade-long decline of church attendance around the turn of the twentieth century in Europe, when secularization was a broad societal phenomenon. Our evidence indicates that education was a factor in this decline. We suggest that the positive correlation between education and church attendance in existing cross-sectional studies may be driven by omitted variables. In contrast, our unique panel dataset allows us to exploit differential longitudinal variation within German cities over the period 1890 to 1930. We find that Protestant church attendance declined more rapidly in cities with expanding advanced-school enrolment.

Patrick Wallis & Chris Minns (London School of Economics)

Human capital before the industrial revolution: institutions and the ‘decline’ of apprenticeship in eighteenth-century England

The decline of apprenticeship in eighteenth-century England is often presented as one of the key changes in the economic and social framework of British society prior to industrialization. Several generations of economic historians have associated declining apprenticeship with the rise of a laissez-faire economy and, ultimately, the industrial revolution. While the decline of apprenticeship is usually presented as an accepted stylized fact in surveys of British economic history, and tied closely to the weakening of guild and labour market controls more generally, it remains a source of debate. Scholars such as Snell affirm decline in this period, while others, such as Humphries, reject it entirely.

This paper provides a new analysis of the development of apprenticeship in eighteenth-century England. It uses an extensive body of quantitative evidence on the scale, price and characteristics of apprenticeship in England derived from the Stamp Tax registers (TNA, IR1) to engage directly with the question of whether decline occurred nationally between 1710 and 1800. Our sources provide compelling new evidence against decline, particularly in the manufacturing side of the apprenticeship market. Apprenticeship remained a ubiquitous source of training for middling sort youths across the eighteenth century, and was experienced by perhaps half of all entrants into manufacturing and trade occupations. There are indications that apprenticeship was becoming less important in some tertiary sector occupations, which we interpret as a narrowing in its usage.

However, we do find clear evidence of decline in corporate, guild apprenticeship, using an extensive body of evidence for London and other major cities across England. The decline in guild apprenticeship should be distinguished from apprenticeship training more generally, and is associated with shifts in the social composition, financing and political status of urban freemen in the eighteenth century. This finding implies that the attractions of prospective guild membership may have fallen, or certainly evolved, but the broader benefits to apprenticeship-based human capital formation held up well over time.

Dan Bogart (UC Irvine)

Governance after the Glorious Revolution: evidence on the enforcement of property rights in Britain’s transport sector, 1690-1750

Britain’s economic rise in the eighteenth century is often linked with political developments in the seventeenth century giving merchants and pro-development interests greater power. According to this view property rights in land and commercial enterprises were well enforced and barriers to entry imposed by landed interests and rival firms were minimal. Such arguments remain controversial because there have been few studies directly examining
property rights and barrier to entry. This paper takes up this task in the context of Britain’s transport sector just after the Glorious Revolution when trusts and companies were increasingly granted rights to undertake infrastructure projects. The rights were created by acts of Parliament and were subject to renegotiation in Parliament.

The main aim of the paper is to identify whether political party connections imparted a bias on barriers to entry and the enforcement of rights in the transport sector. The theoretical premise is that securing the right to enter a market or protecting one’s property from predation is similar to a ‘contest.’ Entrants or property owners must exert effort in convincing Parliament to rule in their favour against vested interests. The lobbying efforts firstly depend on the economic gains and losses to each side if entry or production occurs and secondly on Parliament’s bias to vested interests. We theorize that the bias operates through two opposing factors: (1) the level of general governance promoting free entry and impartial enforcement of property rights and (2) political connections which serve to enhance the interests of favoured groups. If political connections dominate then the enforcement of property rights and entry will largely depend on whether vested interests have linkages to the ruling coalition. In the wake of the Glorious Revolution, the ruling coalition in Britain was defined by political parties, namely the Whigs and Tories.

In the empirical analysis several outcomes are analysed including whether a turnpike trust or river navigation company is established near a major city and whether the regulated tolls were increased, preserved, or decreased upon renegotiation. The outcomes are coded from a collection of all bills and acts of Parliament spanning 1690 to 1750. The acts show that trusts and navigation companies were established in many important cities but often after several decades or after several earlier proposals failed. Also in around 10 per cent of renegotiations trusts had their regulated tolls decreased, while 40 per cent had their tolls increased. To explain these outcomes, cities and infrastructure authorities are matched with economic, geographic, and political characteristics, most notably connections to the majority party in the Commons. Statistical analysis shows that, conditional on economic and geographic characteristics, greater connections to the majority party affected the probability of entry and whether the regulated tolls were decreased. The broader finding is that even after the Glorious Revolution the enforcement of property rights and entry depended on political connections. General governance had not yet taken hold in Britain.

Giovanni Favero (Università Ca’ Foscari Venezia)

From bunches of privileges to bunches of contracts: large firms at the fall of the Venetian Republic

The paper proposes an empirical enquiry into the transition experienced by some large firms in the passage from pre-modern to modern times in the context of the fall of the ancient regime in the Venetian State.

It starts from the assumption that the definition of the firm as a bunch of contracts (usually with reference to Coase 1937) applies to a specifically modern (and Western) context. Taking into consideration the different institutional constraints at work in pre-modern states, it could in fact be argued that most economic enterprises, and especially the largest ones, may be interpreted more usefully as a bunch of privileges (already in Ekelund and Tollison 1980, but see a more recent discussion at: http://www.h-net.org/announce/show.cgi?ID=179510).

If this hypothesis is taken to heart, implying that these two definitions were somehow working, the transition from the first to the second in terms of the behaviour of entrepreneurs and of the organization of the firms becomes particularly interesting. Was it the technological change brought about by the industrial revolution that in last analysis modified the rules of the business game? Or was this change paralleled by independent institutional transformations that exerted their influence even when and where the industrial revolution was far ahead?
If the question is put in this perspective, the Republic of Venice is indeed a perfect test case, being almost perfectly immune from the cluster of innovations typically related to the first industrial revolution, but at the same time having experienced one of the most dramatic institutional collapses after the Napoleonic conquest in 1797 and during the subsequent war years, preceded by a tentative reform of the Republic’s mercantilist economic policy culminating in 1794 with the abolition of all industrial and commercial privileges.

Some previous studies (Favero 2006, 2011) on specific industries are used here to develop a clear framework of the peculiar effects the economics of privileges exerted on property rights and entrepreneurial strategies in the Republic of Venice. The present research extends the scope of that enquiry ahead in time and to the whole Venetian economy, focusing on a panel of large private firms operating in the territory of the Republic in different industries. The cases include the Remondini printing house of Bassano, established in 1725 (Infelise 1990); the cotton mills established by Francesco Lisciuta in 1745 in Venice and by Jacopo Linussio in Tolmezzo in 1717 (Ganzer 1986; Banelli 1980); the ceramic firms established in 1728 in Nove by Pasquale Antonibon (Ericani Marini and Stringa 1990) and in 1765 in Venice by Giminiano Cozzi (Stazzi 1981); the woollen mills established in Schio by Niccolò in 1719, by Sebastiano Bologna and Francesco Rossi in 1809, and by the latter with Eleonoro Pasini in 1817 (Fontana 1985; Panciera 1996).

The different conditions of each industry explain only in part the different ability of these companies to adapt to the rapidly changing institutional context and to apply different strategies in order to cope with the abolition of privileges, the end of mercantilist protection and with the turbulent changes on the demand side: the existence of potential competitors in the same area emerges as a discriminating element, pushing the formerly privileged firms to organize differently the production factors using contracts to involve in their activity the bearers of the assets or competences deemed necessary in order to cope with foreign competition or to avoid mutual disruption.

From this standpoint, interestingly, the first emerging implication of this research is that the most resilient firms (or activities) were the ones who were able to perpetuate the barriers to entry they previously enjoyed as privileged companies by other means, establishing either oligopolistic agreements or monopolistic cartels, or ‘natural’ monopolies for local clusters. The paper then focuses on the detailed analysis of the contractual forms used to cope with the changing political and institutional situation and to make possible the socially sustainable introduction and circulation of new technologies, where ‘socially sustainable’ stands for ‘non-disruptive’, provided the impossibility to overcome the social resistances that disruptive innovation raised.

The most important change in the structure of manufacturing activities in the territory of the former Republic of Venice was, on the other hand, the emergence of local clusters, previously hindered by the same presence of privileges granting monopolies, local exclusives or tax exemptions.
Economic History Society Annual Conference

27 – 29 March 2015
University of Wolverhampton (Telford Campus)
Call for Academic Papers

The 2015 annual conference of the Economic History Society will be hosted by the University of Wolverhampton, at its Telford campus, from 27 – 29 March.

The conference programme committee welcomes proposals in all aspects of economic and social history covering a wide range of periods and countries, and particularly welcomes papers of an interdisciplinary nature. Scholars are not expected to present a paper in more than one session and preference may be given to those who did not present in the academic sessions at the previous year’s conference. Those currently studying for, or who have recently completed, a PhD should submit a proposal to the New Researcher session; please contact Maureen Galbraith (ehsocsec@arts.gla.ac.uk) for further information.

The committee invites proposals for individual papers, as well as for entire sessions (3 speakers is optimum and no more than 4 papers will be accepted for any session of 105/120 minutes duration). Please note that the committee reserves the right to determine which papers will be presented in the session if it is accepted. If a session is not accepted, the committee may incorporate one, or more, of the proposed papers into other panels.

Proposals should please be submitted online via the Economic History Society website (www.ehs.org.uk). You will be asked to submit:

For single paper submissions:
- The title of the paper proposed.
- A short abstract of the paper proposed (400-500 words).
- Up to five keywords to help the conference coordinating committee allocate papers between sessions.
- Contact details (name, affiliation and e-mail address; including those of co-authors).
- A brief C.V.

For sessions:
- The title of the proposed session.
- The rationale for the session (up to 100 words).
- The titles of each paper proposed.
- A short abstract for each paper proposed (400-500 words).
- Contact details for each speaker (name, affiliation and e-mail address; including those of co-authors).
- A brief C.V. for each proposed speaker.

For full consideration, proposals must be received by 5 September 2014. Notices of acceptance will be sent to individual paper-givers by mid-November 2014 when they will be asked to provide the following:
- A revised abstract of the paper (750-1,000 words) for inclusion in the conference booklet (by 12 December 2014).
- A brief non-technical summary of the paper (if required) for the ‘Media Briefings’ section of the Society’s website (by 4 February 2015).
- An electronic copy of the full paper, or a web address where the paper is available for consultation (by 4 March 2015).
It is the normal expectation that speakers who submit a proposal for a paper to the conference committee should be able to obtain independent financial support for their travel and conference attendance. However, a very limited support fund exists to assist overseas speakers who are unable to obtain funding from their own institution or from another source. Details of this fund and an application form can be obtained from the Society’s administrative secretary, Maureen Galbraith. The completed application form must be submitted by the September deadline as later applications for support will be considered only in exceptional circumstances.

Any queries should please be directed to Maureen Galbraith.
Economic History Society Annual Conference

27–29 March 2015
University of Wolverhampton (Telford Campus)

Call for New Researcher Papers

The 2015 annual conference of the Economic History Society will be hosted by the University of Wolverhampton, at its Telford campus, from 27 – 29 March.

The annual conference opens with papers presented by new researchers. They offer those completing (or who have recently completed) doctorates the opportunity to present their own work before professional colleagues and to benefit from informed comment. Preference will be given to proposals from speakers who have not participated in a new researcher session at a previous Economic History Society conference.

The session will be held on the afternoon of Friday, 27 March 2015. Those wishing to be considered for inclusion in the programme must submit an application via the Economic History Society website (www.ehs.org.uk) by 5 September 2014. This should provide:

- A firm title.
- A succinct summary of the principal themes and methodology of the paper.
- An outline of probable conclusions.
- A supporting statement from the supervisor must be emailed separately.

The summary should not exceed 500 words and should contain a clear statement of the progress of research and intended date for submission of the thesis. Please note that proposals from researchers at an early stage of their work will not normally be accepted.

Those selected for inclusion in the programme will be asked to submit a paper, 2,250-2,750 words in length, by 12 December 2014 for circulation in the conference booklet. Each new researcher will have the opportunity to speak for 20 minutes, followed by 10 minutes of discussion. Up to two prizes of £500 will be awarded for the best sole-authored papers presented in the new researchers’ session.* The procedure for judging papers will be circulated to all participants.

The Economic History Society is able to offer limited financial support to enable new researchers to attend the conference when this is not available from their institution.

Any queries should please be directed to:
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University of Glasgow
Lilybank House, Bute Gardens
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Scotland, UK
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* New researchers, who have achieved their PhD by 31 December in the year preceding the conference, will not be eligible for the New Researcher Prize.