

Predicting institutional collapse? Financial markets and political violence at the onset of the Spanish Civil War

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ABSTRACT

Could the outbreak of the Spanish civil war have been predicted? We explore this issue by looking at the behaviour of Spanish investors in the years that preceded the dramatic events of July 1936. The paper tests the ability of financial markets to assess *ex ante* the risk of extreme political events which may have posed a serious threat to the survival of the existing economic and institutional order, such as a revolution or an armed internal conflict. To this end we have reconstructed two original time series: an index of the Bilbao stock exchange and the yields of government bonds at weekly frequency from January 1920 to July 1936. The paper tests for structural breaks in the mean and variance of the two series, and explores the impact of political events on investors' expectations by using an event study approach.

Keywords: structural breaks, civil wars, financial asset markets, economic history

JEL classification: G12, N24

Introduction

Could the outbreak of the Spanish civil war have been predicted? We explore this issue by looking at the behaviour of Spanish investors in the years that preceded the dramatic events of July 1936. Two major phases of political instability characterized the postwar period in Spain. The first one, inaugurated by the general election of December 1920, culminated with the assassination of an incumbent prime minister in July 1921 and was brought to an end more than two years later by a military coup in December 1923. The second one, after the demise of Primo de Rivera's military regime in January 1930, witnessed a major political regime shift, with the proclamation of the II Republic, three bitterly fought general elections, repeated government crises, and frequent outbreaks of political violence, revolutionary attempts and military uprisings. Also in the light of the 1920-23 experience, we ask whether economic agents were able to interpret such instability as a run up to a major breakdown of the existing institutional and economic order.

The paper tests the ability of financial markets to assess *ex ante* the risk of extreme political events which may have posed a serious threat to the survival of the existing economic and institutional order, such as a revolution or an armed internal conflict. Due to their forward-looking characteristics, asset markets offer several advantages for a historical analysis of market actors' expectations. Data provided by efficient financial markets reflect knowledge and information available at each point in time, including investors' expectations and 'sentiment' about the future. These are transmitted to asset prices as any error in assessing the impact of current or future developments on assets' value risks to impose a monetary loss on investors.

Our approach elaborates on a growing body of empirical research, both historical and contemporary. One recent stream of literature investigates the impact of political, institutional and military events on asset prices. Willard et al. (1996) inspect the impact of military events during the US civil war on the market for greenbacks. In the same fashion, a recent series of papers find systematic evidence of the impact on bond prices of political and military events before and during WW2 (Frey and Kucher 2000 and 2001, , Brown and Burdekin 2002, Oosterlinck 2003, Frey and Waldenstrom 2004

and 2008). Another stream of literature focused on the volatility of aggregate stock market returns during the interwar period. In a seminal paper, Schwert (1989) argues that the unusually high volatility of the US stock market during the Great Depression can be explained only by investors' expectations about an adverse regime switch. Bittlingmayer (1998) suggests that the extreme volatility of German stock market returns in the 1920s were largely determined by political events. This interpretation is challenged by Voth (2001), who finds no empirical evidence supporting the hypothesis that social or political uncertainty significantly affected asset prices in interwar Germany. However, Voth (2002) also finds that indicators of social unrest and the probability of a violent challenge to the economic status quo significantly contributed to the volatility of share prices in a panel of 10 industrialized countries in the period 1919-1939.

These historical analyses are compounded by a parallel stream of research on contemporary emerging markets. Stock returns in emerging markets are generally found to be characterized by high volatility, non-normality of distributions (too many large fluctuations) and excess kurtosis (Bekaert and Harvey 1997; Bekaert et al. 1998). These and other studies also find evidence of some impact of political risk on stock market volatility (Bekaert and Harvey 1997, Mei 1999, Bilson et al. 2002) and returns (Diamonte et al. 1996). Others, on the contrary, find no significant price reactions to political events, thus implying that they are perceived as uninformative (Dar-Hsin *et al.* 2005).

In order to assess investors' response to political violence we have reconstructed two original time series: an index of the Bilbao stock exchange and the yields of government bonds at weekly frequency from January 1920 to July 1936. We have also collected weekly information on volumes of stocks and bonds traded. We prefer Bilbao to Madrid because of the former's characteristic of an industrial stock exchange, whereas Madrid traded predominantly in government securities. We formally test the impact of political events on stock price returns and government bond prices and yields in an event-study fashion. We model our time series as GARCH processes and search for abnormal returns (either positive or negative) and structural breaks in their

level and conditional volatility. We also use dummies in order empirically to test to what extent abnormal returns were related to political events and violence (including social and military uprisings). In order to isolate the impact of political events, we also control for the influence of macroeconomic factors, such as economic activity, inflation and monetary variables, for which an original data set has been constructed. We find some preliminary evidence suggesting a significant impact of major political events and surges in violence on stock returns and bond yields. The general election of February 1936, with the victory of the Popular Front, emerges as a possible turning point in investors' expectations about the survival of the existing political and economic regime.

The paper is structured as follows. Section 1 explores the events that led to the outbreak of the Spanish conflict in the perspective of a recent literature on the determinants of civil wars. Properly understanding the roots and aims of political violence is critical in order to assess how economic agents could have formed their expectations about the risk of a breakdown of the existing economic and institutional order. Section 2 presents the financial series we have reconstructed for stock and government bond markets, and discusses their characteristics. Efficient markets are required in order to reflect investors' changes in sentiment and expectations. We also discuss here whether changes in macroeconomic fundamentals, rather than institutional and political risk, may have determined the observed pattern of asset markets. Section 3 presents the first part of our empirical strategy. We test for the existence of structural breaks in the mean and volatility of our financial series and discuss to what extent they can be explained by political factors. In Section 4 we test directly the impact of specific political events and episodes of political violence on investors' expectations by using an event study approach. Section 5 concludes.

1. Foreshadowing civil war?

The main objective of this paper is to assess the ability of financial markets to anticipate an extreme occurrence such as a violent crisis of the existing political and economic order. We assume that rational economic agents would react to the threat that such eventuality would posit to the future value of their assets if they conclude

that its probability has increased significantly. They can reach this conclusion either as a consequence of the cumulative effect of a sequence of events, or because of an abrupt and unexpected rupture; the magnitude of the adjustment would in turn depend on whether such rupture is perceived as temporary or irreversible. As a consequence, their shift in expectations could take either the form of repeated marginal adjustments in the expected value of their assets, or would rather materialize in a sudden and radical fall in their assets' value. In fact, dramatic events such as the outbreak of an armed conflict between social groups living under the same political jurisdiction are usually the outcome of protracted periods of escalating political violence, which are likely to generate mounting uncertainty. Empirically, the dynamics of expectations set in motion should materialize in a significant, sometimes dramatic increase in asset return volatility, and a fall, either staggered or precipitous, in the mean value of asset prices. This joint, though not necessarily synchronous dynamics of asset price mean and volatility, constitutes the empirical evidence we are trying to uncover in Spanish corporate equities and government bonds in the run-up to the civil war.

Our approach elaborates on a recent literature on the nature of civil wars and on their economic determinants (Berdal and Malone 2000; Sambanis 2001). The institutional and economic policy framework within which the armed conflict takes place and the economic agenda of social groups involved are indeed critical in order properly to understand the nature and magnitude of the perceived threat to the economic value of existing assets. Traditional views often portray civil wars as a violent political contests between two opposite camps (usually a rebel armed organization and a governmental counterinsurgency) leading to "breakdowns" or "collapses" of the existing peaceful order (Collier 2003). Occasionally a civil war is even regarded as a result of intractable hatreds and hostilities, or a descent into mindless violence and a state of anarchy, spelling disaster for all subjects involved.

Recent studies however suggest that civil wars are better understood as distributional conflicts taking place in the framework of specific political economies that are prone to generate violence. Whatever the ultimate source of this violence (either "greed" or

“grievance”, or a mix of both, materializing in poverty or inequality: Dutta and Mishra 2005), in turn violence can be used to protect—alternatively, to undermine—economic rents entrenched in the existing statu quo and “cemented through control of the state” (such as land ownership). Violent demand for personal empowerment and political/economic change can trigger “elite backlashes”; this kind of violence is often “top down”—that is, mobilized by political leaders and entrepreneurs. The result is often a situation in which multiple political, economic and/or military elites seek to deflect political threats by inciting violence and/or recruiting private militias. In turn civilians or low-ranking armed forces may find that violence fits in well in their economic agenda—a mix of fear, greed and grievance (Keen 2000). Insufficient institutional development—a failure by all parties involved credibly to commit to a peaceful resolution of conflicts—may lead to warfare in case of failure to accommodate changing opportunities brought about by economic modernization and political democratization (Djankov and Reynal-Querol 2007; Skaperdas 2007). In a similar fashion, some argue that specific institutional set-ups, such as political systems based on majoritarian rule, may favour the outbreak of violent conflicts by lowering the opportunity cost of rebellion perceived by those groups who feel themselves under- or mis-represented by the political system (Reynal-Querol 2002). Indeed the Spanish Civil War is interpreted as the result of ossified state institutions where no compromise could be found to accommodate economic and social requests generated by the extension of democratic franchise (Minehan 2006). Likewise, a majoritarian electoral law certainly contributed to political polarization that ultimately turned into armed conflict.

However, whereas all these factors explain why parties may choose to arm, they don’t explain necessarily also why risk-averse agents do not respond to incentives to compromise and finally give in to warfare instead of using arms as a bargaining device, thus sparing themselves the unpredictably destructive consequences of an armed conflict. Indeed, some recent studies based on game theories suggest that, in the presence of weak institutions and high endowment inequalities, armed conflicts may occur exactly when agents value the future so much. If the “shadow of the future” is too long and poorly-endowed agents fear to get trapped into time dependency, they

can have incentives to decide to forgo the short-term advantages of peace for the uncertain but higher expected future benefits that can be achieved through war (McBride and Skaperdas 2005; Garfinkel and Skaperdas 2006).

In the Spanish conflict, all favourable conditions to the outbreak of a civil war identified in the literature were present. A 'weak economy' largely based on agriculture and the export of primary products; a 'weak state' constrained on its ability to tax, regulate and coerce citizens, and challenged by strong regional nationalisms; geographical dispersion of the population which impaired military capability of the government to control the national territory; strong inequalities and inefficient political institutions, so that 'arming' came to be perceived by the poor as the only means to induce redistribution, and by the rich as the only means to pre-empt it. Official chronologies set July 17, 1936—the military coup orchestrated by generals Sanjurjo, Mola and Franco against the incumbent Republican government—as the starting date of the Civil War. Nevertheless, Spain had been devastated by recurrent waves of political violence since the fall of the Primo de Rivera's military regime in January 1930. Did investors believe in the resilience of the democratic institutional framework and in its ability to protect their property rights until the very last moment? Did they foresee at any point the breaking down of the existing political and economic order? Did they envisage as possible at all a success of a revolutionary front? Or did they trust on the state to protect their rights and assets?

2. Financial markets, political events and investors expectations

As mentioned in the introduction, the forward-looking nature of asset markets confers on them special characteristics. These justify their use as reliable indicators of economic agents' changes in expectations about the future in response to macroeconomic or political events. As a matter of fact, the direct influence of political instability on the performance of the Spanish stock markets represents a recurrent leitmotiv in the retrospective narratives of practitioners as well as historians. There seems to exist a general consensus on the fact that, as argued by Torrente-Fortuño (the author of official commemorative histories of the Bilbao and Madrid stock

exchanges), political event affected the behavior of financial markets by far more than strictly economic and financial factors in the decade prior to the Civil War.¹

In order empirically to test this hypothesis, we have constructed a unique data set including two main financial series observed at weekly frequency from January 1920 to July 1936: an index of the Bilbao stock market and the secondary market yield of Spanish government bonds traded in the same market. The main reason for using both equities and bonds is that they capture different facets of political risk. Equities reflect potential losses of private firms' shareholders as a consequence of violent social conflict (strikes, occupations, sabotage), political change (renegotiation of contracts with the government), or outright expropriation. Bonds in turn reflect mainly the risk of government default as a consequence of institutional crisis, including the risk that new political regimes may not acknowledge their liability for the debt of the antecedent. The Spanish and foreign public opinions echoed these worries in April 1931 after the fall of King Alfonso XIII and the proclamation of the Second Republic (Torrente Fortuño 1966, p. 471)

The starting date of the two series has been selected in order to exclude WW1 and the immediate postwar periods, which witnessed the inflation and sudden deflation of an exceptional stock market bubble. The final date corresponds to the last quotation observable in the Spanish markets, before they were closed down upon the attempted coup d'état of July 17, 1936.

Although there are a number of descriptive studies which review the history and development of Spanish stock markets, there are only few empirical studies examining

¹ *"Caracteriza a este decenio bursátil que se extiende de 1926 a 1936 el predominio del factor político sobre el estrictamente económico y financiero. [...] [Anteriormente] las revistas financieras, cuando se produce un acontecimiento político de primer orden, apenas si aluden a él, amparándose en el principio de su apoliticismo y su carácter económico y financiero. [...] Cuando se inicia la preocupación honda y la política se convierte en centro motor y la Bolsa se mueve con un telón de fondo enteramente político, las revistas inauguran, sistemáticamente, una sección 'La política y las finanzas'."* Torrente Fortuño (1966), pp. 339-40. See also Moreno Castaño (2004), p. 9 and Hoyo (2007), p. 45-48.

historical returns of market indices.² Exceptions are Gomez Biscarri and Perez de Garcia (2004) and Gomez Biscarri et al. (2004), though limited to the post-1941 period. In a recent re-edition of Spanish historical statistics, Carreras and Tafunell (2005: 737) have also stressed that this empirical assessment is especially lacking for the interwar period.³

By 1915 Madrid, Bilbao and Barcelona were the three official stock exchanges in Spain. The governing committees of the Madrid and Bilbao Exchanges had jointly and voluntarily designed a reform of the operating regulations for stock markets in Spain, passed in the Parliament in 1914.⁴ The companies listed on the three exchanges were the same.⁵ We have decided to focus on the Bilbao market due to its predominantly profile of an industrial stock exchange, although in the mid-1930s Madrid's size multiplied that of Bilbao by a factor of ten, as shown in the Value Traded Ratio in Table 1.

TABLE 1 HERE

For equity and bond prices to be informative, markets with active and regular trading are required. To assess the quality and consistency of our data, we have reconstructed the basic features of Bilbao stock exchange's microstructure. Trading sessions were held Monday through Saturday from 11 to 12:30 in the morning with the exception of national and local holidays.⁶ Two over-the-counter trading sessions were allowed to take place from 10 to 11 am and from 4 to 6 pm. From 1921 on, trading in the main

² See Torrente Fortuño (1966, 1971, 1974), Hortalá (2006), Hoyo (2007), Montero (1996, 2006), Moreno Castaño (2004) and Tafunell (1983).

³ Rivas Sánchez and García Benavides (2000).

⁴ Adolfo Bonilla y San Martín and Emilio Miñana Vilagrasa (1924). *Derecho burasátil*, p. 93 quoted in Torrente (1966), p. 247.

⁵ Barcelona was somewhat exceptional because it had both an official exchange and a competing over-the-counter market: the Mercado Libre de Barcelona. Whereas the stock market indices we have been able to calculate for Bilbao show a very high co-movement with those calculated for Madrid, the indices calculated for Barcelona by Hortalá are very different. Until we have a clearer understanding from where these differences arise, we will leave the Barcelona exchange aside. For similar reasoning see Carreras and Tafunell (2005), p. 738 n. 24.

⁶ From the end of February 1921 to October 1923 there is no trading on Saturdays, which holds true for all summer sessions after 1923.

session was split into three different segments dealing with bonds, foreign exchange and equities respectively. Trading was carried out face-to-face on a trading floor. BSE was a 'listed' exchange, for only stocks listed with the exchange or the Madrid and Barcelona Stock Exchanges could be traded. Orders were entered by open outcry by brokers who were members of the Exchange. Spot transactions were dominant; only during periods of intensive trading forward transactions would make up to one third of daily trade volumes. Orders were similar to those used in modern stock exchange until recently: market orders, stop orders, conditional orders with the corresponding variations i.e. 'day', 'good till cancelled', and so on. Prices were determined using an auction method: potential buyers wrote out orders for a stock and potential sellers did the same. Brokers announced amount, conditions and price and when the bid and ask prices matched, a transaction took place on a first-come-first-served basis —if there were multiple bidders or askers at a given price. Matches were registered on paper, announced by word of mouth and on the slate. There were no market makers to stabilize stock prices by trading on their own account. Once a transaction had been finalized, brokers cross-signed their bids, registered the details of the transaction in their daily books and reported them to their annual register at the end of each session. Closing prices were quoted on the slate. At the end of the trading day all brokers present on the floor met with the Governing Committee of the Exchange and gave a full report of their trading activities; then the Stock Exchange authorities recorded all transactions —prices and volumes— in sequence order for each traded asset. Quotes and volumes were included in the daily trading minutes, which were recorded in a register and a daily copy was sent to the Mercantile Registry. The Governing Committee of the Exchange issued this information daily in an official stock market bulletin. From 1920 on the Exchange obliged all brokers to settle daily operations (paper and money) with its clearance office. Large volumes were traded by brokers in the 'over-the-counter' sessions at the closing price of the previous main trading session; these transactions were recorded in the minutes of the following official session, but not reported in the Stock Market bulletin which only reflects the quotes and volumes of the official session.⁷

⁷ Rodriguez Sastre (1940), pp. 258-9.

In order to construct our indices, we have used closing prices from an official source, *Información*, a review published by the Bilbao Chamber of Commerce, which reported fortnight summaries of prices quoted and volumes traded. Occasionally missing summaries have been reconstructed with quotes and volumes hand-collected directly from the official daily stock exchange bulletin. We have also compared published quotes with the corresponding closing prices (*último cambio*) reported in the official bulletins for random sub-samples, without finding any significant distortion or misreporting.⁸ A vast majority of stocks did not trade regularly at all times; indeed, for many prices and quantities were reported at very low frequencies, or exhibited long intervals of irregular trading, which suggest the existence of very thin markets. For this reason, we focused on weekly rather than daily observations and selected the 65 equities that traded more regularly.⁹ The selected 65 stocks have been eventually used to construct a market index similar to those used today. For each stock a summary indicator of liquidity and market capitalization (ILC) has been estimated annually as follows:

$$ILC = p_{it}q_{it} + \alpha_m p_{it}v_{it}$$

where $p_{it}q_{it}$ is the average market capitalization of stock i , $p_{it}v_{it}$ is the average trading volume of stock i , and α_m is the ratio of the average market capitalization and trading volume ($p_{mt}q_{mt} / p_{mt}v_{mt}$). Each year stocks have been ranked according to their ILC, and the 20 stocks with the highest value have been included in the index. These 20 stocks, representing the most liquid and most highly capitalized securities available in the Bilbao stock exchange, have been used to construct a unweighted price market

⁸ The Royal Order of 22 January, 1902 obliged the governing committee of the Exchange to publish all transactions that have take place during the trading session in a daily stock market bulletin. These include trading values and closing price quotes. The Real Orden de 1 de Julio de 1916 explicitly prohibits newspapers and magazines from publishing quotes other than those published in the official stock market bulletin. According to our primary source, the traded volumes reported indicated the number of stocks traded multiplied by the nominal paid-up capital of each stock.

⁹ The stock price indexes are all value-weighted and have been adjusted for stock splits, new issues, paid out capital, capital reductions, etc. Prices for each equity have been calculated in terms of percentage of paid out capital.

index.¹⁰ We have preferred an unweighted index in order to minimize the risk that our market index was too sensitive to movements of a particularly large and dominant equity or group of equities.

Fig. 1 plots monthly observations of our Bilbao market index against an equally unweighted market index of the Madrid stock exchange for comparison. The Madrid index was calculated by the research services of the Madrid Stock Exchange and published in 1994.¹¹

FIGURE 1 HERE

As indicated in Figure 2, the two indices were not perfectly and monotonically correlated. In fact the comovement of the two markets increased significantly over the observed period. The recursively estimated beta of (log)returns of the Bilbao index relative to (log)returns in Madrid jumped up to 0.8 by the peak of the short-lived bull market of 1927-28, thus signaling the existence of a structural break in the correlation between the two markets. We are not in the condition to say whether this break reflects the impact of idiosyncratic factors or structural changes in the level of integration between the two markets, or simply the uneven quality of the data collected for Madrid prior to 1928. In any case, since our analysis will concentrate on the post-1930 period, we are reassured that movements observed in Bilbao reflected shifts in expectations similar to those observed in Madrid.

FIGURE 2 HERE

We have also collected from the same sources the quoted prices of government perpetuities (*Renta perpetua* 4%) denominated in domestic currency.¹² Fig. 3 plots the current yield together with an index of traded volume. Since we are interested in a

¹⁰ We have also calculated a capitalization-weighted market index using the same equities. We are still collecting data on dividends in order to estimate dividend-yields and total return index.

¹¹ Revista 'Bolsa', n. 25, Agosto-Septiembre 1994, pp. 15-18.

¹² We have also collected the prices of government perpetuities quoting on foreign markets, but due to their infrequent reporting, we could not use this series.

measure of country risk that nets out the impact of common macroeconomic fluctuations, we report also the spread between the yield on Spanish perpetuities and the yield on British consols, expressed in basis points. It is suggestive to notice that the latter shows a structural upward shift in 1930 in coincidence with the political transition from the military regime of Primo de Rivera to the Second Republic.

FIGURE 3 HERE

The ability of observed stock market returns and government bond yield adequately to capture shifts in the 'sentiment' of investors can be undermined by official and unofficial interventions to stabilize prices in periods of turbulence or loss of confidence. In the case of equities, by instance, Torrente-Fortuño reports that free trading of bank equities was suspended since November 1935, and that coordinated interventions took place systematically throughout 1936 to slowdown the fall in stock prices.¹³ As far as government bonds are concerned, so far we did not find in the surveyed literature any evidence of systematic interventions in the secondary market. In any case we feel that these non-market interferences would have had only a short-run impact and were unlikely to affect structural changes in mean returns and volatility, which are the focus of our analysis.

There exist a number of additional cautionary issues that are important for an appropriate interpretation of our empirical exercise. First, informational inefficiencies may arise due to the presence of a high number of 'noise traders' (investors pursuing irrational speculation) relative to 'marginal traders' (investors trading only on the base of 'objective' prices and information) (DeLong et al., 1990). This problem may be less important for bonds than for stocks, since in the bond market we can assume that fundamentals were easier to define and information asymmetries lower. Second, our perception of "relevant" political events may be biased by the hindsight of history. Whereas there can be little controversy on the relevance of mayor episodes, such as revolutionary attempts or elections, we may well miss apparently minor events which

¹³ Torrente-Fortuño (1966), pp. 508-10.

proved informative to contemporary economic agents. At the same time, dramatic but largely expected events may have failed to trigger a reaction as their occurrence had been already discounted in price formation. Likewise we may find that apparently inexplicable strong movements in asset prices were due to expected events that did not materialize. Third, it may prove hard to disentangle purely political from macroeconomic uncertainty. Empirical studies demonstrate that economic recessions are generally associated to higher stock market volatility (Schwert 1990). A negative response of stock prices to inflation is another well known empirical regularity (Ely and Robinson 1997). In turn, inflationary expectations may or may not be related to political uncertainty, risk of institutional collapse or threats to the existing economic regime. All these issues, and others—such as currency depreciation due to political capital flights—need to be properly addressed both in designing our empirical strategy and discussing our findings. For this reason we have collected information from the published balance sheets of the Bank of Spain to elaborate a few indicators of monetary policy at weekly frequency, as presented in Figure 4. These data have been complemented by monthly data on price indices and the nominal exchange rate collected by the Bank of Spain.

FIGURE 4 HERE

3. Financial markets and political events: searching for structural breaks

The first part of our empirical strategy is based on a sequence of tests to ascertain the existence of possible structural breaks in the mean return and volatility of the stock market index, as well as in the mean yield and volatility of domestic 4% government perpetuities. We complement the price information with the information provided by traded quantities. We are interested in testing whether any mayor political event or episode of political violence may have determined a regime shift in our series. The concept of structural break is related to the stability of parameters within a dynamic model. In a stationary process, the parameters should be constant over time. However, if some of the parameters have changed at some date, this can be interpreted as evidence that there was a structural break in the behaviour of the series in correspondence with the estimated breakdate. If at some point, market actors

became more uncertain about the future value of financial assets, or perceived that a breakdown of the existing institutional and economic order would pose a serious threat to the protection of their property rights, there should be some datebreak around which we can detect this shift in expectations by looking at the mean and variance of our series.

We start by visual inspection of the series. Figure 5 plot a 52-week rolling-window of mean and standard deviation of both series of log-return of the BSE market index and the change in the log-price of the government perpetuity.

FIGURE 5 HERE

We can clearly identify the existence of turning points in mean and volatility over time. The stock market went through a first period of negative and falling mean return with increasing volatility from January to October 1931. The dynamic of mean returns, though still negative, was reversed from October 1931 to November 1932, and deteriorated again until March 1933, when traded volumes reached their historical low. On the contrary, from March 1933 to September 1935, mean returns and trade volumes recovered and volatility increased only slightly; this recovery was interrupted only by a short-lived reversal in October-November 1934. A final turning point can be identified around September 1935, with a dramatic increase in volatility and a steep fall in mean return. The mean changes in the price of government bonds signalled increasing risk during 1931, during which volatility increased continuously, peaked around May 1932 and remained at high records for the rest of the year. The reversal in the dynamics of mean price changes, started during 1932, was completed in 1933 and lasted until the end of 1935, with short-lived shocks in the first quarter of 1933 and the last quarter of 1934. During this period volatility fell consistently; a new turning point can be observed around October 1934, which opened a new period of rapidly increasing volatility. After December 1935, also the mean changes in the bond price returned negative. Since then and until April 1936, the mean price of government perpetuities was falling consistently; volatility remained low and stable until the end of 1934, then increased significantly during 1935. It is interesting to notice that the

dynamics of mean and volatility of both equity and bond series show broadly synchronous shifts and trends.

To run formally mean-shift breakpoint tests, we model the stock market return and the change in the bond prices as AR(4) processes:

$$r_t = \alpha + \sum \rho r_{t-i} + e_t \quad (1)$$

$$d(b)_t = \alpha + \sum \rho d(b)_{t-i} + e_t \quad (2)$$

where r is the weekly (log) return of the stock market index, and b is the (log) price of 4% government perpetuities expressed as per cent of par value. Breakpoints in the mean value of the series are estimated by Quandt-Andrews statistics. This method allows heteroskedasticity in the series, and endogenously identifies breakdates of unknown timing by running a sequence of Chow tests on all possible breakdates. Once the possible breakdates are identified, we use breakpoint dummies (taking the value of 1 on and after the breakdate, and 0 before) to estimate the sign, the magnitude and the significance of the associated coefficient.

Table 2 reports the LR and Wald F-statistics for unknown breakdates estimated sequentially, and the results for the breakpoint dummies.

TABLE 2 HERE

Before the period of our main interest, a downward shift in the mean return of the market index is located on 23 September 1929 (coefficient -0.256, prob 0.012). For the period of the Second Republic, the tests identify 21 August 1933 with an upward shift in the mean return on the market index (coefficient 0.315, prob 0.007), and 28 October 1935 with a large and very significant reversal (coefficient -1.121, prob. 0.003). As far as the mean change in the government bond price is concerned, the test identifies breakdates less precisely. 30 November 1931 is associated with an upward shift, but the breakpoint dummy suggests that this shift is relatively small and not entirely significant (coefficient 0.174, prob 0.082). For the subsequent period, the tests fail to determine one breakpoint unanimously and suggest a range of possible candidate dates associated with a downward shift, spanning the period from 28

October 1935—coinciding with the shift in the stock market—to 17 February 1936. When breakpoint dummies are introduced, all prove significant, with coefficients ranging from -0.602 to -0.819, and probs from 0.016 to 0.031.

To test for shifts in the variance of the series, we specify returns and price changes as a process composed of a mean equation as in (1) and (2), and a variance equation as follows:

$$\sigma_t^2 = \beta_0 + \beta_1 \varepsilon_{i,t-1}^2 + \beta_2 \sigma_{t-1}^2 \quad (3)$$

where $\varepsilon_i \sim N(0, \sigma_t^2)$ represents the unpredictable component of the returns and price change series. Equation (3) models the variance of the unexpected returns as a GARCH process depending on a long-run average (β_0), past 'news' (ε_i^2 , the ARCH term capturing information about the unpredicted return observed in the previous period and measured as the lagged squared residual from the mean equation) and past expectations (the GARCH term capturing information about forecast variance from the last period). The parameters β_1 and β_2 are the weights assigned respectively to the determinants of volatility. If β_1 and β_2 are positive, shocks to volatility (risk) persist, and the magnitude of the two parameters determine the degree of persistence; usually their sum should be lower than 1 in order to prevent an explosive process and satisfy the stationarity condition. We estimate the GARCH equation using Bollerslev-Wooldrige heteroskedasticity consistent covariance and retrieve a series for σ_t^2 , the conditional variance (ie. the one-period-ahead forecast variance based on past information). In Figure 6, spikes in the conditional variance series denote shocks to volatility caused by unexpectedly large returns in either the downward or upward direction.

FIGURE 6 HERE

In the case of the stock market, moderate shocks are located in 15-22 June 1931 (prior to the general election of 28 June) and November 1931; however, the biggest episodes can be found in September-October 1935 (corruption crisis of the right-wing government and intensification of political violence by the left) and in 24 February 1936 (declaration of results of 16 February general election, won by the left). As for

the bond market, mild shocks can be observed in April and October 1930, and June and October 1931, followed by a strong one in January 1932. No further episodes can be detected until 1935, with the most relevant one located in February 1936.

For a more formal test of breakpoints in volatility, we use the Inclan-Tiao test to detect a finite number of structural breaks in the variance of a time series. After retrieving the cumulative sum of squared residuals, $\sum \varepsilon_t^2$, of the two series and defining $C_k = \sum \varepsilon_t^2$, $k=1,2,\dots,T$, the cumulative sum of squared residuals from the start of the sample to the k th observation, we compute the test-statistics as

$$D_k = (\sqrt{T}/2)[C_k/C_T - k/T]$$

where $k = 1,2,\dots,T$, $D_0=D_T=0$, and $(\sqrt{T}/2)$ is used to standardize the distribution of the D_k test statistic. The test assumes that, in case of structural breaks in the variance of the series, the D_k t-stats would drift away from zero instead of hovering around it. The null hypothesis of homogenous variance can be rejected if $\max_k D_k$ at $k=k^*$ exceed the critical values reported in Inclan and Tiao (1994). As shown in Figure 7, the D_k t-statistics pick up a number of potential breakdates that are consistent with those indicated by different methods. In the case of the stock market, 12 January 1931 is confirmed as a turning point of increasing volatility. As for the bond market, upward shifts in volatility are captured in July 1927 and April 1930.

FIGURE 7 HERE

To sum up, our tests provide interesting insights. Uncertainty seemed to dominate in 1931. Mean stock returns and bond prices fell; in both cases volatility increased as a consequence of unexpected surprises (in June and November in the stock market, in June and October in the bond market). In fact early 1931 was pervaded by institutional uncertainty, until the municipal elections of 12 April forced the resignation of King Alfonso XIII, the proclamation of the Republic and the election of a provisional government with socialist politicians in key posts (Prieto at the Finances, Caballero at Labour). This was apparently an unwelcome novelty for investors, as signalled by cut in investment and large capital flight; a new tax on share dealing was also introduced, which may have contributed to lower trading in the stock floor (Beavor 2006, 23). It is

hard however to disentangle a possible shift in political and institutional risk from a more general increase in macroeconomic risk. As summarized in Figure 4, monetary policy had turned expansive during the institutional transition and the government failed to achieve the officially claimed objective of macroeconomic stabilization in preparation to a return to Gold. The Bank of Spain's discounts almost doubled between June 1930 and August 1931 and the monetary base went through a quick expansion that brought the ratio of circulating banknotes-to-gold reserves to its historical peak (2.4 from just 1.8 one year earlier). Between March and September 1931, the banking system experienced a 20 per cent contraction of total deposits (Martin Aceña 1984, 226-7). At the same time, the nominal exchange rate went through a substantial depreciation (from 37 to 50 Ptas/GBP), which was reflected in an acceleration of internal prices up to an inflation above 2.5 per cent on annual basis during 1931. The escalation of the official discount rate from 5.5 to 6.5 percent failed to stabilize the Peseta (Martin Aceña 1984, 175-190). The international banking and financial crisis of May-June 1931 may have further contributed to an atmosphere of uncertainty whose main sources were nevertheless domestic.

The end of 1931 and the following year marked a recovery in both stock and bonds markets with falling volatility. In the stock market, August 1933 brought home an upward shift in mean return, in coincidence with the crisis of centre-left Azaña government and in the wake of the general elections of 19 November 1933, won by the centre-right coalition between Radicals and the right of the CEDA. Again, however, political and macroeconomic factors are difficult to assess separately. By mid-1933, the government appeared to have succeeded in bringing macroeconomic fundamentals under control. Monetary policy had taken on a more disciplined stance, mildly contractionary from July 1932 to March 1933, reflected in a mild deflation (-8 percent early in 1933). The nominal exchange rate of the Peseta had appreciated substantially and was de facto pegged to Gold Bloc currencies (Martin Aceña 1984, 290-5; Carreras and Tafunell 2004, 257-8).

Confidence in both markets was only briefly shaken by the wave of violence that in October 1934 followed the general strikes and the revolutionary attempts in the

Basque Country and Asturias, successfully counteracted by the declaration of a State of War by the government and a brutal repression by the Army. The political instability that characterized the end of 1935, with right-wing governments weakened by internal rivalries and scandals of corruption, seems to have led to a reversal of expectations. Radicalization and polarization on both sides of the political arena led to the creation of the Popular Front on the left and a National Block on the right. October 1935 was a turning point with a strong fall both in stock market mean return and in mean change of bond prices; both markets suffered repeated shocks to volatility between October 1935 and February 1936, when the victory of the Popular Front in the general election seemed to be received by investors as a final blow, with prices falling and volatility escalating.

4. Political shocks and financial markets: an event-study approach

As a further step of our empirical analysis, we look at the possible impact of given political and institutional events on financial markets in an event-study fashion. By using recursive least squares, we estimate the models' residuals recursively, that is, we estimate the one-step ahead forecast error of the dependent variable at time t , where the prediction is based on the estimated coefficient vector up to period $t-1$. Residuals, plotted in Figure 8, can be considered as indicative of particularly large surprises when they fall outside the ± 2 standard error bands.

FIGURE 8 HERE

Apparently, some large and unexpected variations can in fact be associated with political events. Table 3 reports in detail a list of the largest positive and negative "surprises" in the variation of government perpetuities' price and the related changes in yields.

TABLE 3 HERE

The relationship between political events and large, unexpected variations in the return on the BSE index is somehow less straightforward. In any case, some

particularly “bad” news seems to have had a common negative effect on both financial markets. Namely, in coincidence with the critical general elections of June 28, 1931, and February 16, 1936—both won by left wing parties—financial markets show synchronized downwards movements.

We also explore a complementary approach which uses political event dummies taking the value 1 in the week in which an arguably important event took place, and zero otherwise. We have selected a list of events which can be regarded as relevant turning points and a significant source of political instability across three different political regimes: the highly unstable pre-1923 liberal democracy (up to September 1923), the military dictatorship of Primo de Rivera (September 1923-January 1930), and the Second Republic (up to July 1936, which includes also a transitional period of institutional void from February 1930 to June 1931). These events include change of governments, general elections, institutional changes and relevant policy decisions (such as exceptional emergency decrees).

Political event dummies are introduced in equations (1) and (2), as follows:

$$r_t = \alpha + \sum \rho r_{t-i} + \theta D_t + e_t \quad (4)$$

$$d(b)_t = \alpha + \sum \rho d(b)_{t-i} + \theta D_t + e_t \quad (5)$$

in order to test whether the identified events can explain part of the variation of the dependent variable and the dummy-related parameter θ is significant. Additionally, we follow Voth (2001) by introducing the political event dummies in the variance equation of a GARCH model for both series. In this case, the variance equation is specified as:

$$\sigma_t^2 = \beta_0 + \beta_1 \varepsilon_{i,t-1}^2 + \beta_2 \sigma_{t-1}^2 + \theta D_t \quad (6)$$

The results, presented in Table 4 are suggestive but far from conclusive. In a number of events, the reactions of the stock and bond markets were divergent. The stock market saluted with a strong upward shift in return and a volatility reduction the victory of the republican centre-left alliance in the general election of 28 June 1931, but bond prices went down dramatically (AR col. 1 and 3)—as noted above, rumours had spread that a Republican government could renege on the public debt of the monarchic regime. In

the same year, the stock market sentiment turned against the government: especially the extraordinary measures to limit free press and political rights (Ley de Defensa de la Republica) adopted by the Azaña government on 21 October, and to a lesser extent also the approval of the republican Constitution on 14 December, were received with strong negative returns (AR col. 1). However, these institutional changes coincided with strong upward price rebounds in the bond market (AR col. 3). Other social and institutional reforms, such as the enactment of land reform and Catalonia's statute of autonomy, got the approval of the stock market but a rebuke from the bond market.

TABLE 4 HERE

On the contrary, the crisis of the centre-left Azaña government of 12 June 1933 and the victory of the centre-right coalition in the general election of 19 November 1933 were received as 'good news' by both stock market and bond investors (AR model in col. 1). The events of October 1934—the entry of CEDA (far-right) ministers in the centre-right Lerrox government, the social upheaval and political turmoil triggered by a general strike and the revolutionary attempts in Asturias, Catalonia and the Basque Country, crushed by the Army's violent counterinsurgency operations, and the announcement of Catalonia's secession—brought stock returns down and bond prices up by almost the same magnitude.

During the last months of the political crisis, however, the two markets went on aligned. The hegemony conquered by CEDA (far-right) ministers in the centre-right Lerrox government on 6 May 1935 pushed both stock and bond prices up. On the contrary, stock and bond investors received the final crisis of the centre-right government and the call of a new election (11 December 1935) and especially the victory of the Popular Front in the election of 16 February 1936 with a general wave of pessimism and a dramatic fall in stock and bond prices. This downward synchronization may signal that investors considered the electoral results as a credible threat to property rights and institutional stability.

5. Conclusion

The tentative results of our empirical exercises point unanimously towards a quick and generalized deterioration of investors' expectations in the early months of 1936. The Popular Front's victory in the general elections of 16 February 1936 can be identified as a final turning point. Unlikely previous phases of "pessimism" and uncertainty about the value of financial assets, such as in 1930-31, the nature of such reversal appears almost entirely political and less affected by a visible deterioration in macroeconomic fundamentals. The political failure and final disintegration of the centre-right alliance, whose successes had been received with rising expectations in 1933-34, and the increasing polarization of the political arena in 1935, may have contribute to induce a feeling that a point of no return in the deterioration of the institutional environment had been reached.

Bibliographical References

- Addison, Tony and S. Mansoob Murshed (2002). "On the Economic Causes of Contemporary Civil Wars. Issues in positive political economy," in *Frontiers of Political Economy*, vol. 42. London and New York: Routledge. Pp. 22-38
- Beevor A. (2006). *The Battle for Spain. The Spanish Civil War 1936-1939* (London, Phoenix)
- Bekaert G., Erb C.B., Harvey R., Viskanta T.E. (1998), 'Distributional characteristics of emerging markets returns and asset allocation', *Journal of Portfolio Management*: 102-116
- Bekaert G., Harvey R. (1997), 'Emerging stock market volatility', *Journal of Financial Economics*, 43: 29-77
- Berdal M., Malone D. (eds.), *Greed and Grievance*.
- Bilson, C., T. Brailsford and V. Hooper (2002). "The explanatory power of political risk in emerging markets," *International Review of Financial Analysis*, 11 (1), pp. 1-27.
- Bittlingmayer G. (1998), 'Output, stock volatility and political uncertainty in a natural experiment: Germany, 1880-1940', *Journal of Finance*, 53, 2243-2257
- Brown W., Burdekin R. (2002), 'German debt traded in London during the Second World War. A British perspective on Hitler', *Economica*, 69, 655-669
- Carreras, Albert and Xavier Tafunell (eds.) (2005). *Estadísticas históricas de España: siglos XIX y XX*. Segunda edición revisada y ampliada. Bilbao: Fundación BBVA, 3 vols

- Carreras A., Tafunell X. (2004). *Historia Económica de la España Contemporánea* (Barcelona, Crítica)
- Collier P., Hoeffler A. (2004). "Greed and Grievance in Civil War." *Oxford Economic Papers*, 56 (4), pp. 563-95.
- Dar-Hsin, C. *et al.* (2005). "The impact of political events on foreign institutional investors and stock returns: Emerging market evidence from Taiwan," *International Journal of Business*, 10 (2), pp. 165-188.
- De Long, B., A. Shleifer, L. Summers and R. Waldman (1990). "Noise trader risk in financial markets," *Journal of Political Economy*, 98 (4), pp. 703-38.
- Diamonte R., Liew J., Stevens R. (1996), 'Political risk in emerging and developed markets', *Financial Analyst Journal*, May/June
- Dutta I., Mishra A. (2005), 'Does inequality lead to conflict?', WIDER Research Paper, n. 34
- Frey B., Kucher M. (2000), 'History as reflected in capital markets: the case of World War II', *The Journal of Economic History*, 60, 468-496
- Frey B., Kucher M. (2001), 'Wars and markets: how bond values reflect the Second World War', *Economica*, 68, 317-333
- Frey B., Waldenstrom D. (2004), 'Markets work in war: World War II reflected in the Zurich and Stockholm bond markets', *Financial History Review*, 11, 51-67
- Garfinkel M.R., Skaperdas S. (2006), 'Economics of Conflict: An Overview', in T.Sandler, K. Hartley (eds.), *Handbook of Defence Economics* (New York)
- Gomez Biscarri J., Perez de Garcia F. (2004), 'Stock market development and stock market cycles in Spain', *Spanish Economic Review*, 6:2, 127-151
- Gomez Biscarri J., Cuñado J., Perez de Garcia F. (2004), 'Structural changes in volatility and stock market development: Evidence for Spain', *Journal of Banking and Finance*, 28:7, 1745-1773
- Keen D. (2000), 'Incentives and disincentives for violence', in M. Berdal, D. Malone (eds.), *Greed and Grievance*.
- Martin Aceña P. (1984), *La Política Monetaria en España, 1919-1935* (Madrid, IEF)
- McBride M., Skaperdas S. (2005), 'Explaining conflict in low-income countries: incomplete contracting in the shadow of the future', *CESifo Working Paper*, n. 1636
- Mei J.P. (1999), 'Political risk, financial crisis and market volatility', *NYU Working Paper*, n. S-MF-99-08
- Minehan P.B. (2006), *Civil War and World War in Europe* (New York, Palgrave)
- Oosterlinck K. (2003), 'The bond market and the legitimacy of Vichy France', *Explorations in Economic History*, 40, 326-344
- Reynal-Querol M. (2002), 'Political systems, stability and civil wars', *Defence and Peace Economics*, 13:6, 465-483
- Sambanis, Nicholas (2002). "A Review of Recent Advances and Future Directions in the Quantitative Literature on Civil War." *Defence and Peace Economics*, 13 (3), pp. 215-43.
- Schwert, G.W. (1989). "Why does stock market volatility change over time?" *Journal of Finance*, 44 (5), pp. 1115-1153.
- Schwert W. (1989), 'Why does stock market volatility change over time?', *Journal of Finance*, 44, 1115-1153

- Skaperdas, Stergios (2008). An Economic Approach to Analyzing Civil Wars. *Economics of Governance*, 9 (1), pp. 25-44.
- Torrente Fortuño, José Antonio (1974). *Historia de la Bolsa de Madrid*. 3 vols. Madrid: Colegio de Agentes de Cambio y Bolsa.
- Torrente Fortuño, José Antonio (1971). *Cuentos de Bolsa*.
- Torrente Fortuño, José Antonio (1966). *Historia de la Bolsa de Bilbao: 75 años. 1890 – 1965*. Bilbao: Bolsa de Bilbao.
- Torrente Fortuño, José Antonio (1940). *Guia del bolsista cotizaciones diarias, cambios medios, índices, negocio, comentarios, direcciones, vida sindical*. Madrid.
- Voth H-J. (2001), 'Inflation, political instability and stock market volatility in interwar Germany', UPF Economics Working Paper, 535
- Voth H-J. (2002), 'Stock price volatility and political uncertainty: evidence from the interwar period', CEPR Working Paper, 3254
- Waldenstrom D., Frey B. (2008), 'Did Nordic countries recognize the gathering storm of World War II?. Evidence from the bond markets', *Explorations in Economic History*, 45, 107-126
- Willard, K., T. Guinnane and H. Rosen (1996). "Turning points in the Civil War: Views from the greenback market," *American Economic Review*, 86 (4), pp. 1001-1018

TABLES

Table 1.
Securities traded on the Bilbao and Madrid Stock Exchanges, 1920 – 1935
(millions pesetas and percentages)

year	Government Bonds		Corporate Bonds		Corporate Equities		Total	Value Traded Ratio
	Pta. mln	%	Pta. mln	%	Pta. mln	%	Pta. mln	%
Bilbao								
1920	33	9,8%	43	12,6%	263	77,6%	339	1.19
1925	58	26,0%	62	27,8%	102	46,1%	221	0.73
1930	70	28,1%	40	16,2%	139	55,7%	249	0.74
1935	62	25,4%	42	17,0%	141	57,6%	245	0.68
Madrid								
1920	565	51,6%	60	5,5%	470	42,9%	1095	3.84
1925	520	52,5%	90	9,1%	380	38,4%	990	3.24
1930	620	23,5%	75	2,8%	1940	73,6%	2635	7.80
1935	1130	51,0%	160	7,2%	925	41,8%	2215	6.14

Note. Value traded ratio is the ratio of total securities traded to nominal GDP.

Source: Memorias de la Cámara de Comercio, Industria y Navegación de Bilbao, various issues; Nominal GDP from Prados 2007.

Table 2
Breakpoint Tests on Mean Values

Stock market mean return		
Period: 26 Dec 1921 - 13 July 1936		
	Value	Prob.
Quandt-Andrews Statistic		
Maximum LR F-statistic (9/23/1929)	8.12	0.096
Maximum Wald F-statistic (9/23/1929)	6.29	0.211
Breakpoint Dummy	Coefficient	t-Stat (prob)
(9/23/1929)	-0.256	-2.51 (0.012)

Period: 30 Sep 1929 - 13 July 1936		
	Value	Prob.
Quandt-Andrews Statistic		
Maximum LR F-statistic (8/21/1933)	4.88	0.213
Maximum Wald F-statistic (8/21/1933)	6.99	0.158
Breakpoint Dummy	Coefficient	t-Stat (prob)
(8/21/1933)	0.315	2.69 (0.007)

Period: 28 Aug 1933 - 13 July 1936		
	Value	Prob.
Quandt-Andrews Statistic		
Maximum LR F-statistic (10/28/1935)	12.29	0.014
Maximum Wald F-statistic (10/28/1935)	9.31	0.057
Breakpoint Dummy	Coefficient	t-Stat (prob)
(10/28/1935)	-1.121	-3.05 (0.003)

Mean change in (log)price of bond		
Period: 25 Dec 1922 - 13 July 1936		
	value	prob
Quandt-Andrews Statistic		
Maximum LR F-statistic (11/30/1931)	3.81	0.467
Maximum Wald F-statistic (11/30/1931)	3.03	0.620
Breakpoint Dummy	Coefficient	t-Stat (prob)
(11/30/1931)	0.174	1.74 (0.082)

Period: 7 Dec 1931 - 13 July 1936		
	value	prob
Quandt-Andrews Statistic		
Maximum LR F-statistic (12/09/1935)	6.82	0.135
Maximum LR F-statistic (2/17/1936)	7.62	0.120
Maximum Wald F-statistic (10/28/1935)	3.12	0.688
Maximum Wald F-statistic (11/18/1935)	5.92	0.198
Breakpoint Dummies	Coefficient	t-Stat (prob)
(10/28/1935)	-0.602	-2.34 (0.019)
(11/18/1935)	-0.665	-2.43 (0.016)
(12/09/1935)	-0.711	-2.41 (0.017)
(2/17/1936)	-0.819	-2.17 (0.031)

Table 3

Stock market: recursive residual of (log) return

Week	Recursive residuals	(log) return	Events
17 feb 1936	-6,75	-6,12	General election. Victory of left Popular Front
9 sep 1935	-4,34	-1,67	Political crisis in centre-right government
28 oct 1935	-3,85	-2,11	Leader of centre-right Lerroxx resigns as prime minister. New government Ciapapietra.
11 nov 1935	-3,82	-3,26	?
15 jun 1931	-2,95	-3,06	Basque Country approves Statute of autonomy
13 apr 1931	-2,37	-2,64	Municipal elections. Victory of republican centre-left. King Alfonso XIII resigns. Republic proclaimed.
16 sep 1935	-2,33	-1,27	Corruption scandal. Government crisis.
16 mar 1931	-2,26	-1,66	
19 oct 1931	-2,21	-3,05	Declaration of Ley de Defensa de la Republica. State of War
10 feb 1930	-2,17	-1,94	Provisional government Damaso Berenguer after fall of Primo de Rivera
29 jan 1934	-1,99	-1,24	
4 apr 1932	-1,95	-2,22	?
25 nov 1935	-1,94	-2,55	
6 jul 1931	-1,88	-2,37	Result of general elections of 28 June announced. Victory of centre-left coalition.
18 may 1931	-1,87	-2,41	Anti-religious violence. State of war declared in Madrid, Alicante, Andalucia
2 mar 1936	-1,86	-2,31	
12 jan 1931	-1,86	-2,18	
25 may 1931	-1,80	-2,69	State of war declared in San Sebastian. Implementation of land reform.
2 sep 1935	9,94	10,83	?
30 sep 1935	4,76	5,33	?
21 oct 1935	4,58	5,28	?
26 aug 1935	3,93	4,08	?
8 jan 1934	3,39	3,78	?
1 jun 1931	3,20	2,24	?
2 nov 1931	2,91	2,13	
10 feb 1936	2,66	2,83	Week before general election.
16 feb 1931	2,34	1,70	Government Juan Bautista Aznar. Municipal elections called.
23 feb 1931	2,24	2,23	
25 mar 1935	2,22	1,93	?
21 jan 1935	2,20	2,18	National Alar. State of War in Catalonia, Asturias, Basque Country
9 apr 1934	2,17	1,98	?
11 dec 1933	2,09	2,19	National Alarm. Anarquist revolt repressed

Bond Market: recursive residuals of change in yield

Week	Recursive residuals	Base points change	Events
4 jan 32	0,09871	-69,59	follows 2 week new government Azaña (left)
8 jun 31	0,0422	-26,21	?
7 apr 30	0,041039	-24,9	?
21 dec 31	0,038024	-19,96	new government Azaña (left)
29 jul 35	0,036268	-17,61	Law of Agrarian Counterreform passed
21 mar 32	0,03346	-20,98	?
7 dec 31	0,032967	-20,72	2nd Republic proclaimed
1 may 33	0,02643	-12,4	follows political defeat of Left in municipal elections
28 sep 31	0,026306	-16,99	?
10 jul 33	0,025787	-15,98	?
26 nov 34	0,023286	-15,31	?
25 may 36	0,022609	-14,02	political crisis 1936
15 jul 35	0,022336	-10,05	draft of constitutional reform by gov Lerroxx (right)
19 sep 32	0,02191	-21,44	?
18 dec 33	0,020706	-11,51	Government Lerroxx (right)
11 sep 33	0,020146	-13,56	Government Lerroxx (right) replaces Azaña (left) after crisis
29 apr 35	0,019662	-14,71	precedes formation of Government Lerroxx with CEDA (right)
4 apr 32	-0,053039	30,68	?
17 feb 36	-0,044591	23,23	follows General Elections 16feb36;
28 dec 31	-0,041465	35,18	follows Carner as new Minister of Finance (Azaña gov)
20 apr 36	-0,039935	17,8	surge in political violence
8 feb 32	-0,037996	28,61	?
13 oct 30	-0,037773	19,77	?
21 oct 31	-0,035176	26,39	Government Azaña resigns
12 sep 32	-0,03417	21,92	Law of Agrarian Reform approved
4 may 31	-0,032496	16,1	political violence (churches burnt; military uprising)
22 apr 35	-0,031299	19,79	state of emergency declared
5 apr 36	-0,029638	15,98	?
2 feb 31	-0,026057	15,26	?
30 jun 30	-0,025917	15,12	?
27 apr 31	-0,022211	10,49	state of emergency declared
21 aug 33	-0,021661	11,04	?
4 may 36	-0,020769	12,52	political crisis (two govns in 2 weeks)
6 apr 31	-0,020659	9,13	municipal elections 12apr31; consolidation Treasury bonds into long-term debt 5%
14 apr 30	-0,020596	17,07	?
5 aug 35	-0,020522	16,42	follows Agrarian counterreform
5 jan 31	-0,019853	11,4	?
3 oct 32	-0,019605	13,42	?
3 apr 33	-0,019591	12,31	?

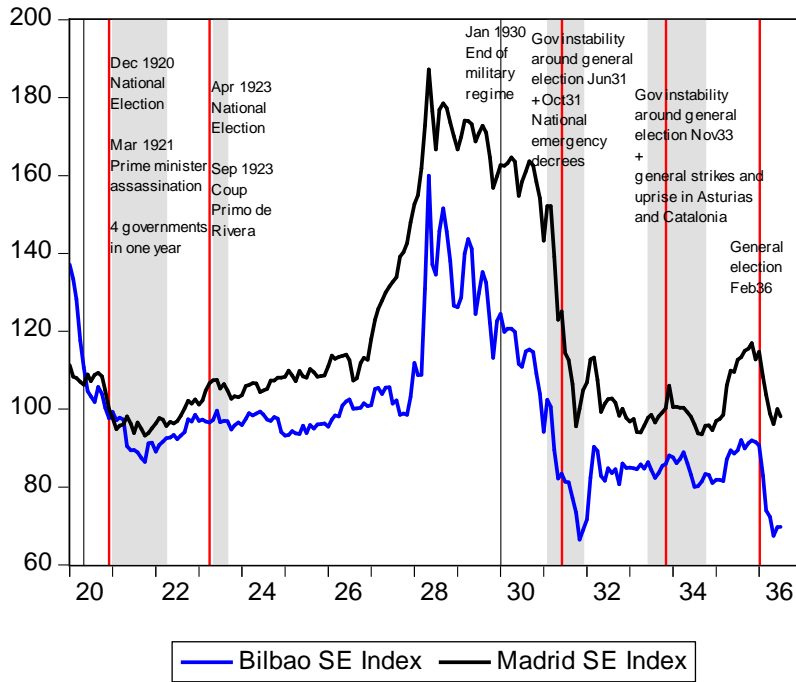
Table 4
Political event dummies

Week	Event	(1) log-return BSE Market Index		(3) d(log-price) Government Perpetuity	
		AR(4)	GARCH	AR(4)	GARCH
30 jan 1930	End of military regime, transitional period begins	0.39(5.53)	-0.02(-2.91)	0.16(2.69)	-
13 apr 1931	Provisional government Alcala-Zamora, violence against churches, military uprising, state of emergency declared	-0.83(-2.21)	-	-	-
28 jun 1931	General election	0.62(3.31)	-0.03(-4.96)	-2.06(-7.38)	-
14-20 oct 1931	Government Azaña, emergency decree (Ley de Defensa de la Republica)	-1.63(-10.22)	-0.03(-4.91)	0.82(5.71)	-
14 dic 1931	Republican Constitution approved, New government Azaña	-0.19(-2.36)	-	0.39(10.24)	-
9 sep 1932	Bill of Agrarian Reform and new Catalonia's Statute approved	1.77(6.81)	-	-0.24(-4.32)	-
12 jun 1933	Crisis and new government Azaña	2.28(42.69)	-	0.27(4.14)	-
19 nov 1933	General election	0.71(13.18)	-	-	-0.009(-5.82)
28 apr 1934	Government Samper Ibañez	-	-	-	-0.01(-5.73)
4-15 oct 1934	Political crisis, Lerroux new prime minister, ministers from CEDA (right) general strike declared by the left, revolutionary attempt in Asturias, Catalonia proclaimed independent	-0.39(-3.47)	-	0.30(5.06)	-0.008(-5.68)
6 may 1935	New government Lerroux with majority to CEDA	0.30(2.49)	-	1.95(9.02)	-
11 dec 1935	Parliament dissolved, new general election called	-0.53(-9.52)	-	-0.87(-9.74)	-
16 feb 1936	General election, new Government Azaña, Agrarian Reform reinstated	-3.17(-2.55)	-	-1.99(-2.97)	-

(1) (3) Political event dummies in least square mean equation of dep. variable modelled as AR(4) process; Newey-West heteroskedasticity consistent coeff. covariance
(2) (4) Political event dummies in variance equation of dep. variable modelled as GARCH process; Bollerslev-Woolbridge heteroskedasticity consistent covariance
T-stats in parhentesis

FIGURES

Figure 1
Madrid and Bilbao Stock Market Index
 (monthly data)



Sources: Bilbao, *Información*, Bilbao Chamber of Commerce; Madrid, *Bolsa*, 1994, n.25.

Figure 2
Madrid and Bilbao Stock Exchange (log)price return correlation

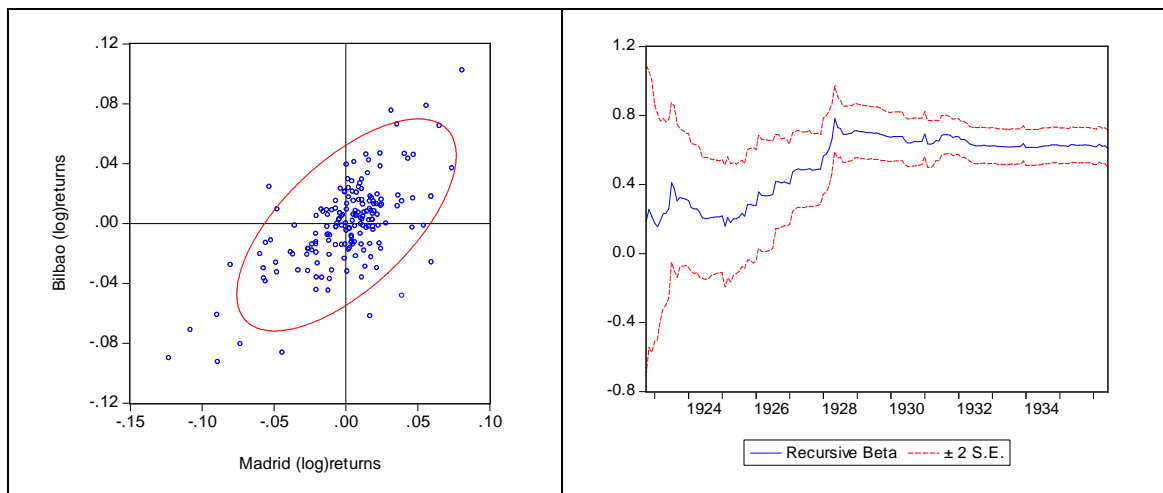
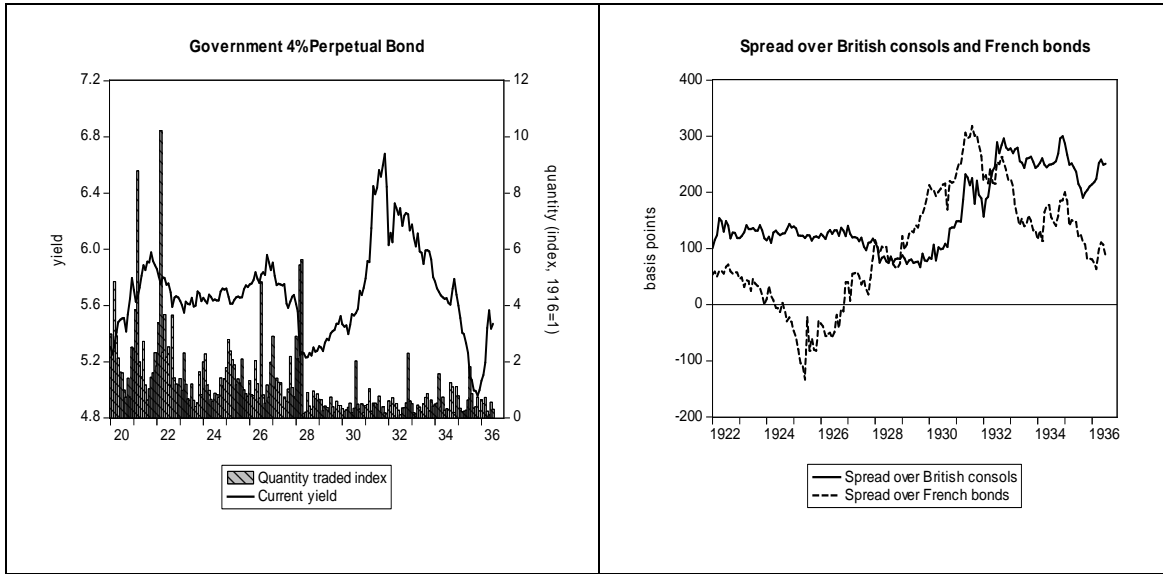
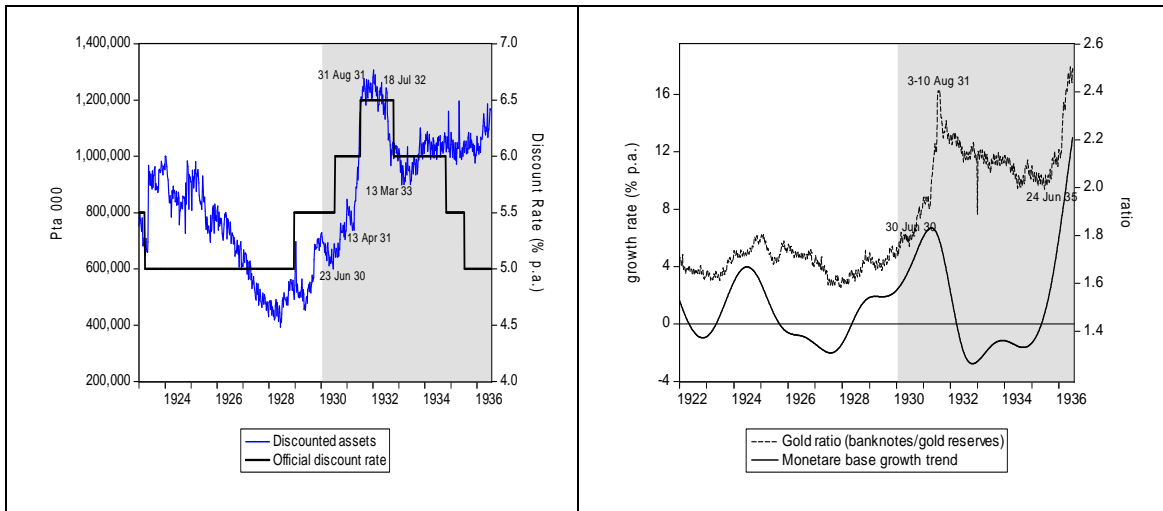


Figure 3
Government Bond Yield and Sovereign Risk

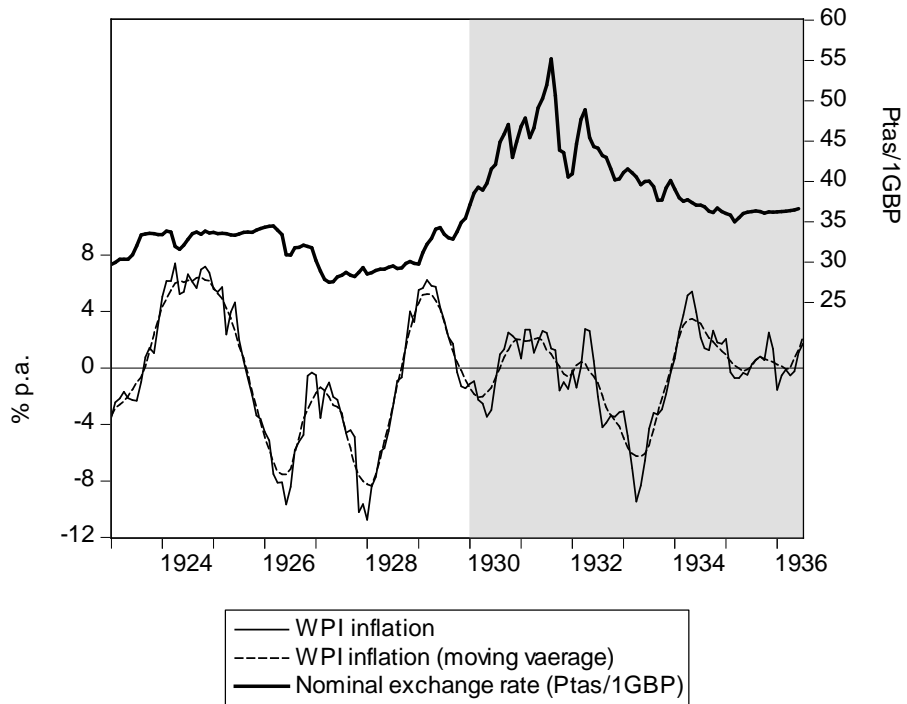


Sources: see Figure 1; British consols and French bonds, *Global Financial Data*.

Figure 4
Monetary policy indicators and macroeconomic fundamental

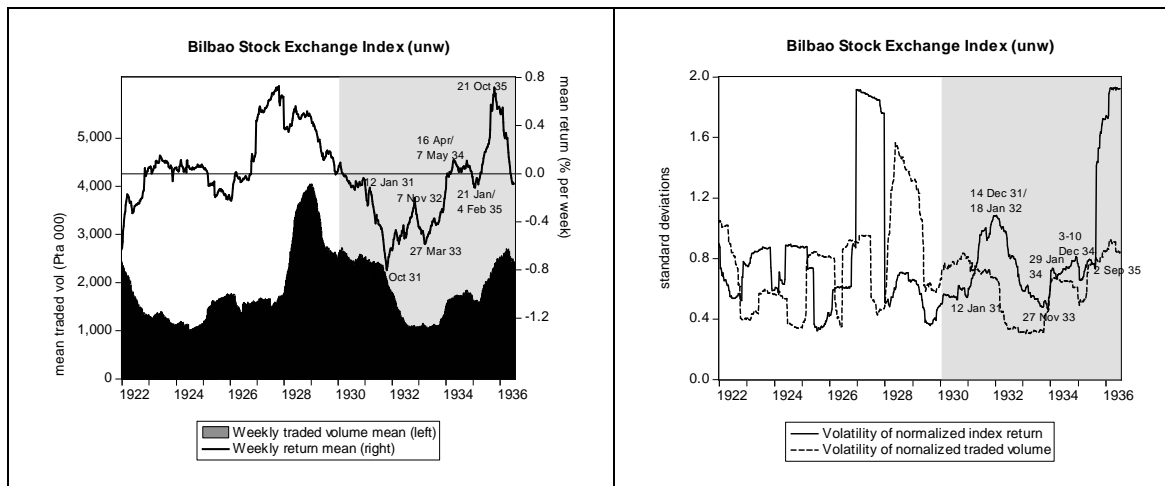


Source: Bank of Spain, published balance sheets.



Source: Bank of Spain, historical series (Trabajos inéditos de Pedro Martínez Mendez), CD.

Figure 5
Stock and bond markets' turning points
 (mean and volatility estimated for 52-weeks rolling windows)



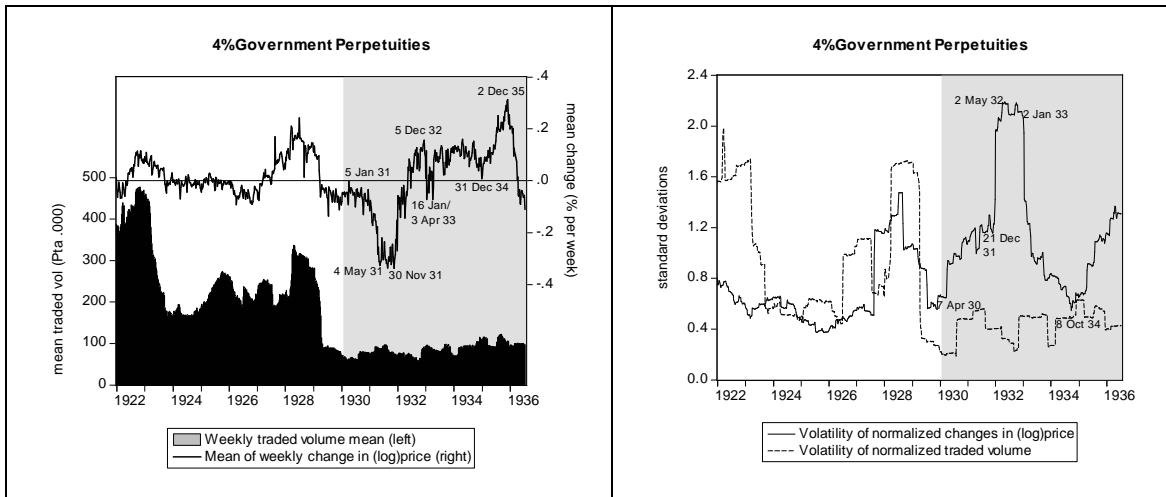


Figure 6
Conditional Variance

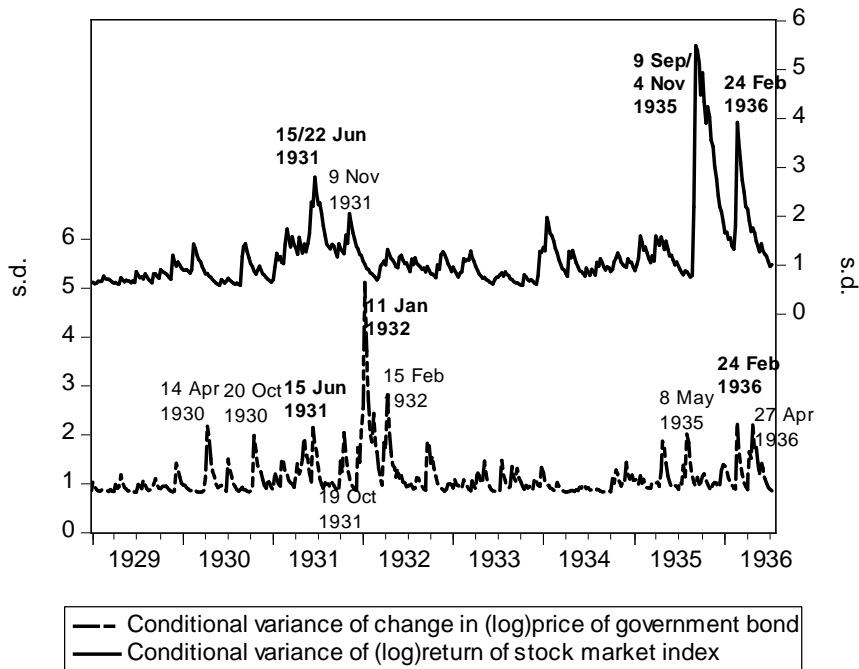


Figure 7
Inclan-Tiao Test of Breakdates in Variance

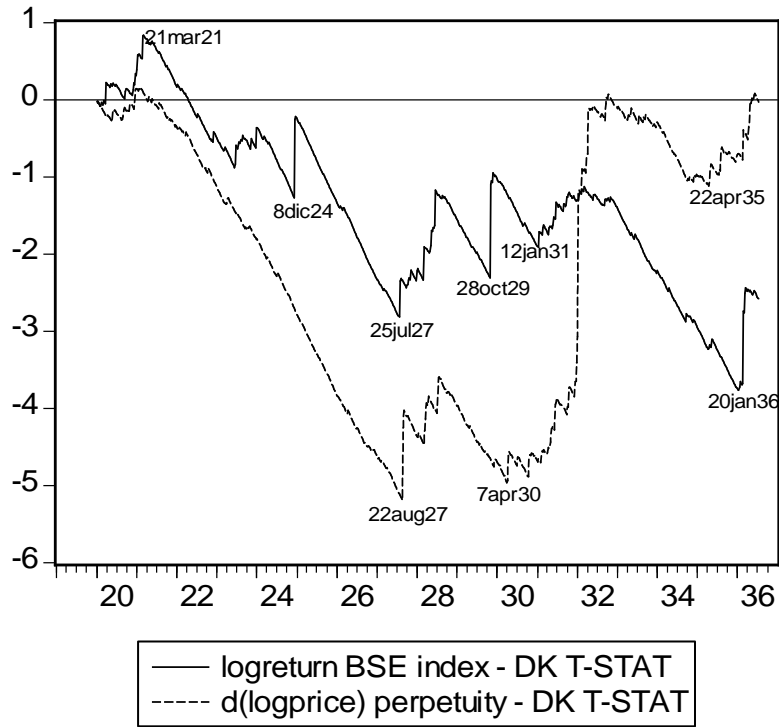


Figure 8
Recursive residuals

