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Evidence from the Italian case (1890-1973)

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Economic History Society
2007 Annual Conference
Peter Chalk Centre
University of Exeter
Exeter, 30 March-1 April 2007

(first draft, please do not quote without permission)

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1. Introduction

During the last decade, a number of studies on the procyclicality of financial and banking systems were published in order to explain the nature, the reason, and the extent of credit fluctuations[1]. According to wide empirical evidence, we observe at least two major stylised facts about the relationship between finance and business cycles, even with regard to the most recent credit cycles and financial crises. The first one is that lending sharply increases in quantity when business cycles experience expansionary phases, whilst an often dramatic downturn in it occurs whenever the cycle slows down. In both circumstances, bank loans are generally growing and falling more than proportionally to fluctuations of real variables. Historically, there is strong evidence of the kind of amplifications which depend on financial «euphoria» or «credit crunch» (Kindleberger, 1978). The second stylised fact is that loans' performance follows a peculiar pattern over business cycles: during upward phases, losses and charge-offs are substantially low, while they start to increase significantly at the end of the expansionary cycle, hugely augmenting during crises (Berger and Udell, 2002). As Alan Greenspan observed, «the worst loans are made at the top of the business cycle»[2]. Credit cycles, therefore, would tend to amplify economic cycles, both because banks adopt risky behaviours and because they tend to relax effective screening on borrowers' credit-worthiness. Given such a scenario and taking into account the information theory of financial intermediaries, we have to reckon that strong and ample credit fluctuations may have a negative effect on the effectiveness of the financial structure in screening borrowers (Greenwood and Jovanovic, 1990).

[1] Many recent studies deal with procyclical behaviours of banking activities according to different perspectives. Among them we could mention: Rajan, 1994; Bikker and Hu, 2002; Goodhart, Hofmann and Segoviano, 2004.
[2] Quoted by Berger and Udell, 2002, p. 1.

Thus, such an issue, often developed as a consequence of Basel 2 agreements on risk ratios, is strongly related both with credit crunch phenomena and financial intermediaries stability in its relations with business cycles (Bliss and Kaufman, 2003). Besides, many studies have emphasised the relationship between business cycles and financial stability in order to offer models and analyses for central bankers and financial regulators. This kind of approach came to be known as «macro-prudential analysis» and can provide useful models and tools for those who are responsible of financial stability (Kaminsky 1999; Logan, 2000). Given such purposes, analysis is generally carried on medium term periods, while there is an astonishing lack of studies about long run relationships between business cycle fluctuations and the banking sector. That is, currently there are no reliable assessments about macroeconomic relations between business cycles and financial systems while structural changes occur. In particular, even though a long term approach has recently been adopted with a specific attention to technological innovations – following an explicit neo-Schumpeterian approach (Perez, 2002) – it is not presently possible to evaluate how important these relations might be , if any, when structural changes, such as institutional breaks or technological innovations, take place.

Economic literature generally considers banking systems as naturally procyclical, without distinguishing among different patterns of bank specialization (Allen and Gale, 2000). Banking systems would suffer, and to some degree amplify, cyclical variations in credit demand and in borrowers behaviours (Berger and Udell, 2002; Jimenez and Saurina, 2005), while an explicit counter-cyclical hypothesis is less considered by scholars (Bernanke, Gertler and Gilchrist 1998; Eber, 1998). Thus, procyclicality would affect the continuity of capital formation processes, hence having a significant impact on the determination of economic growth rates and timing (Demirguç-Kunt and Levine, 2001).

Historical-economic literature tends to largely confirm such hypotheses referring to specific events and business cases (single financial institutions, banking crises, etc.). Findings at a micro level suggest that banking systems are characterised by various degrees of procyclicality depending on functional specialisation patterns chosen by financial intermediaries or central monetary authorities. In this sense, despecialised banking systems would be subject to cyclical fluctuations and to the worsening of firms' financial position more often than specialised ones, therefore requiring monetary authorities to promptly adopt expansive policies to preserve macroeconomic stability. The German case demonstrates a procyclical behaviour of universal banks, either up to 1914 (Fohlin, 1998 and 2000) and in the interwar period. In the Italian case such a macroeconomic constraint would explain great banks bail-outs in the early 1930s and the banking system reform culminated in the Bank Act of 1936 (Toniolo, 1978 and 1993; de Cecco, 1997).

According to historiography, Italian universal banks showed a strong procyclical behaviour in the 1890s-1930s period (Confalonieri, 1974-76, 1982 and 1994). The early 1930s crisis is taken as a major example of that: when economy slowed down while monetary restriction policies were being adopted, universal banks reduced their loans to firms (in which they often held shareholding quotas or even had gained a substantial control), thus causing negative effects on capital accumulation (Ferri, 1994). The mid-1930s banking system reform would have reduced procyclicality, thanks to the introduction of specialisation in credit supply (Cotula, 1999).

The paper aims to verify procyclicality of the Italian banking system in the long run, from 1890 to 1973, adopting a quantitative approach. Such a long term quantitative analysis – about 80 years – is the first attempt to verify the hypothesis of banking system procyclicality for a European late comer country. The focus of this paper is on testing some hypotheses about cyclical behaviour of the banking system in relation to real macro-economic variables, such as gross domestic product and aggregate investments, while in a next work we will concentrate in particular on monetary and financial variables[3]. Moreover, this approach will permit to check whether universal banks are more sensitive to business cycles fluctuations than other intermediaries, both in the sense that they strongly amplify business cycle effects (if monetary authorities fail to provide stabilization policies) and that they react more than other intermediaries to stagnation and

[3] Besides, we are currently collecting financial and macroeconomic data about other economies, both industrialised and backward ones, in order to verify our hypotheses with a broader and more representative sample of countries.

recession phases, as maintained by Renato De Mattia, who emphasizes the counter-cyclical behaviour of savings institutions as compared to more procyclical universal banks (De Mattia, 1990). Eventually, we try to understand whether the banking system had been more procyclical before 1936 than afterwards, and if banks behaviour anticipated or followed variations in the most relevant macroeconomic indicators considered. That may shed light on whether, and to which extent, the new 1936 Banking Act contributed to a consistent reduction of bank procyclicality's effects on Italian economic growth capabilities[4].

The paper is organised as follows: section 2 briefly deals with sources and methodologies; section 3 presents and discusses empirical evidences on the Italian credit cycles in the long run and suggests possible explanations; in section 4 macro variables and banks' ratio are estimated using vector autoregression, to check their correlations and suggestions emerging by evidence analysed in the previous section; finally, section 5 offers provisional concluding remarks.

2. Methodologies and sources

The analysis considers both the banking system as a whole and in its main components (banks, savings banks, and cooperative banks). We collected balance sheets figures from two different databases realised by the Bank of Italy, reclassified to get homogeneous data (Cotula et alii, 1996; Banca d'Italia, 1937-1975). As for macroeconomic variables (gross domestic product, gross domestic product per capita, and investments as a whole and by main sectors) we used historical estimates and series provided by Rossi, Sorgato, Toniolo (1993). The long run perspective, however, could produce reliability issues as far as the choice of deflators is concerned. Therefore, whenever possible, we opted for a ratios analysis not to incur – partially, at least – in distortion effects connected with price's dynamics on the long period (when necessary, however, we deflated our series with a 1961 deflator). As it is well known, a serious problem concerning

[4] Even though our use of banking system's indicators and macroeconomic variables may seem similar to that adopted by Neuburger and Stokes (1974), our purpose here is not to evaluate whether and in which measure Italian universal banks fostered industrialisation, but to verify possible cyclical regularities of those variables. For some critical remarks on Neuburger and Stokes, 1974 see Tilly, 1992.

sources is the quality and extent of information they are able to offer. As a matter of fact, our balance sheets' time series data are lacking relevant information, such as interest rates for different borrowers and loans losses or charge-offs.

Usually, the procyclical behaviour of banking systems is measured through an indicator of business performance, as given by profit rates (e.g. Bikker and Hu, 2002 provide a cross-section analysis on 26 countries in the last 20 years). Richer and more recent data panels permit sophisticated analyses, both on banking activities and firms' performance. Unfortunately available data do not allow to employ methodologies such as, for instance, the «institutional memory hypothesis» (Berger and Udell, 2002) and neither to follow relatively simple and commonly used approaches based on loan loss provisions and bad debts data (e.g. Quagliariello, 2006). Indeed, the lacking of information on interest rates applied to different borrowers (by size, sector, technology, ownership, etc.) and on non-performing loans compelled us to employ rougher indicators: i) profitability (or, as we will see, capital net worth), as a proxy of bank screening capability; ii) total assets, as a proxy of credit supply; iii) assets' composition ratios, to better control for credit crunch.

As well known, usual indicators of firms' profitability are ROE (return on equity) and ROA (return on assets). Even if, given the available data in sources, we had to take a modified, not-standard ROE (here ROE is defined as return on equity plus retained earnings), these ratios do not seem sufficiently reliable indicators of real profitability of the banking system, at least in the Italian case. In Appendix A we provide four graphs plotting ROE time series for the system as a whole as well as for its single components (banks, cooperative banks, and savings banks).

An apparent asymptotic trend with a strikingly strong upward in the last years suggests that this kind of ratios is not that useful to measure true profitability of banks. We can observe quite similar dynamics for the other main profitability ratio (ROA). This is very consistent with most current assumptions on credit cycles as presented above: banks' balance sheets tend to consistently undervalue their profits (thus, their dividends) whenever the business cycle is boosting real and financial activities and to understate their loans losses in downturns, unless compelled by very difficult situations, such as the threat of failure. Besides, usual indicators of profitability, such as ROE and ROA, tend to be quite dependent on bank's management and executives' choices, sometimes maintained even in sharp contrast with shareholders. That is why we decided to use a sort of capital adequacy ratio as a proxy of real medium term profitability of banks; we defined it as the ratio of the sum of equity, retained earnings and all kinds of reserves to total assets (basically Tier 1 capital plus Tier 2 capital). Such a ratio can be assumed as a good proxy of banks' medium-long term true profitability, since it is considered a reliable tool for prudential monitoring by nowadays central monetary authorities.

On such long time series a number of anomalous observations could cause distortions in results. This is especially true as for some sub-periods (in particular the 1966-1973 one) and traditional profitability ratios are concerned; that is due to high inflation periods and/or the introduction of tighter regulatory rules on banking activity, particularly when these latter concern main risk ratios. Graphs in Appendix A, for instance, show sharp and sudden falls in 1925 and in 1947, when new bank laws or specific credit policies were adopted by central authorities.

As literature points out that significant delays generally occur between credit and business cycles, the analysis is also taking into account temporal lags usually recorded between banks operations and growth or depression phases. Eventually, we used a vector auto-regression model to estimate correlations between banking and macroeconomic variables.

3. Some stylised facts on the Italian banking system: cycles and crisis on the long run

In the long run the Italian banking system structure seems to be characterised by two major dynamics, whilst financial markets were playing a minor role as studies on quantitative series demonstrate (Biscaini Cotula and Ciocca, 1979)[5]. Since its gradual formation in the late Nineteenth century and till the mid-1930s the Italian financial system was bank-oriented and characterised by the major role

[5] Italy's FIR grew from 0.4 to 1.0 between 1881 and 1971. The financial assets issued by banks as a share of the total amount of financial assets declined from 89% in 1913 to 81% in 1951.

exerted by universal banks and issuing banks, among which the Bank of Italy was the largest one. After the 1936 Banking Act the Italian banking system was reorganised according to credit specialisation principles and the Bank of Italy ceased, even formally, to be a private company. While German-style universal banks became commercial banks, about two-third of the banking system fell under control of the State, either via the Treasury, or via the State-owned conglomerate Istituto per la Ricostruzione Industriale (IRI). Nevertheless, the financial structure remained bank-oriented and financial markets were generally weak and ineffective, while long term credit was provided by banklike special institutions, such as Istituto Mobiliare Italiano (IMI) and Mediobanca (Piluso, 1999).

A sort of dualism in terms of size and functions appears to emerge from this broad framework all over the period. On the one hand, the three main German-style mixed banks (Banca Commerciale Italiana, Credito Italiano, and Banco di Roma) financed the largest industrial firms operating in the most advanced technological sectors such as steel, electricity and automotive, thus probably supporting the industrialisation process (Gerschenkron, 1962; Cohen, 1967). On the other one, a great number of small or medium sized local banks (cooperative and savings banks) financed and supported small manufacturing firms (Conti, 1999). Besides, up to 1926, when the government assigned to the Bank of Italy the monopoly of issuing, this institute played also a relevant role *vis-à-vis* manufacturing firms (Bonelli, 1991). Moreover a geographical dualism was also relevant over the whole period (A'Hearn, 2005).

What do we know about credit cycles in Italy? We have a number of examples of credit crunch and banking crises. According to the literature, we can recognise some major financial crises: after the 1873 crack, a dramatic crisis occurred in the early 1890s when Banca Romana, a minor issuing bank, failed and the two largest Italian banks, Credito Mobiliare and Banca Generale, collapsed (Confalonieri, 1975); in 1907 a financial crisis harshly involved Società Bancaria Italiana, a medium sized mixed bank based in Milan, threatening the stability of the system (Bonelli, 1971); after the first world war, in 1921, the largest mixed banks were in a turmoil and Banca Italiana di Sconto failed, while Banco di Roma was rescued by the Bank of Italy (Falchero, 1990); in 1927-1928, even as a consequence of a restrictive monetary policy, a high number of cooperative banks failed; eventually, in the early 1930s, largest mixed banks were in a situation of relatively liquidity, that convinced the authorities to intervene with a massive rescue operation (Toniolo, 1993 and 1995; Confalonieri, 1994).

As a consequence of the lack of data on loan losses, we can try to use some proxies to assess in which measure business and credit cycles are related to each other. We chose the growth rate of real total assets as an indicator of the growth rate of activities of the banking system, i.e. as an indicator of overall credit supply. Other two ratios can be indicators of specific credit supply, that's to say of credit to firms: i) loans on total assets; ii) loans on current accounts, deposits and other liabilities. We found the first ratio appropriate to evaluate credit crunch phenomena. Now, let us have a look at Graph 1, plotting real GDP growth and real total asset growth. Even at a first glance, the graph suggests the existence, at least in part, of relevant relations between business and credit cycles.

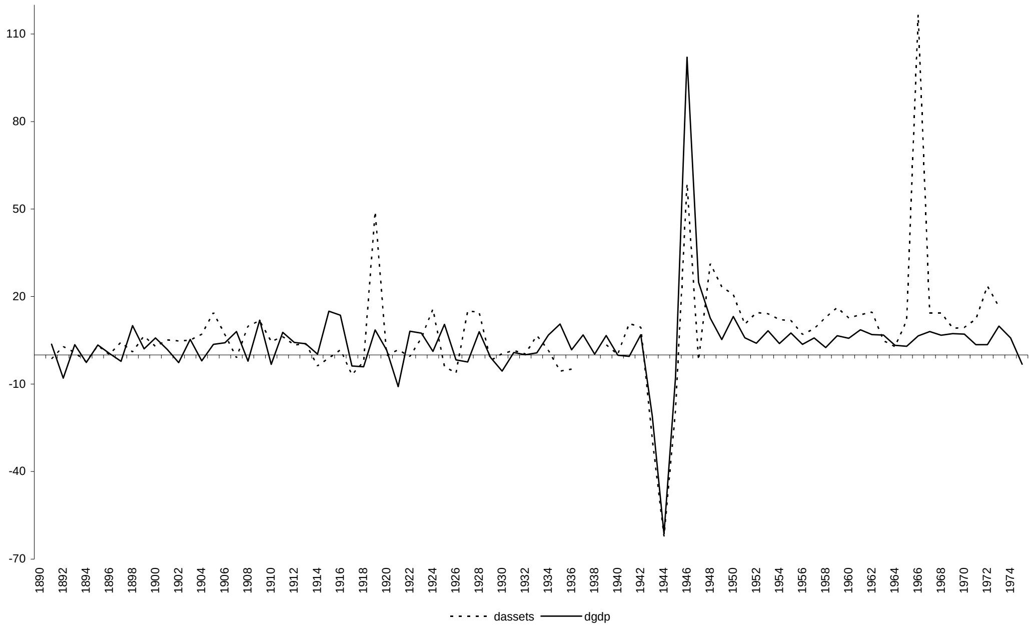
We can observe both some regularities and some anomalies. Above all, some anomalies clearly appear in relation to the two major opposite peaks reached both by real gross domestic product growth and real total assets growth[6]. They are related to the exogenous shocks of the second world war and to the subsequent recovery and high inflation period. The other most relevant peaks concern the total assets series (1905, 1919, 1948, 1966). We observe three main peaks reached by real total assets growth rate: two after each world war – due to a high inflation period – and one in the mid-1960s. The main feature of this series is the apparent change in its dynamics occurred around 1934-1936, consistent with the hypothesis of an institutional break, namely the new Banking Act of 1936 and its consequences[7]. Before 1936, credit cycles does not seem to have a homogeneous behaviour. Up to 1907 we observe a countercyclical movement of the series with two exceptions at the beginning of the period (1894 to 1896). At the turn of the century the banking cycle even precedes and sustains the economic cycle, with a

[6] The series of the real GDP per capita growth rate and GDP growth rate have more or less the same dynamics, with few and minor differences.

[7] Even if we lack data for 1937 and 1938, it seems clear that, after the new law, a smoothing process is backing this series. Probably this process is due to the new Banking Act and to a stronger control by monetary authorities. We will come on that point later.

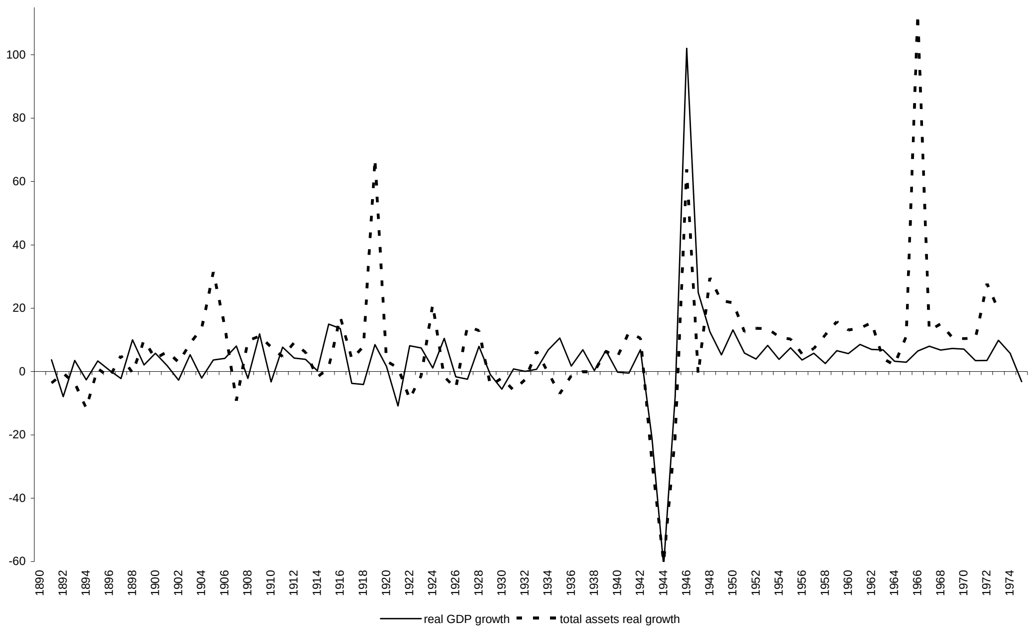
positive peak in 1905 related to the stock exchange boom, followed by a dramatic slump between 1906 and 1907, pre-empting the stock exchange crash of this latter year. Afterwards, until 1920, the banking system seems to be procyclical, even if with some slight delay, sometimes following the economic cycle and some others anticipating it. In the interwar period, raw data do not draw a clear cut picture. Asynchronous movements must be understood in their real meaning, although it seems sufficiently clear that curves fluctuate in opposite directions. At a first glance it appears that banking cycle follows the economic cycle with a certain lag. But taking in account the fact that the 1920s were a period of expansionary monetary policies and relative high inflation, it could be argued that the banking cycle was able to anticipate and move the real one, except after 1933-1934. As we will see in the next paragraph our estimates seem to be consistent with this hypothesis. After 1933-1934 universal banks bail-out and banking reorganisation, promoted and realised by Iri on behalf of the government, banking cycle appears to become, so to speak, a-cyclical until the war's eve. Most relevant effects of the new Banking Act were experienced since the post-war recovery and during the so-called «economic miracle» of the 1950s and 1960s. In this decades the banking system was predominantly State-owned[8] (Ferri, 1993), Donato Menichella and Guido Carli, governors of Bank of Italy exerted, a strict control over banks activities, even through discretionary powers (Gigliobianco, Piluso and Toniolo, 1999), and foster a Keynesian-oriented economic policy (Spinelli and Fratianni, 1996). Thus, it could be argued that a better macroeconomic performance of the country is combined with a smoothing effect of the credit cycle (see graph 1).

[8] After the banking bail-outs major Italian banks became State-owned, directly by the Treasury or indirectly by the State-owned holding Iri, whilst savings banks (casse di risparmio) were strictly controlled by local authorities.



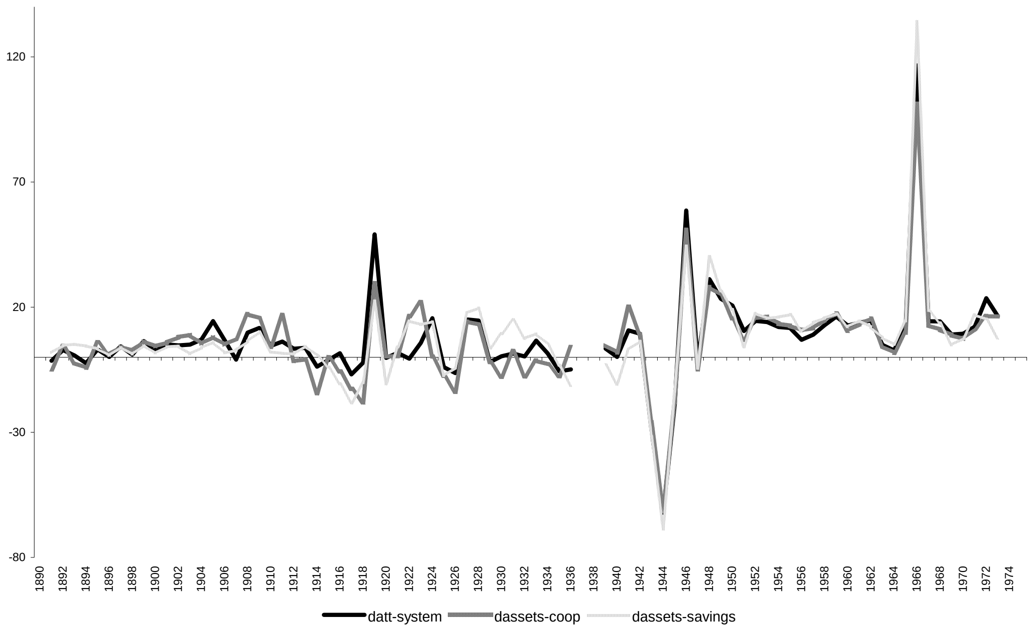
Graph 1 – Real GDP growth rate and banking system total assets real growth rate (1890-1975).

Graph 2 plots real GDP growth with real total assets growth of (commercial) banks, which included, until 1936, universal banks, whose share was about 20% of the system's total assets, and excludes savings and cooperative banks. Here main trends are generally similar to those observed for the banking system as a whole, but they appear to have more marked peaks. Even after the second world war, when the banking system was moving along more constant dynamics, banks real total assets evolution seems to follow a slightly higher variation rate. Of course, sharper cyclical movements are observable for the period prior to 1936. During the early 1900s, for instance, banks total assets experienced an astonishingly brusque boom followed, from 1906-1907, by a sudden fall, quite tougher than that suffered by the whole banking system. This was probably an effect of the participation of mixed banks, as insiders, to the financial markets boom during the precedent years. This awkward fall in the real total assets growth rate is consistent with what we know at micro level, i.e. the failure of Società Bancaria Italiana. After the first world war banks total assets increase reached the highest peak before the crisis of the subsequent years. In particular, as the Bank of Italy opted for a robust revaluation of the lira with «quota novanta», a strong decrease in the growth rate of total assets occurred between 1927 and 1933, before the Great Depression and in correspondence with the deflationary effects of the monetary policy pursued by the Bank of Italy. A feeble and only temporary resilience was not sufficient to couple the credit cycle to the real economic one till the late 1930s. After the second world war and the recovery period, the banking regulation seems to have had a significant impact on banks, as noted above about the entire system. Sharp falls in the growth rate of total assets disappeared, the only exception being 1964, when a sudden increase in interest rates was decided by Guido Carli, governor of Bank of Italy. The smoothing trend of banking cyclical movements during the 1950s and 1960s seems to confirm the fear expressed with a harsh remark by Giuseppe Toeplitz – the mighty managing director of Banca Commerciale Italiana – during the early 1930s crisis, that the government wanted to transform Italian universal banks in «savings banks» (Confalonieri, 1994) (see graph 2).



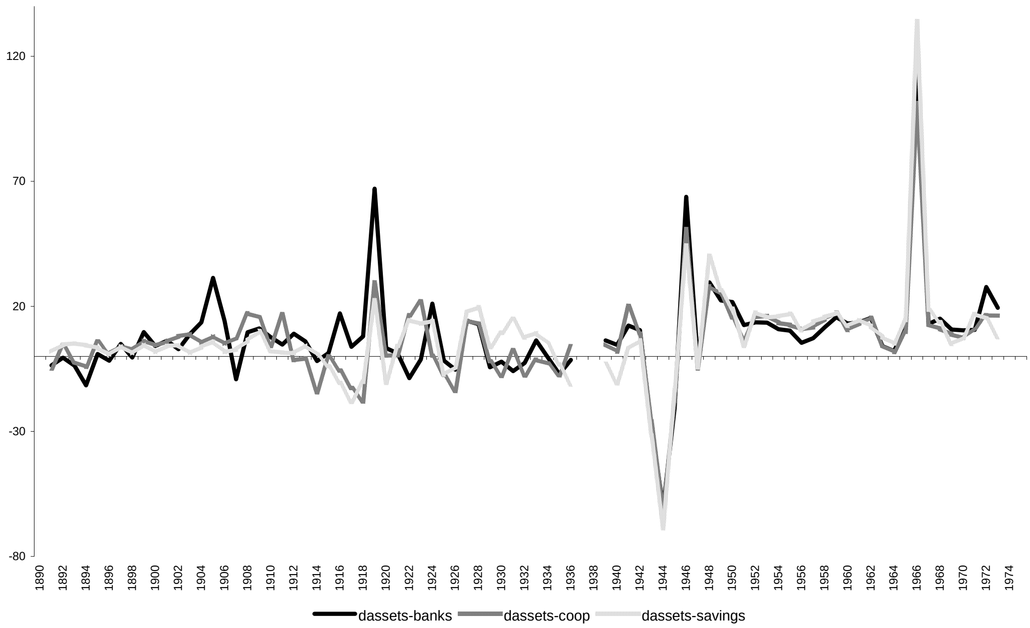
Graph 2 – Real GDP growth rate and banks total assets real growth rate (1890-1975).

A direct comparison of total assets growth rate of the Italian banking system and its main components can help to verify and specify Toeplitz' concerns (Graph 3). Actually, before the Bank Act of 1936 we can note that cooperative banks and savings banks were moving along their specific cyclical paths, with some apparent divergence from the general one. Until the mid-1930s, or up to the end of the second world war, the grey line representing the cooperative banks suggests that in several cycles this group experienced a more robust growth than the whole banking system, here shown by the solid line, while the dotted line (for savings banks) underwent minor fluctuations around the cycles before 1914 and tended to maintain high values in the 1920s. On the contrary, cooperative banks went below the banking system line during the 1920s, because of tough effects of their difficulties and, eventually, their crisis at the end of the decade. In 1927-1928 a number of cooperative catholic banks, deeply involved in long term loans, failed. In the 1930s this group of small and medium sized local banks, probably acting as «pocket mixed banks», fluctuated beneath the values reached by the system as a whole, while savings banks had the best performance. Afterwards, a more homogeneous cycle seems to characterise both the system, as observed, and individual components.



Graph 3 – Growth rate of total assets of the banking system as a whole compared with the same variable of cooperative banks and savings banks (1890-1975).

As most cooperative banks acted as «pocket mixed banks» their real total assets growth rate often fluctuated in a similar way, and on similar values, as banks. After the second world war curves appear to be flatter as a result of a smoothing process and of the structural change occurred in the mid-1930s, due to the institutional break represented by the Bank Act of 1936 (see graph 4).



Graph 4 – Growth rate of total assets of banks, cooperative banks and savings banks (1890-1975).

An institutional break could be recognised also in Graph 5, which plots the ratio of total loans to total assets on the left axis and the ratios of investments on GDP and industrial investments (plants and machinery) on GDP on the right axis. with the exception of a strong upward trend of the former ratio in the late 1890s and early 1900s, we observe a long run almost stable trend from 1907 to the late 1930s, even if with some interesting peaks before and after the first world war. It is worthy to note that the two major opposite peaks of the investments on GDP ratio, reached during the 1920s, are not followed by the banking variable. This latter seems to be more stable than the others and similar movements, if any, are related to the ratio of industrial investments on GDP (see graph 5).

Graph 5 – Series of ratios of loans on total assets of the banking system, investments on GDP, and investments in plants and machinery (industrial) on GDP (1890-1975).

Again, after the structural change occurred in the mid-1930s, these ratios appear to be less characterised by strong fluctuations and peaks, even considering the sharp and sudden the fall of 1964, when the Bank of Italy tightened the credit supply through the lever of the interest rate.

4. A procyclical banking system over the whole century?

To check the hypotheses and suggestions resulting from the analysis carried out in the previous section we also decided to apply vector auto-regression (VAR) analysis to a set of relevant variables. VAR methodology, in fact, is a flexible and non-deterministic method which permit to estimate whether a bilateral causality occur among phenomena described by our variables (Sims, 1980): that would give better insights on the kind of relation existing between banking and business cycles. We identified a set of bank specific indicators (relative to the entire system) and another one for macroeconomic variables. Business cycle indicators include the real GDP annual variation rate (DGDP) – the most direct measure of aggregate economic activity - and the real investments annual variation rate (DINV). As for the latter, we considered both investments as a whole, and their components: industrial investments, constructions and public works. Then we considered some bank specific indicators, first of all ROE and ROA as rough proxies of banks' screening capability in absence of more specific indicators, such as bad loans to total loans ratios[9]. A positive and quite durable impact of such variables on investments and GDP growth would confirm a procyclical behaviour of banks, whereas a negative sign in their parameters would indicate countercyclicality. It has to be noted, anyway, that such indicators could most often be misleading because of their dependence from publicly recorded profits, which many studies at firm level have confirmed to be commonly understated[10], especially before the adoption of more stringent accountancy criteria in the last 20-30 years (Teti, 1999). The practice of profits' understating and of accumulating hidden reserves was not principally connected with fiscal reasons, but rather with signaling policies, aimed to smooth variations in performance which could mine the public's trust in bank's soundness (Rassegna dell'Abi, 1947, p. 71). At this regard, graphs A.1 to A.4 seem to confirm that such a behaviour was generally spread among Italian banks, both taking into account the whole banking system, and each of its three components (banks, savings banks, cooperative banks). That's why we introduced another measure of profitability: the ratio of Tier 1 plus Tier 2 capital to total assets (PAT), that is, as already said, a possible kind of capital adequacy ratio. This variable is like to be less affected by biases on understated profits, since it comprehend all reserves and retained profits, of all kinds and for all purposes. We then considered the real total assets growth (DATT), which can be thought of as an indicator of the banking cycle. Eventually, the ratio of loans to total assets (IMP) would represent the banking system's «investment cycle». Again, significant and positive estimated coefficients of these two indicators will confirm banks' procyclicality, whereas negative signs in their parameters would suggest a countercyclical behaviour of banks. Some of the considered variables' series being non-stationary, we took

[9] In fact, data on bad loans are not available till very recent years and never appear in our sources.
[10] See for instance Confalonieri 1981, vol. 3, and 1994, on Italian universal banks' balance sheets. One of the most striking examples of this phenomenon is portrayed by Bouvier 1999, p. 164 where he quotes a letter of 1864 by an officier of the Crédit Lyonnais to the bank's managing director, Henri Germain, in which the former explained the differences among the 3 different income statements he is submitting: one for shareholders, another for the board of directors, and the latter and most exhaustive one for the executive committee.

their first differences, which satisfied homoschedasticity conditions: this was the case for ROE, ROA, IMP, PAT.

The econometric analysis is carried out using a four-variables VAR model, with two lags for each variable, of the type:

$$X_t = c + A_1 X_{t-1} + A_2 X_{t-2} + e_t$$

Variables considered are the real GDP annual growth (DGDP), the real investments annual growth (DINV), the first difference of the ratio of loans to total assets (IMP1), and, at turn, the real annual total assets growth (DATT), the (first-differenced) ratio of Tier 1 and Tier 2 capital to total assets (PAT1), and the first difference of ROE (ROE1) and ROA (ROA1).

VAR estimates for ROE and ROA gave very poor results, confirming warnings already mentioned in section 2 about these variables' reliability. For all the equations of these estimates, in fact, we cannot reject the null hypotheses that coefficients are jointly equal to zero; moreover, we cannot reject the null hypothesis that each regression's coefficient is individually equal to zero either. Thus we run a VAR on the same model using PAT1, our more reliable proxy for banks' screening capability: results of the estimated equations are given in Table 1. Although the coefficients of three out of four equations are jointly significant at 1% level, profitability turns out to be uncorrelated with the other variables at any lags, being instead positively and quite highly correlated with itself at the first lag, at 10% level of significance. This seems to confirm qualitative evidences and arguments which have pointed out the widespread adoption by banks of window dressing techniques and signaling policies. Moreover, such results question our hypothesis that Tier 1 and Tier 2 capital could be a proxy of banks' screening capability. Anyway, both variables concerning investments (DINV and IMP1) have positive and very significant impact on real GDP growth (eq. 1): DINV is significant only at the second lag, suggesting a delay in the effect of new investments on growth; in the very short period (first lag), then, IMP1 has a relevant impact on the real cycle, being in its turn positively slightly influenced by the immediately previous investments cycle (Table 1, eq. 4, and Table 2, eq. 4).

Table 2 presents results of the VAR estimate substituting PAT1 with DATT, our proxy for the overall banking cycle. Coefficients of all four equations are jointly significant at 1% level, as well as most coefficients taken individually. R-squared values are quite high especially as for eq. 1 and eq. 3, the two most relevant ones to our study. Eq. 2 confirms our idea that the banking cycle is not depending on the overall GDP growth, while investments show a significant impact on banking (at 1% and 5% respectively); opposite signs of DINV coefficients show that investments are characterised by differed returns, and seem to be coherent with what is maintained by recent historical works, which find a medium to long term lending attitude by Italian banks – through the roll-over of credits – even after the Banking Act of 1936 (De Cecco 1997; Brambilla, 1998; Gigliobianco, Piluso, Toniolo, 1999; Brambilla and Bussière forthcoming). As expected IMP1 has a strong and significant impact on DATT at both lags, although of opposite sign. That seems to underline the relevance of screening and monitoring activities by banks, as pointed out in theoretical literature on credit and financial systems (Fama, 1983; Diamond and Dybvig, 1985; Levine, 1997; Goodhart 1989; Calomiris, 1993). Such an interpretation appears coherent with the positive and significant relation emerging in eq. 4, where IMP1 are depending on their lagged value at the first lag, suggesting that banks' past lending policies, at least in the short term, have a certain persistent impact on their ability to make performing loans in the future.

Let us take into consideration eq. 1. Here, again, the investments cycle has a significant impact on the dependent variable, with opposite signs, that can be interpreted – as in the case of the banking cycle – as an indication of differed returns of investments. Banking variables are both significant at both lags and show alternate signs (lag 1 positive, lag 2 negative), probably due to a minor reverting, pointing out a misalignment between the two cycles. Although it is difficult to say whether such misalignment can be interpreted as a confirmation of Schumpeter's theory on business cycles, according to whom banks *anticipate* and foster this latter, nevertheless it seems that coefficients' values for DATT and IMP1 at first lag confirm a strong direct effect of banking on economic growth. These is especially evident as far as banks' loans are concerned.

The same can be seen for the investments cycle in eq. 3: here, too, real total assets growth coefficients and loans coefficients are highly significant and show the same alternate signs as in eq. 1. Moreover, both variables' coefficients are higher than in eq. 1 – roughly the double in the case of DATT, and up to threefold for IMP1 – suggesting a stronger procyclical behaviour of banks towards investments, thus strengthening the «Schumpeterian» interpretation.

Estimating this same model substituting DINV with each one of the three variables rappresenting its components – namely industrial investments (DIND), constructions (DHOUSES) and public works (DPW) – does not really change the picture (see Tables 3 to 5). As expected, coefficients' signs and significance are the same for investments' components as well as for the aggregate value, with a couple of minor exceptions. A certain interest, anyway, has the relationship of each of the investments variables with banks' loans (IMP1) in eq. 4 of all three estimates: if the overall rate of investments showed a positive relation with this variable only at the first lag (the second lag coefficient being non significant, see Table 2, eq. 4), industrial investments, on the contrary, are positively linked to IMP1 at both lags, while constructions show the same behaviour of DINV and public works seem to be totally uncorrelated with them. Such a result may, on one hand, be interpreted as coherent with interpretations of the overall structure of Italian banking system that stressed its «Gerschenkronian» nature; on the other hand, anyway, it has to be noted how the present dataset do not include, yet, banklike institutions, which – especially from the 1930s onwards – were charged with medium to long term financing, in particular to public utilities and public works (De Cecco and Asso, 1994; Piluso, 1999).

5. Conclusions

This first attempt to approach the issue of banks' procyclicality in the long run allows to draw only some preliminary and tentative conclusions, that anyway do not seem trivial. First of all, the institutional break represented by the Banking Act of 1936 and its consequences seems to have caused a structural change in the banking series, as seen in graphs A.1 to A.4, a change whose nature and impact deserves additional analysis. In contrast with recent literature on banks' procyclicality, economic performance variables – ROE, ROA, PAT1 – turned out to be uncorrelated with the economic cycle and, moreover, with the investments cycle, both taken in its aggregate value, and in its components (DIND, DHOUSES, DPW). Such an evidence could perhaps be interpreted in two – not necessarily alternative – ways: 1) the Italian case presents some peculiarities which are not recorded in other national studies, or when an international comparison among banking systems' procyclicality is tried; 2) the period here under examination does not include structural breaks which are likely to have occurred in the 1980s and 1990s, which, instead, recent works generally are able to capture. Both arguments are an incentive to proceed further in our research, e.g. by widening our scope to some other of relevant national cases, on one hand, and to prolong our series, on the other. VAR estimates, nevertheless, seem to confirm a certain procyclical behaviour by the banking system as a whole. We can interpret such behaviour as «Gerschenkronian» and even – at least to a certain extent – as «Schumpeterian», since industrial investments are relatively strongly and persistently affected, especially, by banks' loans.

Such results urge us to widen the scope of the analysis to comprehend other aggregates and macro variables. In fact, we expect to get more insights from the analysis of universal banks behaviour – both pre and post-1936 legislation – and from the study of the main components of the banking system, namely savings banks, commonly believed to be countercyclical, and cooperative banks, for which qualitative evidence is less uniform. We intend also to work specifically on the relation between the banking system – and its components – behaviour and monetary variables, which have been deliberately let apart here.

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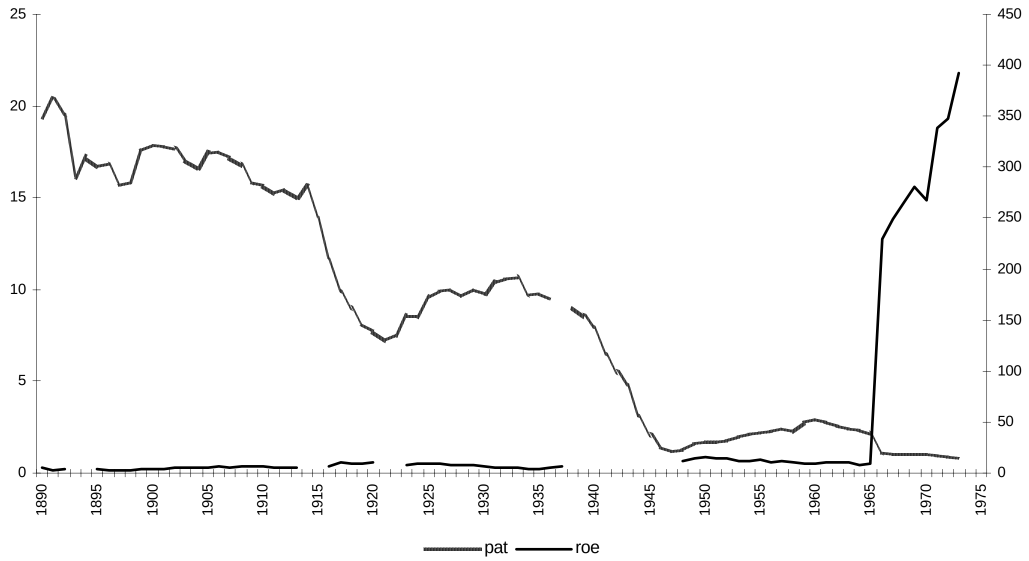
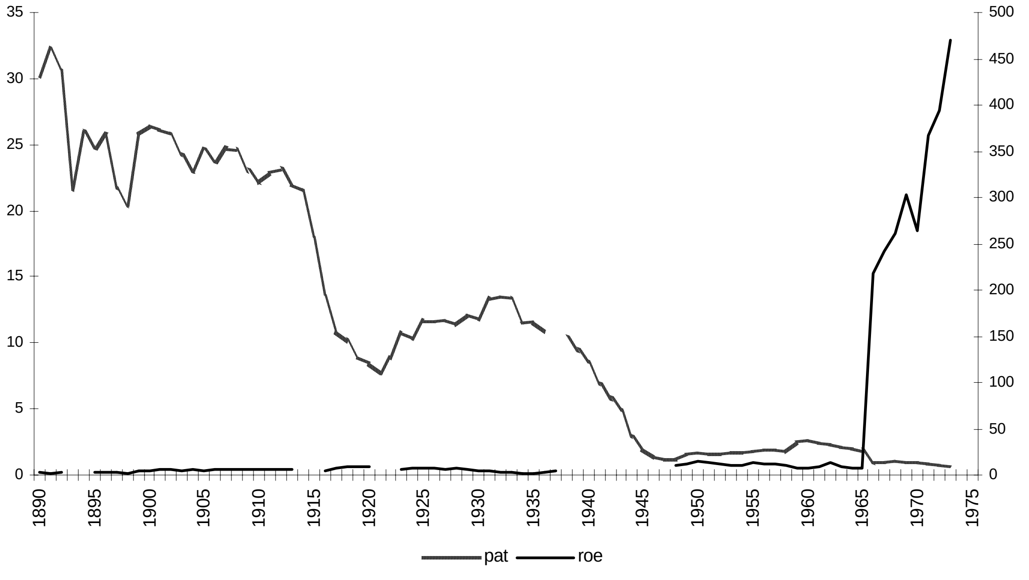
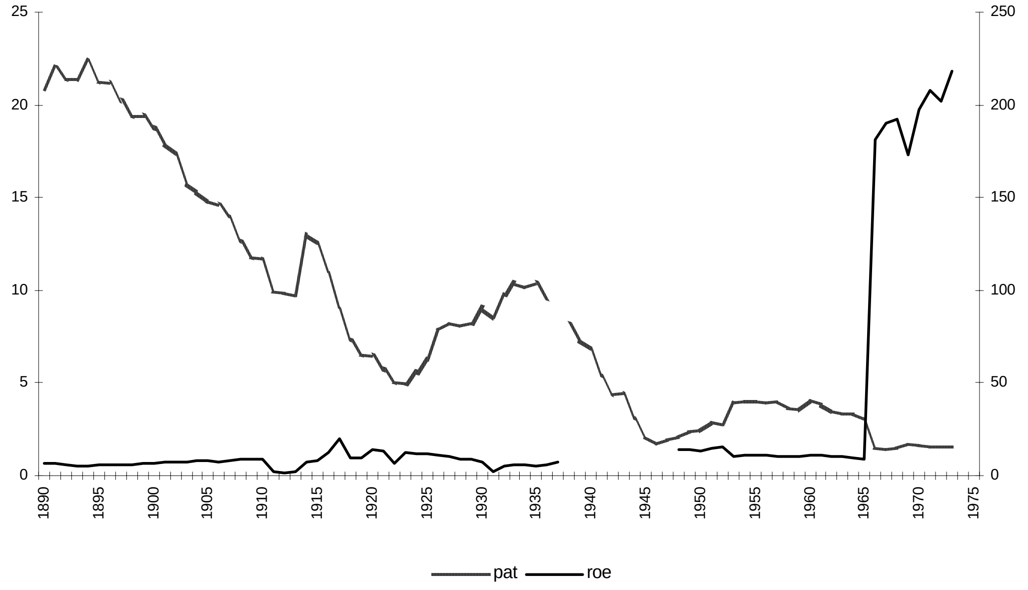
Appendix A.



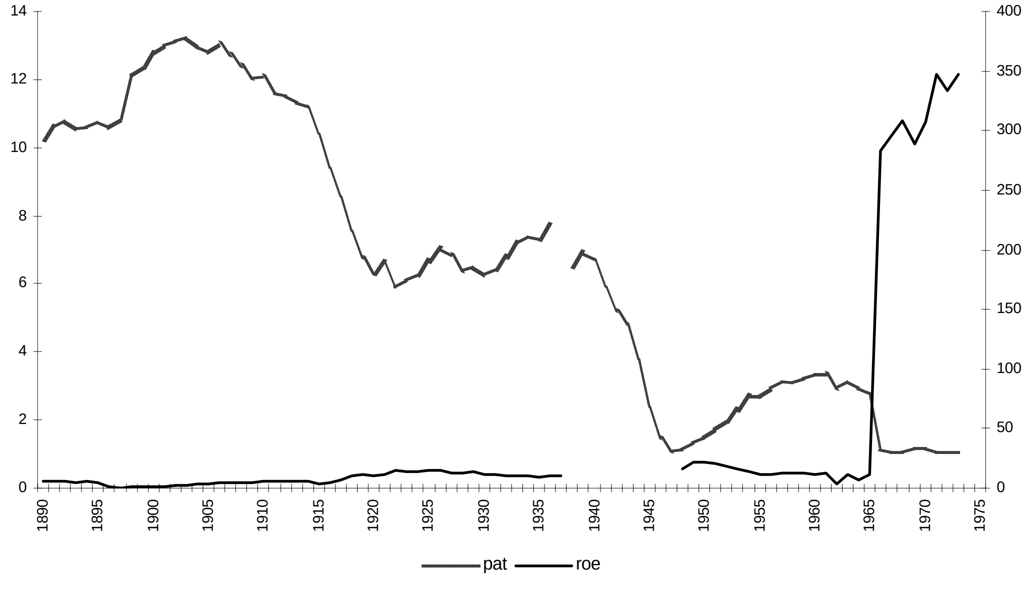
Graph A.1 – Roe and capital net worth of the Italian banking system (1890-1973).



Graph A.2 – Roe and capital net worth of the Italian banks (1890-1973).



Graph A.3 – Roe and capital net worth of the Italian cooperative banks (1890-1973).



Graph A.4 – Roe and capital net worth of the Italian savings banks (1890-1973).

Appendix B. Vector auto-regression estimates

Table 1

Included observations: 77 after adjustments; Standard errors in ( ) & t-statistics in [ ]

	DGDP	PAT1	DINV	IMP1
DGDP(-1)	0.192967	0.011655	-0.303779	-0.183106
	(0.20923)	(0.01257)	(0.50408)	(0.06592)
	[0.92226]	[0.92697]	[-0.60264]	[-2.77763]
DGDP(-2)	-0.818948	-0.019085	-2.594793	-0.057192
	(0.21801)	(0.01310)	(0.52523)	(0.06869)
	[-3.75643]	[-1.45676]	[-4.94031]	[-0.83263]
PAT1(-1)	0.598416	0.251512	1.520683	0.325184
	(2.00250)	(0.12033)	(4.82435)	(0.63091)
	[0.29884]	[2.09010]	[0.31521]	[0.51542]
PAT1(-2)	-0.462385	0.065875	-8.102970	0.018448
	(1.95473)	(0.11746)	(4.70926)	(0.61586)
	[-0.23655]	[0.56081]	[-1.72065]	[0.02995]
DINV(-1)	-0.047771	-0.002987	0.021277	0.073786
	(0.08043)	(0.00483)	(0.19377)	(0.02534)
	[-0.59393]	[-0.61793]	[0.10981]	[2.91172]
DINV(-2)	0.224051	0.006683	0.708427	0.015336
	(0.08120)	(0.00488)	(0.19563)	(0.02558)
	[2.75923]	[1.36952]	[3.62134]	[0.59947]
IMP1(-1)	1.027317	0.004835	2.001656	0.235695
	(0.43689)	(0.02625)	(1.05254)	(0.13765)
	[2.35144]	[0.18415]	[1.90174]	[1.71231]
IMP1(-2)	-0.462082	0.004712	-1.243064	-0.041423
	(0.43450)	(0.02611)	(1.04678)	(0.13690)
	[-1.06348]	[0.18048]	[-1.18751]	[-0.30259]
C	5.542708	-0.146969	13.18094	0.200234
	(1.66796)	(0.10023)	(4.01839)	(0.52551)
	[3.32306]	[-1.46630]	[3.28016]	[0.38103]
R-squared	0.375883	0.139432	0.477296	0.270681
Adj. R-squared	0.302458	0.038189	0.415801	0.184879
Sum sq. resides	10505.75	37.93719	60976.33	1042.856
S.E. equation	12.42965	0.746927	29.94513	3.916136
F-statistic	5.119250	1.377203	7.761581	3.154711
Mean dependent	4.347187	-0.222843	8.865348	-0.133564
S.D. dependent	14.88243	0.761611	39.17832	4.337572

Table 2

Included observations: 77 after adjustments; Standard errors in ( ) & t-statistics in [ ]

	DGDP	DATT	DINV	IMP1
DGDP(-1)	0.120726	0.192625	-0.274552	-0.193463
	(0.18028)	(0.31040)	(0.47278)	(0.06854)
	[0.66965]	[0.62057]	[-0.58072]	[-2.82253]
DGDP(-2)	-0.478189	-0.264546	-1.728590	0.004225
	(0.18539)	(0.31919)	(0.48617)	(0.07048)
	[-2.57940]	[-0.82880]	[-3.55554]	[0.05995]
DATT(-1)	0.469387	0.620117	0.847801	0.074449
	(0.08911)	(0.15342)	(0.23368)	(0.03388)
	[5.26772]	[4.04198]	[3.62810]	[2.19758]
DATT(-2)	-0.511062	-0.417545	-1.245014	-0.085035
	(0.09682)	(0.16670)	(0.25390)	(0.03681)
	[-5.27849]	[-2.50477]	[-4.90349]	[-2.31010]
DINV(-1)	-0.177595	-0.344412	-0.229982	0.052313
	(0.06617)	(0.11393)	(0.17353)	(0.02516)
	[-2.68382]	[-3.02294]	[-1.32529]	[2.07935]
DINV(-2)	0.313125	0.290130	0.912685	0.028409
	(0.06498)	(0.11187)	(0.17039)	(0.02470)
	[4.81914]	[2.59342]	[5.35632]	[1.15001]
IMP1(-1)	2.255699	2.436662	4.200446	0.444776
	(0.39454)	(0.67931)	(1.03467)	(0.15000)
	[5.71723]	[3.58698]	[4.05970]	[2.96511]
IMP1(-2)	-2.095571	-1.639007	-5.388220	-0.302134
	(0.43819)	(0.75446)	(1.14914)	(0.16660)
	[-4.78229]	[-2.17242]	[-4.68892]	[-1.81354]
C	4.967997	7.096001	14.08254	0.046674
	(1.28659)	(2.21519)	(3.37400)	(0.48915)
	[3.86137]	[3.20334]	[4.17384]	[0.09542]
R-squared	0.613194	0.295203	0.616151	0.341800
Adj. R-squared	0.567688	0.212286	0.570992	0.264365
Sum sq. resids	6511.097	19301.73	44778.13	941.1630
S.E. equation	9.785266	16.84782	25.66129	3.720300
F-statistic	13.47485	3.560217	13.64410	4.414008
Mean dependent	4.347187	7.798335	8.865348	-0.133564
S.D. dependent	14.88243	18.98276	39.17832	4.337572

Table 3

Included observations: 77 after adjustments; Standard errors in ( ) & t-statistics in [ ]

	DGDP	DATT	DIND	IMP1
DGDP(-1)	0.142652	0.251700	-0.024959	-0.179545
	(0.18022)	(0.30671)	(0.46162)	(0.06664)
	[0.79154]	[0.82064]	[-0.05407]	[-2.69408]
DGDP(-2)	-0.414170	-0.124347	-1.523737	-0.048908
	(0.18403)	(0.31319)	(0.47137)	(0.06805)
	[-2.25061]	[-0.39703]	[-3.23260]	[-0.71869]
DATT(-1)	0.478893	0.640467	0.810503	0.077976
	(0.09054)	(0.15408)	(0.23191)	(0.03348)
	[5.28942]	[4.15661]	[3.49497]	[2.32901]
DATT(-2)	-0.535848	-0.461828	-1.347072	-0.088395
	(0.09951)	(0.16936)	(0.25490)	(0.03680)
	[-5.38463]	[-2.72689]	[-5.28476]	[-2.40205]
DIND(-1)	-0.188375	-0.380634	-0.197893	0.046797
	(0.06785)	(0.11547)	(0.17379)	(0.02509)
	[-2.77633]	[-3.29631]	[-1.13867]	[1.86512]
DIND(-2)	0.318655	0.283878	0.918517	0.049966
	(0.06825)	(0.11615)	(0.17481)	(0.02524)
	[4.66911]	[2.44410]	[5.25437]	[1.97982]
IMP1(-1)	2.313566	2.605406	3.767868	0.412062
	(0.40181)	(0.68383)	(1.02920)	(0.14859)
	[5.75786]	[3.81002]	[3.66096]	[2.77321]
IMP1(-2)	-2.262802	-1.921001	-5.906342	-0.315691
	(0.45563)	(0.77542)	(1.16705)	(0.16849)
	[-4.96633]	[-2.47736]	[-5.06090]	[-1.87367]
C	4.750788	6.913022	13.36320	0.021734
	(1.29630)	(2.20614)	(3.32036)	(0.47936)
	[3.66488]	[3.13354]	[4.02462]	[0.04534]
R-squared	0.607353	0.300988	0.615988	0.367918
Adj. R-squared	0.561159	0.218751	0.570810	0.293555
Sum sq. resids	6609.418	19143.31	43363.39	903.8169
S.E. equation	9.858870	16.77853	25.25266	3.645741
F-statistic	13.14795	3.660021	13.63472	4.947621
Mean dependent	4.347187	7.798335	9.619147	-0.133564
S.D. dependent	14.88243	18.98276	38.54627	4.337572

Table 4

Included observations: 77 after adjustments; Standard errors in ( ) & t-statistics in [ ]

	DGDP	DATT	DHOUSES	IMP1
DGDP(-1)	-0.059307	-0.114419	-1.166758	-0.163627
	(0.16478)	(0.26614)	(0.41985)	(0.05780)
	[-0.35990]	[-0.42993]	[-2.77902]	[-2.83109]
DGDP(-2)	-0.167508	-0.108990	-0.376710	0.073434
	(0.17644)	(0.28496)	(0.44955)	(0.06189)
	[-0.94936]	[-0.38247]	[-0.83798]	[1.18661]
DATT(-1)	0.439589	0.605352	0.694738	0.067316
	(0.09766)	(0.15773)	(0.24882)	(0.03425)
	[4.50118]	[3.83798]	[2.79209]	[1.96523]
DATT(-2)	-0.480424	-0.362563	-0.849772	-0.094433
	(0.10406)	(0.16806)	(0.26512)	(0.03650)
	[-4.61690]	[-2.15737]	[-3.20521]	[-2.58742]
DHOUSES(-1)	-0.115555	-0.267809	0.076012	0.054916
	(0.06745)	(0.10894)	(0.17185)	(0.02366)
	[-1.71318]	[-2.45841]	[0.44231]	[2.32129]
DHOUSES(-2)	0.201244	0.239032	0.462060	0.007238
	(0.06601)	(0.10661)	(0.16818)	(0.02315)
	[3.04872]	[2.24215]	[2.74739]	[0.31264]
IMP1(-1)	2.333684	2.400594	4.148423	0.471620
	(0.42672)	(0.68917)	(1.08721)	(0.14967)
	[5.46892]	[3.48332]	[3.81567]	[3.15115]
IMP1(-2)	-1.882412	-1.334328	-3.892079	-0.337932
	(0.47329)	(0.76439)	(1.20588)	(0.16600)
	[-3.97726]	[-1.74561]	[-3.22759]	[-2.03571]
C	4.869782	7.300226	12.23091	-0.117211
	(1.43388)	(2.31578)	(3.65328)	(0.50292)
	[3.39624]	[3.15239]	[3.34792]	[-0.23306]
R-squared	0.538443	0.260012	0.438049	0.331586
Adj. R-squared	0.484142	0.172955	0.371937	0.252949
Sum sq. resids	7769.381	20265.48	50434.77	955.7683
S.E. equation	10.68904	17.26331	27.23395	3.749055
F-statistic	9.915930	2.986675	6.625863	4.216666
Mean dependent	4.347187	7.798335	9.558921	-0.133564
S.D. dependent	14.88243	18.98276	34.36441	4.337572

Table 5

Included observations: 77 after adjustments; Standard errors in ( ) & t-statistics in [ ]

	DGDP	DATT	DPW	IMP1
DGDP(-1)	0.066152	-0.070885	-0.677687	-0.153891
	(0.18153)	(0.31394)	(0.65635)	(0.06902)
	[0.36441]	[-0.22579]	[-1.03252]	[-2.22965]
DGDP(-2)	-0.400382	-0.166625	-2.238261	0.064805
	(0.18902)	(0.32689)	(0.68341)	(0.07187)
	[-2.11821]	[-0.50973]	[-3.27512]	[0.90174]
DATT(-1)	0.424057	0.540162	0.883909	0.078071
	(0.09051)	(0.15652)	(0.32723)	(0.03441)
	[4.68540]	[3.45106]	[2.70117]	[2.26876]
DATT(-2)	-0.445065	-0.311443	-1.256798	-0.089867
	(0.09814)	(0.16972)	(0.35483)	(0.03731)
	[-4.53508]	[-1.83504]	[-3.54201]	[-2.40846]
DPW(-1)	-0.108375	-0.150297	-0.202433	0.023839
	(0.04548)	(0.07865)	(0.16442)	(0.01729)
	[-2.38314]	[-1.91107]	[-1.23119]	[1.37877]
DPW(-2)	0.172179	0.146009	0.642277	0.001045
	(0.04193)	(0.07251)	(0.15159)	(0.01594)
	[4.10659]	[2.01365]	[4.23687]	[0.06554]
IMP1(-1)	2.217600	2.129922	5.622638	0.562281
	(0.39048)	(0.67530)	(1.41182)	(0.14847)
	[5.67913]	[3.15404]	[3.98255]	[3.78729]
IMP1(-2)	-1.625260	-1.035503	-4.425523	-0.309742
	(0.43897)	(0.75916)	(1.58715)	(0.16690)
	[-3.70240]	[-1.36401]	[-2.78835]	[-1.85583]
C	5.250069	7.092965	19.11422	0.124332
	(1.33431)	(2.30756)	(4.82432)	(0.50732)
	[3.93466]	[3.07379]	[3.96205]	[0.24508]
R-squared	0.583151	0.233702	0.565211	0.290619
Adj. R-squared	0.534110	0.143550	0.514059	0.207162
Sum sq. resids	7016.817	20986.01	91726.79	1014.347
S.E. equation	10.15817	17.56752	36.72769	3.862237
F-statistic	11.89107	2.592297	11.04969	3.482273
Mean dependent	4.347187	7.798335	8.525833	-0.133564
S.D. dependent	14.88243	18.98276	52.68680	4.337572