Did investors expect an institutional breakdown? Stock and bond markets and political violence at the onset of the Spanish Civil War

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ABSTRACT

Did Spanish investors expect a traumatic breakdown of the existing economic and institutional order in the run up to the outbreak of the Civil War? The paper explores this issue by looking at financial markets in the years that preceded the dramatic events of July 1936. Our purpose is empirically to assess the notion, advanced both by contemporary commentators and by historical narratives, that political developments were the main determinants of investors' sentiment in the 1930s. We test for structural shifts in the mean and variance of stock and bond markets in coincidence with main political events, and assess their short-run impact by using an event study approach. We also test the impact of political vs. macroeconomic "events" on markets' behaviour. Comments from stock market chronicles are used in order to investigate the public's perception of the identified events. Our preliminary findings suggest that, unlike the crisis of 1931, in which macroeconomic and political shocks fed back mutually, from 1933 onwards political shocks dominated. Investors' sentiment was optimistic from the end of 1933 but turned pessimistic already in November 1935, in coincidence with the crisis of the ruling right-wing coalition. Expectations collapsed after the victory of the Popular Front coalition in February 1936, which markets did not anticipate.

Keywords: structural breaks, Spanish civil war, financial asset markets

JEL classification: G12, N24

1. Introduction

Was the institutional collapse which culminated in the outbreak of the Spanish civil war expected? We explore this issue by looking at the behaviour of Spanish investors in the years that preceded the dramatic events of July 1936. Serious political instability characterized the 1930s in Spain. The military regime of Primo de Rivera, installed by coup in December 1923 and which put an end to a fragile democratic system whose legitimacy was shaken by social upheaval, political violence and antidemocratic outbursts, was demised in January 1930. A controversial return to democracy was compounded in April 1931 by the end of the monarchy, discredited by the support given to the military government. The proclamation of the republic was followed by the victory of Republican and Leftist parties in the general election of June 1931 and a leftist coalition government. Five long and difficult years followed, characterized by repeated government crises and frequent outbreaks of political violence, revolutionary attempts and military uprisings. The victory of a Popular Front coalition in the general election of February 1936 raised fears of a traumatic breakdown of the capitalist system and democratic political institutions. The Russian revolution cast a long shadow on Spain. The influence and power gained in the Spanish society by the socialist and communist movements, the pervasiveness of sectarian violence and the massive support given by the electorate to the left in democratic elections, certainly contributed to give credibility to a potential threat of expropriation or limitation of property rights. The attack on the legitimate government brought home by disloyal generals on July 18th, 1936 is generally interpreted as a pre-emptive response to that possibility. Although we cannot assess Franco's expectations and those of his accomplices, we ask whether and how such political developments affected economic agents' expectations as for the survival of the existing institutional and economic order.

The paper tests how financial markets reacted to political instability and violence in the run up to the outbreak of the civil war. Due to their forward-looking characteristics, financial assets 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. Adjusting perspectives as new information relevant to the future value of assets becomes available is immediate. The difficulty is to know when exactly information becomes available and how "news" is interpreted by the public.

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, Landon-Lane and Oosterlinck 2006). 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 industrialized countries in the period 1919-1939.

These historical analyses find their counterpart in empirical 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 and bond market volatility and returns (Bekaert and Harvey 1997, Bilson et al. 2002, Chaney 2008, Diamonte et al. 1996, Mei 1999)

In order to assess investors' response to political violence we have reconstructed a unique data set which includes indexes of the Bilbao and Madrid stock exchanges and the yields of government bonds at weekly frequency from January 1920 to July 1936. Bilbao showed more the characteristics of an industrial stock exchange, whereas Madrid traded more predominantly in government securities. We have also collected weekly information on volumes of stocks and bonds traded on both markets. The empirical finance literature has documented a strong and positive correlation between trading volumes and aggregate return volatility; surges in trading volumes are generally associated with increasing disagreement between investors or the existence of different priors (Karpoff 1986; Schwert 1989; Andersen 1996)

We formally explore the impact of political events on stock price returns and government bond yields, their volatility and traded volumes by testing the existence of structural breaks and abnormal changes in an event-study fashion. Instead of bringing historians' hindsight into the analysis, we let data speak by themselves. Once "events" are identified, we use financial chronicles and commentaries from the press to assess which "news" moved the markets.

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. 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 crisis 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. These data have been complemented by monthly data on foreign bond and stock markets and the nominal exchange rate collected by the Bank of Spain.

We find some preliminary evidence suggesting a significant impact of major political episodes on stock returns and bond yields. Macroeconomic commotion also contributed to the first period of turmoil in 1931. Government crises in late 1935 leading up to the general election of February 1936, with the victory of the Popular Front, emerge 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 describes the question to be addressed in the paper and the reviews some of the literature we build our analysis on. 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 introduce the changes in macroeconomic fundamentals, rather than institutional and political risk, as elements that 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 attempts to disentangle the effect of political events and changes in macroeconomic fundamentals on stock exchanges and Section 6 concludes.

2. Spanish financial markets 1920-1936: the data

Our main question is whether and when financial markets anticipated an extreme occurrence such as a violent crisis of the existing political and economic order, which could put their property rights in jeopardy. We expect that rational economic agents would react to the threat that such eventuality posited to the future value of their assets if they concluded that its probability increased significantly. They could 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

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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.

As mentioned in the introduction, the forward-looking nature of asset markets confers on them special characteristics. These justify their use as an indicator of economic agents' changes in expectations about the future in response to macroeconomic or political events which affect the value of their assets. As a matter of fact, the direct influence of political instability on the performance of the Spanish financial 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 instance by J.A. Torrente-Fortuño, a commentator of financial chronicles in the 1930s and the author of official histories of the Bilbao and Madrid stock exchanges, political events affected the behaviour of stock exchanges by far more than strictly economic and financial factors in the years prior to the Civil War.[1]

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[1] *"What characterizes the stock exchange decade spanning from 1926 to 1936 is the predominance of political factors over the strictly economic and financial. […] [Previously t]he financial journals, when a key political event took place, made almost no reference to it, sticking to its principles of economy and finance and eluding political comments. […] As soon as deep worries are introduced, politics become the driving element and stock exchanges move with against the backdrop of politics, journals systematically introduce a new section 'Politics and Finances'."* [free translation by authors] Torrente Fortuño (1966), pp. 339-40. See also Moreno Castaño (2004), p. 9 and Hoyo (2007), p. 45-48.

In order empirically to test this hypothesis, we have constructed a unique data set including different financial time series observed at weekly frequency from January 1920 to July 1936: a set of market capitalization-weighted indices of the Madrid and Bilbao stock markets, both including and excluding dividends; a set of indices of secondary market price of Spanish government bonds (both domestic and external) traded in the same markets; and data on traded volumes of both equities and bonds.

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 sovereign default, not only due to the inability or unwillingness to honour its commitments by a government pressed by mounting debts, but also to the risk that new political regimes may not acknowledge their liability for the "odious" debt of the antecedent (Landon-Lane and Oosterlinck 2006, Collet 2010). This is particularly relevant in the Spanish context of the 1930, characterized by realized and potential regime changes. Indeed Spanish and foreign public opinions echoed worries of an "odious debt" episode in April 1931 after the fall of King Alfonso XIII and the proclamation of the Second Republic (Torrente Fortuño 1966, p. 471).[2]

The starting date of the two series has been selected in order to exclude WWI and the immediate post-war period, 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

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[2] "During episodes of agitation and panic such as the week of revolution the downward trend cannot be contained, because the spirits are subject to restlessness and deep unease, which leads to the contraction of stock quotes. It is a common phenomenon of this class of political commotions in a country, which cease —following a universal process— as soon as the mood has calmed down, that the normality on the stock exchange will be re-established, given that the new regime does not produce reforms that directly affect the equities and the national budget does not affect the existing favourable development. The declarations made by the Secretary of the Treasury about government bonds and the guarantee of the Treasury have produced a sensation of peace: the debt emitted during the dictatorship will be respected and there is no need therefore to fear alterations in this fundamental principle." [free translation by authors] *ABC*, April 19th, 1931, one week after the Second Republic had been declared.

coup d'état of July 18, 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 historical returns of market indices.[3] Exceptions are Gómez Biscarri and Pérez de García (2004) and Gómez 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.[4]

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.[5] The companies listed on the three exchanges were decided by each exchange until 1928. After that, listing was centralized in Madrid. We have decided to focus on the Madrid and Bilbao markets due to their institutional and regulatory similarities and cross-listing, 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.[6]

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 Madrid and Bilbao stock exchange's microstructure. Trading sessions were held Monday through Saturday from 11 to 12:30 in the morning with the

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

[4] Rivas Sánchez and García Benavides (2000) is an exception.

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

[6] 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 Madrid and Bilbao show a very high co-movement, the indices calculated for Barcelona by Hortalá are very different. Until we have a clearer understanding where these differences arise from, we will leave the Barcelona exchange aside. For similar reasoning see Carreras and Tafunell (2005), p. 738 n. 24.

exception of national and local holidays.[7] 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 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. Both stock markets were 'listed' exchanges. Orders were entered by open outcry by brokers who were members of the Exchange. Spot transactions were dominant; only during periods of intensive trading would forward transactions 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. 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

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[7] From the end of February 1921 to October 1923 there was no trading on Saturdays, which held true for all summer sessions after 1923.

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.[8]

In order to construct our series, we have hand-collected closing prices and traded volumes from official sources: the official daily stock exchange bulletins for Madrid[9]; and *Información*, a review published by the Bilbao Chamber of Commerce, which reported fortnight summaries of prices quoted and volumes traded, for Bilbao.[10] Data on nominal capital of listed companies, stocks' face value, and paid dividends were collected from *Anuarios Financieros y de Sociedaded Anónimas* and *Boletines de Cotización Oficial* of the Madrid and Bilbao Stock Exchanges respectively. A vast majority of stocks did not trade regularly at all times; indeed, for many of them prices and quantities were reported at very low frequencies, or exhibited long intervals of irregular trading, which suggests the existence of very thin markets. For this reason, we focused on weekly rather than daily observations and preselected the equities that traded more regularly.[11] The pre-selected stocks have been 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,

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[8] Rodriguez Sastre (1940), pp. 258-9.

[9] The Real Orden 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.

[10] 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.

[11] 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.

representing the most liquid and most highly capitalized securities available in the two stock exchanges, have been used to construct a weighted price market index.[12] We have also collected from the same sources the quoted prices of government perpetuities (*Deuda perpetua* 4%) denominated in domestic currency.[13]

There exist a number of cautionary issues that are important for an appropriate interpretation of our empirical exercise. The ability of observed stock market returns and government bond yields to adequately capture shifts in the 'sentiment' of investors can be undermined by official and un-official interventions to constrain speculative trading or stabilize prices in periods of turbulence or loss of confidence. According to Torrente-Fortuño, by instance, coordinated interventions took place systematically throughout 1936 to slowdown the fall in stock prices. In fact it is most likely that interventions on behalf of the governing boards of the two exchanges occurred regularly.[14] 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.

Constraints on full informational efficiency may arise also 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.

Finally, our perception of "relevant" political events is certainly biased by the hindsight of history. Whereas there can be little controversy on the relevance of major episodes,

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[12] 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.
[13] 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.
[14] Torrente-Fortuño (1966), pp. 508-10.

such as revolutionary attempts or elections, we may well miss apparently minor events which 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 <u>not</u> materialize. For this reason we do not impose our own grid of events of data, but allow data to speak by themselves.

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

The two capitalization-weighted price indexes of the Madrid and Bilbao stock exchanges and the index of the price of 4% government consols (*Deuda Perpetua*) are shown in Figure 1 against the key political events which characterized interwar Spain.

FIGURE 1 HERE

As indicated in Figure 2, the two equity markets 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 stayed around 0.3 until the peak of the short-lived bull market of 1927-28 and climbed up to almost 0.6 by 1931, 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 growing importance of commonly traded stocks for Madrid and Bilbao after 1928. In any case, since our analysis will concentrate on the 1930's period, we are reassured that movements observed in Bilbao reflected shifts in expectations similar to those observed in Madrid.

FIGURE 2 HERE

As evident from Figure 1, equity and bond markets followed very similar long-run patterns, which can be taken as evidence that they were responding to the same

fundamentals. Both prices of equities and government bonds started a period of rapid escalation in October 1926; peaks were reached in June-July 1928, followed by a protracted fall due to last until November 1931. After this turning point, bond prices recovered consistently, reaching a new peak between July and November 1935. Equity prices remained stagnant until the end of 1934 and went through a brief and moderate recovery until the Fall of 1935. The year 1936 saw a joint and rapid fall.

Visual inspection suggests that major political events moved both markets in the short run. Downward shifts are evident in the months prior to the demise of the Primo de Rivera dictatorship (January 1930), as well as during the dramatic political events of Spring 1931, the unfolding of revolutionary attempts of Fall 1934 or the general election of February 1936. Similarly, the victory of a centre-right coalition in the general election of November 1933 and the successful repression of the 1934 revolutionary outburst were followed by significant price recoveries. We will examine whether any of these events had a long lasting effect on investors' sentiment and expectations?

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.[15] We are interested here in testing whether any major political event or episode of political violence determined persistent shifts in the mean or variance of 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 break date. If at some point investors 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

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[15] We also complement price analysis with the information provided by traded quantities.

threat to the protection of their property rights, there should be some date break around which we can detect a downward shift in expectations.

The existence of multiple unknown breakpoints in the mean value of our series is estimated by Bai-Perron (BP) tests (1998, 2003), as it is now standard in the event studies literature. BP tests are based on a multiple linear regression with m breaks (m+1 regimes):

$$y_t = \beta x'_t + \delta_j z'_t + u_t, \quad t = T_{j-1}+1, \ldots., T$$

where $j = 1, \ldots, m+1$, y is the dependent variable at time t, x and z are vectors of covariates, β and δ_j are the corresponding coefficients, and u is a disturbance. Tests can be specified by allowing shifts either in all parameters (and even in variance, provided that they occur at the same dates as the breaks in the parameters), or just in the vector parameter δ_j, whereas β is estimated for the entire sample.

We estimate a pure structural change model for the (annualized) weekly log returns of the Madrid and Bilbao stock market indices, r, and the yield of the 4% consol, y:

$$r_t = \delta^r_j + u_t \qquad\qquad (1)$$
$$y_t = \delta^y_j + u_t \qquad\qquad (2)$$

which allow us to test for shifts in the parameters δ_j.

Results of BP tests are sensitive to the specification of the trimming parameter which sets the minimum permissible length of windows over which the existence of structural break can be detected, that is, the minimum distance between two consecutive breaks. Technically, Bai and Perron (2003) suggest choosing trimming parameters long enough to allow for possible heterogeneity across segments and serial correlation, depending on the sample size.[16] An additional complication is the truncated character of the series, due to the closure of the stock exchanges after the coup of July 18th, 1936. This implies that possible breaks during the months leading to the outbreak of the civil war could be identified only by relatively short segments. As a

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[16] Bai and Perron (2003) suggest at least a trimming parameter of 0.20 for sample size of T=120 (corresponding to segments of 24 observations). As the sample size increase, the parameter can be reduced.

degree of discretion is inevitable here, we specify alternative windows of 30, 52 and 104 weeks (corresponding to parameters 3.5, 6 and 12 per cent respectively for our sample of 864 weekly observations), and then focus on breaks identified on the base of at least two criteria and across series, to ensure that the results are robust to different parameter specification. The number of breaks is endogenously determined on the base of Bayesian Information Criteria. Results are presented in Table 2.

TABLE 2 HERE

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

$$\sigma^2_t = \beta_0 + \beta_1 \, \varepsilon^2_{i,t-1} + \beta_2 \, \sigma^2_{t-1} \qquad\qquad (3)$$

where $\varepsilon_i \sim N(0, \sigma^2_t)$ represents the unpredictable component of the returns and yield change series. Equation (3) models the variance of the unexpected returns (yield changes) as a GARCH process depending on a long-run average (β_0), past 'news' (ε^2_i, the ARCH term capturing information about the unpredicted result 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^2_t, the conditional variance (i.e. the one-period-ahead forecast variance based on past information). As shown in table 3, we find evidence of standard GARCH effects for stock markets' log returns. On the contrary, change in bond yields do not show any GARCH effect and are modelled as ARCH.

TABLE 3 HERE

We finally run BP tests for windows of 30 and 52 weeks to detect shifts in the mean conditional variance. Our results are summarized in Figures 3 to 6.

FIGURES 3, 4 5 and 6 HERE

Our tests provide interesting, though preliminary insights. Shifts both in mean and volatility are identified in 1931, both for stock markets, which suffered a protracted fall, and the government bond, whose yield approached 7 per cent. 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 appointment of a provisional government with socialist politicians in key posts (Prieto at the Finances, Largo Caballero at Labour). This was apparently an unwelcome novelty for investors, as signalled by large capital flight (Beevor 2006, 23).

It is hard however to disentangle a possible shift in political and institutional expectations from a shift in macroeconomic risk. Figure 7 shows a set of indicators which captures the stance of monetary policy: the volume of assets discounted by the Bank of Spain, the gold ratio (total circulation normalized by gold reserves) and the Bank's discount rate. We also include an indicator of economic activity based on industrial production.[17] (See Appendix for details)

FIGURE 7 HERE

As shown in Figure 7, monetary policy had turned expansionary during the institutional transition of 1930-31 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

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[17] Prados de La Escosura (2003) estimates an annual index of industrial production. The index is converted to monthly frequency on the base of a "cubic-match-last" transformation.

contraction of total deposits (Martin Aceña 1984, 226-7). At the same time, industrial production contracted and 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 the atmosphere of uncertainty.

Also in the subsequent recovery in stock markets, consistently falling bond yields and generalized reduction in volatility, it seems hard to disentangle the impact of political development from improved macroeconomic circumstances. The year 1933 was marked by the crisis of centre-left Azaña government and the general elections of 19 November 1933 brought to power a centre-right coalition. However, by the start of the same year the incumbent government had apparently succeeded to bring 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).

Markets appeared to have been hardly shaken by the wave of violence that in October 1934 followed the general strikes and the revolutionary attempts concentrated mainly in the Basque Country, Catalonia and Asturias, successfully counteracted by a declaration of a State of War by the government and a brutal repression by the Army. However, the political instability that characterized the period between October and November 1935, with right-wing governments weakened by internal rivalries and scandals of corruption, seems to have led to a reversal of expectations, signalled by a strong fall both in stock market returns and a significant increase in bond yields, coupled by a surge in volatility. 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 in preparation of the general election of 16 and 23 February 1936, eventually won by the left. Although the victory of the Popular Front seemed to be

received by investors as a final blow, with stock prices falling, bond yield increasing and a further surge in volatility, the turning point in investors' sentiment seems to have happened months before. Unlike in the 1931 episode, macroeconomic factors do not seem to have played a significant role in contracting markets and driving up uncertainty.

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

As a further step of our empirical analysis, we look at the short-run 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 can be considered as indicative of particularly large surprises when they fall outside the ± 2 standard error bands. We then resort to the press in order to assess what drove these shocks according to contemporary observers. We use the stock market chronicles and commentaries from the newspaper ABC for that purpose. Tables 4-5 report a list of "surprises" in stock market returns and bond yields.

TABLES 4 and 5 HERE

The largest negative "surprises" cluster in 1931 and 1935-36. In the stock markets, negative shocks related to the macroeconomy prevailed clearly in 1931 (although they were often compounded by "bad news" from politics), whereas political factors emerge as the main determinants of price falls in 1935-36. The largest negative surprise occurred after the results of the general election of February 16, 1931, whose outcome (a victory of the Popular Front) apparently came out as unexpected. In fact the stock market had been betting quite clearly on an electoral success of the right-wing coalition, as signalled by the large positive shocks in the week prior to the election. In general, investors were quite optimistic during the first part of 1935 both due to political stability and falling interest rates, but reacted negatively to the weakening of the centre-right ruling coalition during fall of the same year. Surprises in bond yields confirm this analysis.

5. Politics or the macroeconomy: what moved the market?

The evidence provided by the previous analysis suggests that the impact of politics on securities markets is not easy to separate from that of the macroeconomy. International factors also played a role. The press gave priority to macroeconomic "events" in the crisis of 1931 but emphasized the dominance of political shocks from 1933 onwards. In order further to explore this issue, we regress stock market returns and bond yields on a set of macroeconomic variables which may contribute to explain markets' behaviour. Residuals obtained after controlling for macroeconomic and cross-country effects can be interpreted more precisely as purely "political" shocks. In order to account for international shocks, we use returns in the Paris stock exchange and yields on French bonds. The obvious reason for choosing France is that both Spanish stocks and bonds were quoted in Paris. Unfortunately only monthly data are available for these variables, therefore we have to run all estimates at this frequency.

We model stock markets returns, r, as follows:

$$r_t = c + \rho r_{t-1} + \beta_0 r^{PSE}_t + \beta_1 g_t + \Sigma \phi X_t + u_t$$

where r^{PSE}_t is the monthly return on an index of the Paris stock exchange, g is an indicator of growth of the industrial production, X is a vector of macroeconomic variables (Bank of Spain's discounted assets and discount rate, the gold ratio, the Peseta/GBP exchange rate), and u are disturbances.

For bonds, we model the spread of Spanish perpetuities over British consols, y^{SPA-UK}_t, as follows:

$$y^{SPA-UK}_t = c + \rho y^{SPA-UK}_{t-1} + \beta y^{FRA-UK}_t + \Sigma \delta X_t + u_t$$

where y^{FRA-UK}_t is the spread of French bond over British consols, X is a vector of variables capturing macroeconomic conditions, and δ is the corresponding set of estimated parameters. Our macroeconomic variables are those presented in figure 7: the volume of assets discounted by the Bank of Spain, the gold ratio, the official discount rate, the nominal exchange rate of the Peseta over the British Pound and the

French Franc. Spreads of Spanish bonds over British consols and French bonds are shown in Figure 8. Estimates are for the whole period 1920-1936 for stock returns, and limited to the period 1927-1936 for the bond yield spread, in order to exclude idiosyncratic movements in the French-British spread related to the Franc stabilization. Preliminary results are presented in Tables 6 and 7.

FIGURE 8, TABLES 6 and 7 HERE

After controlling for common international factors affecting both Spain and France, we find that macroeconomic conditions contributed significantly to explain the behavior of stock market returns (we have used Madrid here) and the bond yield spread. Returns in the Spanish stock market show significant comovement with returns in Paris and economic growth, but responded negatively to increased discount rates. The bond spread also commoved significantly with the French spread, and increased (decreased) in response to expansionary (contractionary) monetary policy and depreciation (appreciation) of the Peseta exchange rate. Results for the bond spread hold when we estimate the regression in first differences, instead of in levels.

Recursive residuals from these estimates, presented in Figure 9, can be interpreted as shocks to the Spanish returns and spread neither related to international factors nor to domestic macroeconomic conditions. Again, for both stock and bond markets April, July and October 1931, and February 1936 (April 1936 in the case of bonds) emerge as the dates of large negative shocks.

FIGURE 9 HERE

7. Conclusion

At this stage of our analysis we can provide two novel insights on investor's behaviour in the decade leading up to the Spanish civil war. Only two waves of political shocks rocked secondary markets over this period and macroeconomic circumstances codetermined the increasing risk to property perceived during the first episode. There was no manifest evidence of the loss of investor's confidence in the existing institution

to protect their property and to respect their debt obligations until the February 1936 elections.

The two phases of turbulence in markets have been identified by examining two stock indices (Bilbao and Madrid) and the primary Spanish consol's yield both in means and variance. The structural breaks identified under different trimming parameters indicate Spring to Fall 1931 as a major phase financial value readjustments. This is reconfirmed when examining excess recursive residuals and even after eliminating the influence of changing macroeconomic contexts. The proclamation of the Second Republic and its proactive policies of institutional reform (reducing the power of the Church and Military, Land Reform, Worker's participation, redistribution of wealth) offer a coherent explanation to this turbulent episode of investor's assessment of their properties. The macroeconomic pressures reinforcing the fall of indexes, the rise of yield and the increase of volatility underline the difficult circumstances under which the new democratic regime was born.

The second major period of financial commotion began in the Fall of 1935 and culminated with the General Election in February of 1936. Again structural breaks, extreme events and residuals discounting macroeconomic changes identify this as a second episode of unrest and perhaps even as a turning point in investor's confidence in the political regime to protect their property rights and the repayment of sovereign debt. The excessive moderation of the centre-right coalition in power after the November 1933 general elections, the government crisis over corruption in Fall of 1935 leads to strong right-left polarization thereafter. For investors the unexpected victory of the Left-Centre coalition in February of 1936 increased the credibility of a leftist revolution which implied expropriation and odious debt.

Events distinguished as turning points or determinant episodes leading up to the civil war such as the October 1934 revolutionary attempt organised by the Socialist party show in our data, not as points of rupture but rather as crisis with resolute solutions which reaffirmed the confidence in the existing institutions and their ability to protect property rights.

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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
Structural breaks in mean

Segments	Madrid stock market	Bilbao stock market	Bond yield
30 weeks	30 March 1931 **26 October 1931**	30 March 1931 **26 October 1931** 25 November 1935	8 September 1930 6 April 1931 7 December 1931 23 January 1933 **4 December 1933** 22 October 1934 20 May 1935 16 December 1935
52 weeks	no breaks	**26 October 1931**	23 March 1931 5 December 1932 **4 December 1933** 25 February 1935
104 weeks	no breaks	no breaks	19 January 1931 **11 December 1933**

Window	Estimate (prob.)	Estimate (prob.)	Estimate (prob.)
29/12/1919-30/3/1931	0.022 (0.40)	-0.027 (0.51)	
30/3/1931-26/10/1931	-0.650*** (0.00)	-0.711 (0.11)	
26/10/1931-13/7/1936	-0.011 (0.83)		
26/10/1931-25/11/1935		0.0395 (0.50)	
25/11/1935-13/7/1936		-0.501 (0.24)	
24/3/1930-20/4/1931			0.0568*** (0.00)
20/4/1931-5/12/1932			0.0632*** (0.00)
5/12/1932-4/12/1933			0.0600*** (0.00)
4/12/1933-25/2/1935			0.0568*** (0.00)
25/2/1935-13/7/1936			0.0521*** (0.00)

Table 3
ARCH-GARCH estimates of conditional volatility
(p-values among parentheses)

<u>Log return of stock market indices</u>
$r_t = \alpha + \Sigma \rho r_{t-i} + u_t$
$\sigma^2_t = \beta_0 + \beta_1 \varepsilon^2_{i,t-1} + \beta_2 \sigma^2_{t-1}$

Madrid
α	0.004 (0.83)
β_0	0.043*** (0.00)
β_1	0.116*** (0.00)
β_2	0.781*** (0.00)

Bilbao
α	-0.018 (0.42)
β_0	0.022 (0.63)
β_1	0.048 (0.21)
β_2	0.905*** (0.00)

<u>Change in bond yield</u>
$d(y)_t = \alpha + u_t$
$\sigma^2_t = \beta_0 + \beta_1 \varepsilon^2_{i,t-1}$

α	0.005 (0.11)
β_0	0.002*** (0.00)
β_1	0.935*** (0.01)

Table 4
Extreme returns in stock markets

Week starting	Recursive residuals	log return	Press comments from newspaper ABC
17-feb-36	-6,75	-6,12	**16 Feb: General elections with victory of Popular Front. Stock markets in Barcelona, Bilbao and Madrid expected right wing parties to win elections. Press comments that this is the first time in 20th century that stock exchanges do not anticipate events correctly.**
09-sep-35	-4,34	-1,67	**Markets nervous due to Italian war in Abyssinia. Rumors of extension of conflict.**
28-oct-35	-3,85	-2,11	*Budget 1936 & tax reform debate in Parliament.* **Uncertainty about allegations of corruption involving Radical party, member of the ruling centre-right coalition; increased probability of government crisis.**
11-nov-35	-3,82	-3,26	**Stock markets nervous due to possible crisis of centre-rigth government (see 28 oct 1935)**
15-jun-31	-2,95	-3,06	**Wave of sell orders due to uncertainty about results of elections for constitutional parliament called for June 28,** *and strong depreciation of exchange rate of Peseta after breaking of credit negotiation with French bank syndicate in Paris.*
13-abr-31	-2,37	-2,64	**Reaction to proclamation of Second Republic after landslide victory of republican parties in municipal elections in main cities.**
16-sep-35	-2,33	-1,27	**Crisis of centre´right government after withdrawal of agrarian party from coalition. New premier Chapaprieta 25 sept.**
16-mar-31	-2,26	-1,66	*Uncertainty in stock markets for Peseta stabilization plan and possible impact on the economy.*
19-oct-31	-2,21	-3,05	**Negative reaction to law limiting economic and educational activities of religious orders. Expectations of political and social conflicts. Liquidation of stock holdings in the hands of religious orders. Also project of law of workers' participation in large industrial companies.**
10-feb-30	-2,17	-1,94	**Uncertainty due to the demise of Primo de Rivera dictatorship, 1 Feb. Transitional government ("dictablanda") led by General Berenguer with mandate of re-establishing constitutional monarchy, 10 Feb. Incumbent National Assembly dissolved and discussion about election of Cosntitutional parliament.**
29-ene-34	-1,99	-1,24	**Radicalization of leftist social movements; strikes in steel plants, building industry and hotel services; revolutionary attempts and attackes to private property. Stock Exchange governing body ready to intervene to stop price fall.**
04-abr-32	-1,95	-2,22	**Agrarian reform approved. Rumors of government projects to introduce workers control on industrial companies.**
25-nov-35	-1,94	-2,55	**Increasing weakness of centre-right government due to allegations of corruption (see 28 oct and 11 nov**
06-jul-31	-1,88	-2,37	*Discount rate increased by 0.50 per cent.*
18-may-31	-1,87	-2,41	**10-12 May: riots and confrontations between pro-monarchy supporters and left parties activitis. Attack on ABC offices by left parties activitists. Wave of monasteries burnings in Madrid, Malaga, Valencia, Sevilla, Granada, Cádiz, Córdoba, Murcia and Alicante**
12-ene-31	-1,86	-2,18	*Increasing pressure on Peseta depreciation. Fall of railway stocks due to bad economic results of main companies and pressure on wage increase by unions. Liquidation of stock holdings.*
02-mar-36	-1,86	-2,31	**New left-wing government. Agrarian reform announced.**
25-may-31	-1,8	-2,69	*Bank of Spain authorized to increase circulation from 5.200 to 6.000 mln Ptas. Government decree against capital flights (prohibition of purchases and holdings of foreign securities, foreign currencies, gold export, transfers of currency and securities abroad). Ministerial order setting 48 hours deadline to declare movements of currencies and securities in the last three years. Banks required to declare domestic assets with gold-clause and foreign assets belonging both to banks themselevs and to customers deposited aborad.*
02-sep-35	9,94	10,83	*Large inflow of liquidity into equities due to reimbursement and conversion (from 5 to 4%) of various issues of government bonds.*
30-sep-35	4,76	5,33	*Strong increase of "war equities" (mining, explosives, armaments) after announcement of Italian war in Abyssinia. See also 26 Aug 1935*
21-oct-35	4,58	5,28	*Inflow of liquidity to equities due to conversion of various issues of government bonds.*
26-ago-35	3,93	4,08	*Expectations about Italian war in Abyssinia; preoccupations for implications for peace in Europe. Strong increase of "war equities" (mining, explosives, armaments). See also 30 sep 1935.*
08-ene-34	3,39	3,78	*Large liquidity. Plan of public works announced to reduce unemployment.*
01-jun-31	3,2	2,24	*Significant appreciation of the Peseta. Capital flight reversed. Ministerial order to limit exchange rate speculation on Spanish equities quoted in international stock exchanges. Press emphasise "calm and confidence" in the stock exchange.*
02-nov-31	2,91	2,13	**Political situation stabilized. Confidence that economic activity will recover free of parlamentarian and political interferences.**
10-feb-36	2,66	2,83	**"Confidence in all stock exchanges in an electoral success of political movements favourable to order".**
16-feb-31	2,34	1,7	**End of political turbulences initiated in December 1930. Government declares that order will be**
23-feb-31	2,24	2,23	**See 16 Feb 1931.**
25-mar-35	2,22	1,93	*Law approved which authorizes Treasury to issue debt up to 1 mln Ptas. Positive reaction of the stock exchange to expected fall in interest rates before debt iddue.*
21-ene-35	2,2	2,18	*Positive reaction of the stock exchange to fall in interest rates. Seasonal liquidity effect of dividends and coupons paid in January. "Money leaves bank accounts and moves to the stock exchange".*
09-abr-34	2,17	1,98	**Parliament approves subsidies to expropriated clergy. The stock exchange interprets this as sign of return to justice.** *Falling interest rates on government bonds.*
11-dic-33	2,09	2,19	**Positive outlook after victory of the right in the election of November. Confidence that the new government will not harm productive capital.** *Recovery of industrial activity; issue of new equities. Improvement in the exchange of the Peseta.*

Note. In bold, press comments on political situation; in italics, comments on market or macroeconomic development.

Table 5

Extreme changes in bond yields

Week starting	Recursive residual	change in yield (base points)	Press comments from newspaper ABC
4-May-31	0.45	+41	Consols price falls to levels not seen since 1898 after the loss of Cuba and the Philippines. Social riots and expectations of land expropriation. Depreciation of the Peseta. Press comments: the atmosphere resembles that of the outbreak of WW1.
13-Apr-31	0.27	+26	Great uncertainty about the results of the municipal elections.
17-Feb-36	0.25	+24	Victory of Popular Front in the election of 16 Feb. Markets had bet on victory of the right.
6-Jan-36	0.24	+23	Panic produced by the dissolution of parliament. ABC quote "a true social war worse than a civil war".
9-Feb-31	0.22	+23	Long downward trend in equities affects consol markets. Growing economic and political uncertainty after more than a year of failed transition back to constitutional monarchy .
27-Jun-32	0.18	+22	Incidente de Carabanchel. Anti-Republican military rally openly criticizing government's military reform and the project of Catalan Statute
13-Oct-30	0.17	+16	Pressure on Peseta-Pound exchange rate. Depreciation. Consols adjust downward to adapt real return.
20-Apr-36	0.16	+14	Lack of foreign exchange is affecting imports and creating black markets. Allusion to not repaying government debt in extreme left wing party's election programmes.
15-Jun-31	0.16	+20	Uncertainty about results to in constitutional congress elections. Pressure on Peseta. Failure to negotiate credit with France in order to stop the depreciation of the peseta.
21-Dec-31	-0.41	-39	Optimism and removal of restrictions on consol trading
20-Apr-31	-0.30	-36	New Finance minister makes declarations to respect capital interests. Agrarian reform seems less viable. Strikes in Gijón and Bilbao ended peacefully. Growing moderate and conservative opposition in Parliament.
16-Feb-31	-0.29	-34	End of political and social unrest initiated in December. Government declares that law and order will be imposed with severity.
7-Dec-31	-0.28	-26	Approval of Constitution and election of moderate Republican President
18-May-31	-0.23	-21	Important appreciation of the Peseta with respect to the pound. Stong regulation on equities traded on foreign exchanges and severe measures against capital flight.
19-Nov-34	-0.18	-20	Finance minister announces that project to tax consol interest has been abandoned.
11-May-36	-0.18	-19	New Chancellor of the Exchequer generates higher expectations of balanced budget.

Table 6

Dependent variable: annualized monthly logreturn of MSE index					
	[1]	[2]	[3]	[4]	[5]
c	-0.00	0.991	0.045	0.252	0.834**
	(0.91)	(0.33)	(0.62)	(0.53)	(0.03)
lagged dependent	0.144***	0.132**	0.140**	0.140***	0.115**
	(0.01)	(0.01)	(0.01)	(0.01)	(0.03)
log return Paris	0.216***	0.211***	0.213***	0.212***	0.203***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
growth of industrial production	0.347**	0.351***	0.327***	0.335***	0.475***
	(0.02)	(0.00)	(0.01)	(0.00)	(0.00)
BdE (log) discounted assets		-0.073			
		(0.33)			
BdE (log) gold ratio			-0.079		
			(0.63)		
(log) Pta/GBP exchange rate				-0.072	
				(0.52)	
BdE (log) discount rate					-0.492**
					(0.03)
Adj R2	0.208	0.207	0.205	0.205	0.219
DW	2.09	2.06	2.07	2.08	2.06

Period: March 1920 - Jul 1936

Note: p-values in parenthesis

Table 7

Dependent variable: yield spread of Spanish over British consol.				
	[1]	[2]	[3]	[4]
c	-4.648***	-0.295***	-2.863***	-1.246***
	(0.00)	(0.00)	(0.00)	(0.00)
ySPA-UK(t-1)	0.802***	0.816***	0.769***	0.855***
	(0.00)	(0.00)	(0.00)	(0.00)
yFRA-UK(t)	0.052	0.046	0.169***	0.102**
	(0.15)	(0.24)	(0.00)	(0.03)
BdE (log) discounted assets	0.367***			
	(0.00)			
BdE (log) gold ratio		0.938***		
		(0.00)		
(log) Pta/GBP exchange rate			0.900***	
			(0.00)	
BdE (log) discount rate				0.970***
				(0.00)
Adj R2	0.96	0.95	0.95	0.95
DW	2.25	2.31	2.38	2.31

Period: Jan 1927-Jul 1936

Dependent variable: first difference of yield spread of Spanish over British consol.				
	[5]	[6]	[7]	[8]
c	0.01	0.00	0.011	0.011
	(0.53)	(0.82)	(0.45)	(0.45)
d(ySPA-UK(t-1))	-0.203	-0.239*	-0.208	-0.206
	(0.13)	(0.07)	(0.13)	(0.13)
d(yFRA-UK(t))	0.329***	0.306***	0.336***	0.335***
	(0.00)	(0.00)	(0.00)	(0.00)
d(BdE (log) discounted assets)	0.469**			
	(0.02)			
d(BdE (log) gold ratio)		2.531***		
		(0.00)		
d((log) Pta/GBP exchange rate)			0.157	
			(0.72)	
d(BdE (log) discount rate)				0.242
				(0.81)
Adj R2	0.197	0.233	0.175	0.176
DW	1.92	1.91	1.91	1.92

Period: Jan 1927-Jul 1936

Note: p-values in parenthesis

FIGURES

Figure 1
Madrid and Bilbao Stock Market Indexes and Government Bond Price
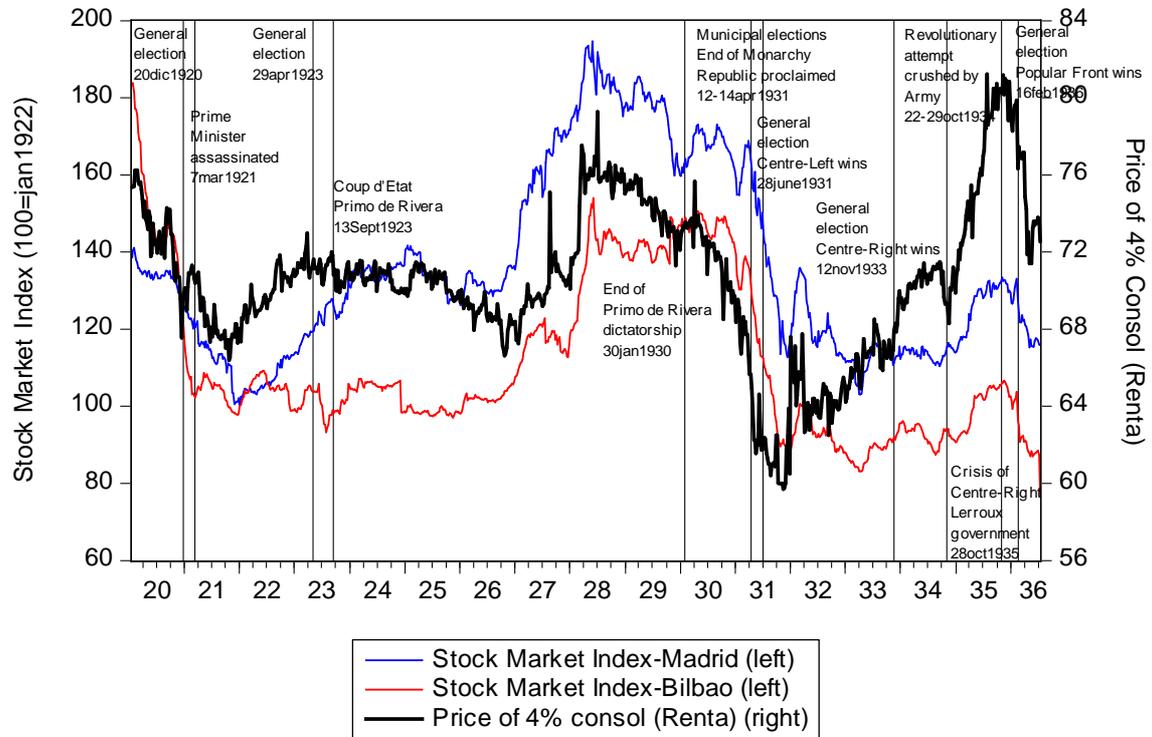
Note. Stock market indexes are capitalization weighted; dividends are excluded; base period: January 1922. The price of consols is expressed as per cent of face value.

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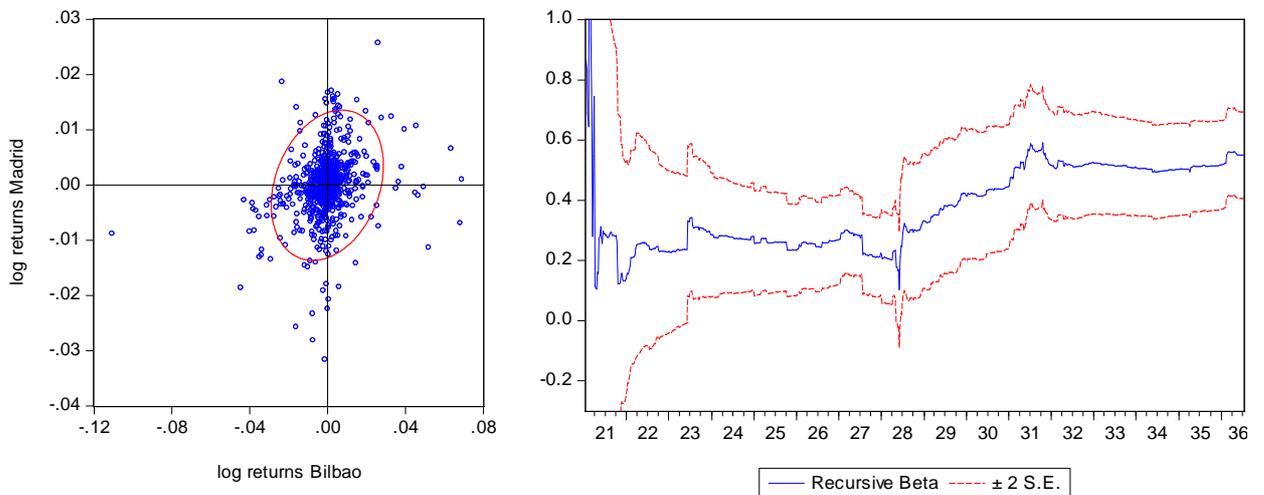### Madrid and Bilbao Stock Exchange (log)price return correlation

Figure 3
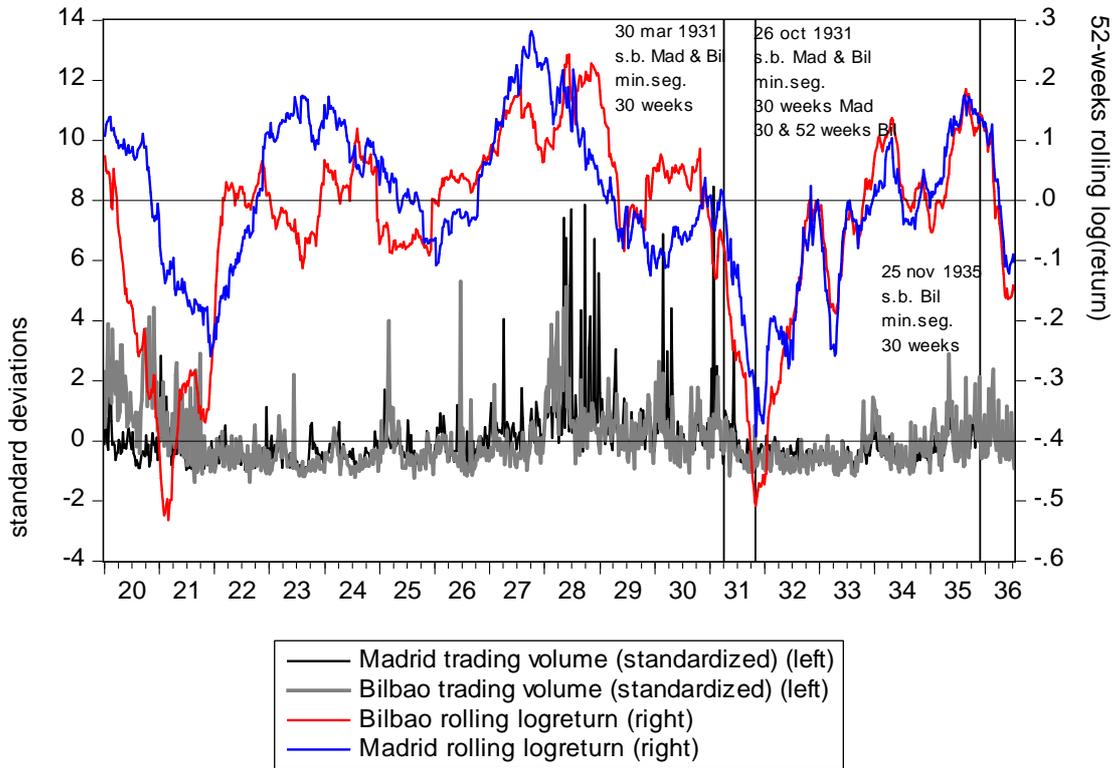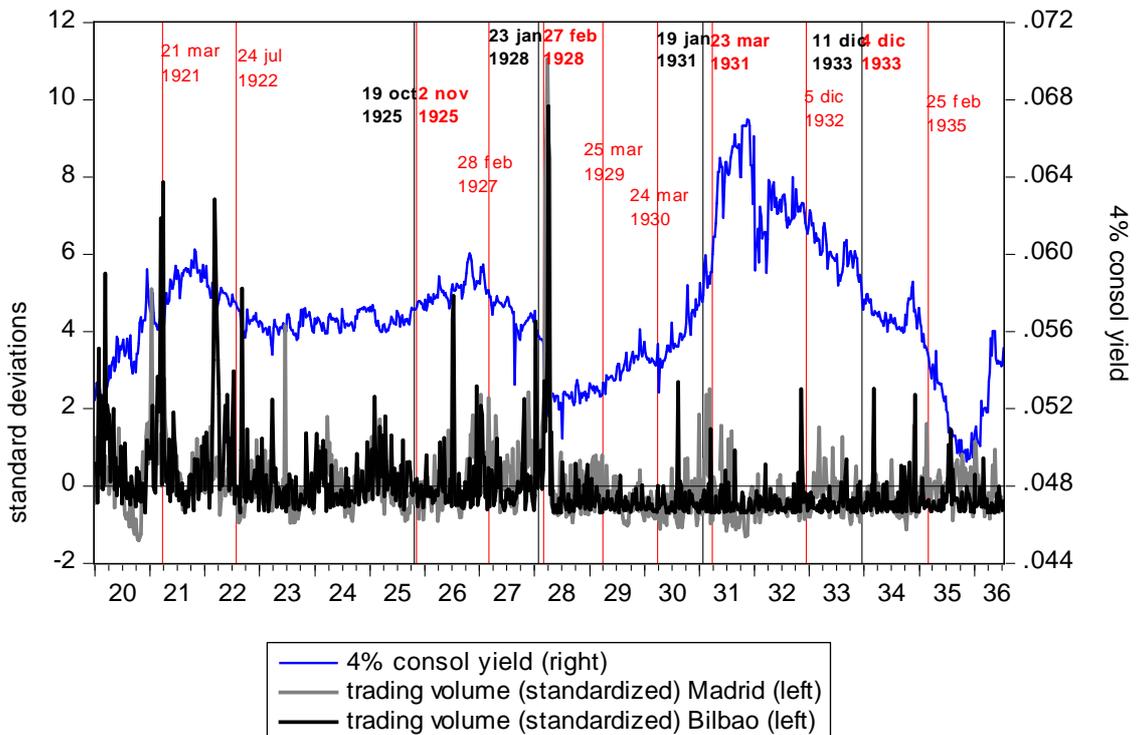**Structural Breaks in Mean of Stock Market Indexes' Returns**

Figure 4
Structural Breaks in Bond Yield's mean

Note. Breaks for 104 weeks windows in black; for 52 weeks windows in red.

Figure 5
Structural Breaks in Stock Markets' Volatility

conditional variance of logreturn: Madrid
conditional variance of logreturn: Bilbao
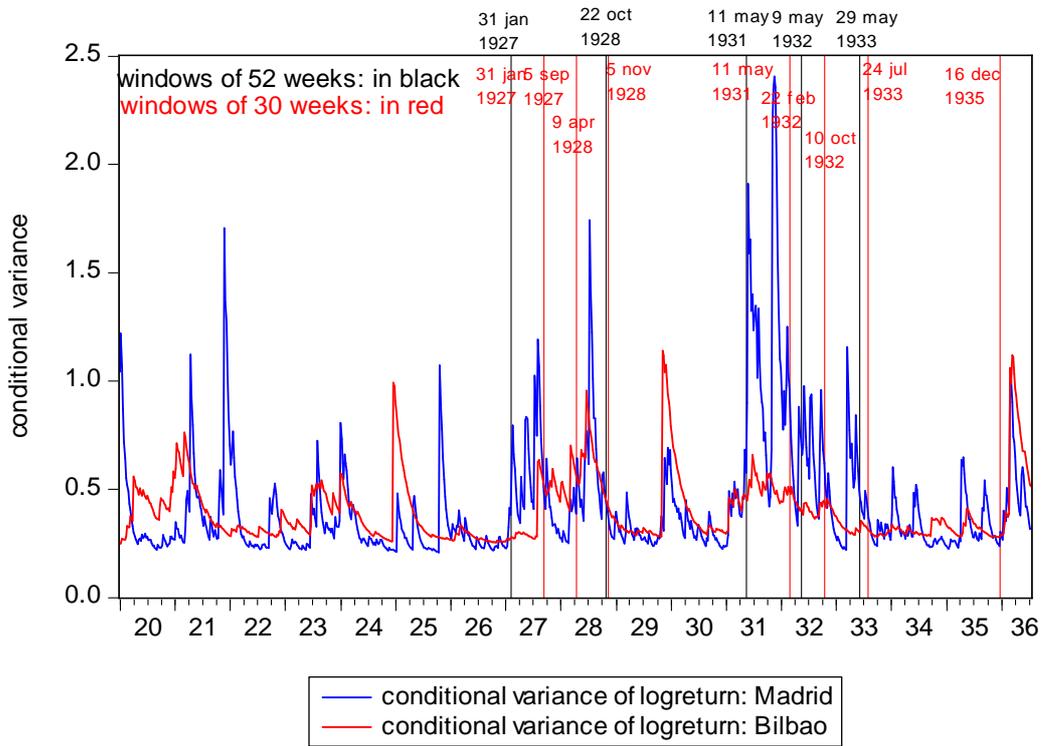
Figure 6
Structural Breaks in Bond Market's Volatility

conditional s.d. of change in bond yield

32
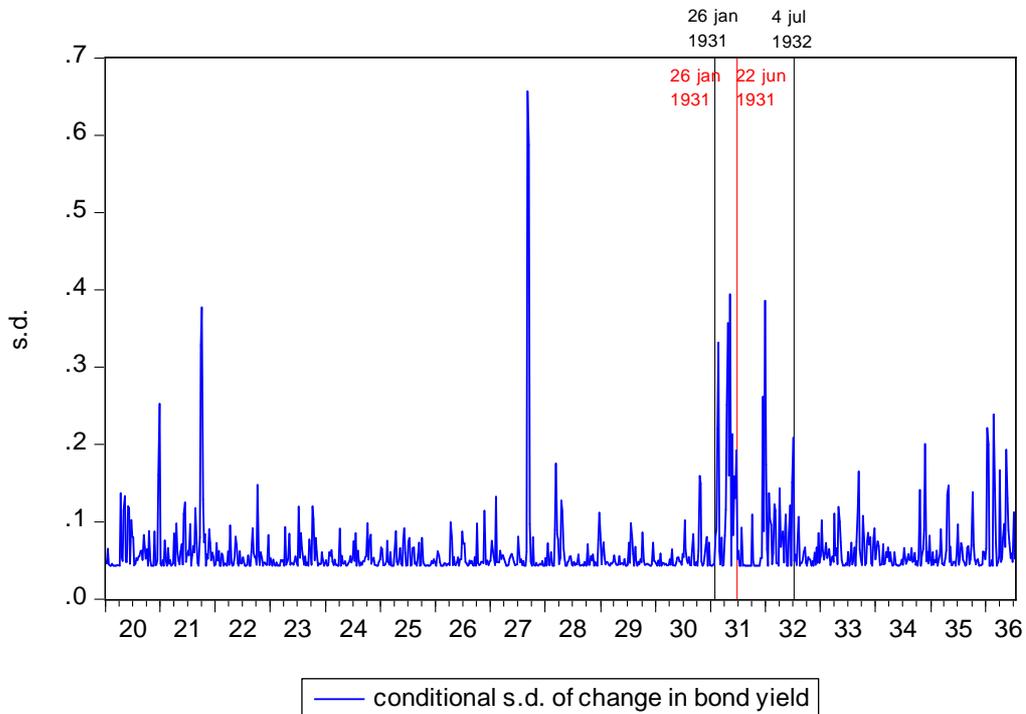
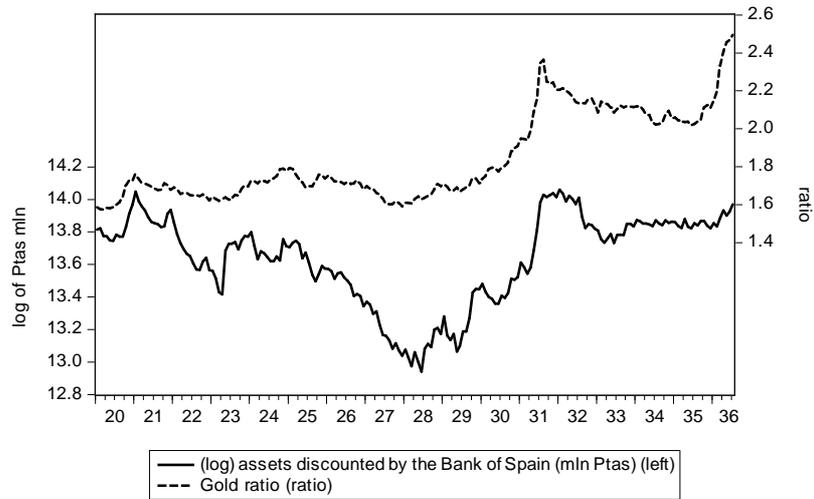**Figure 7**
Macroeconomic indicators
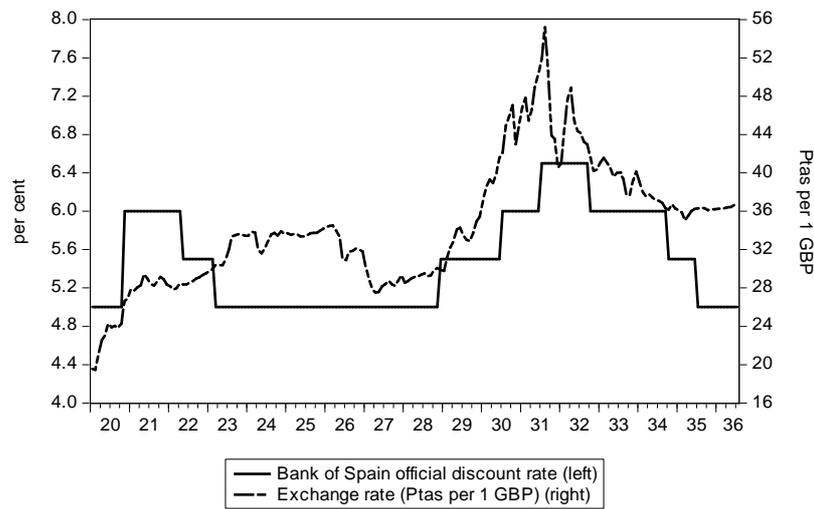
Figure 8
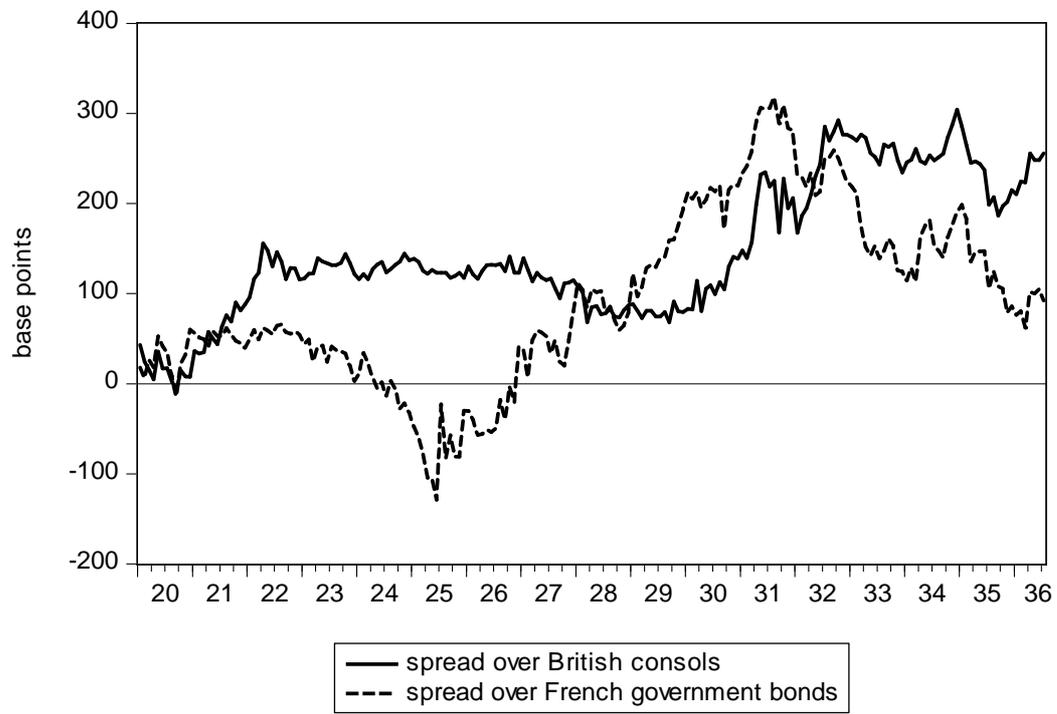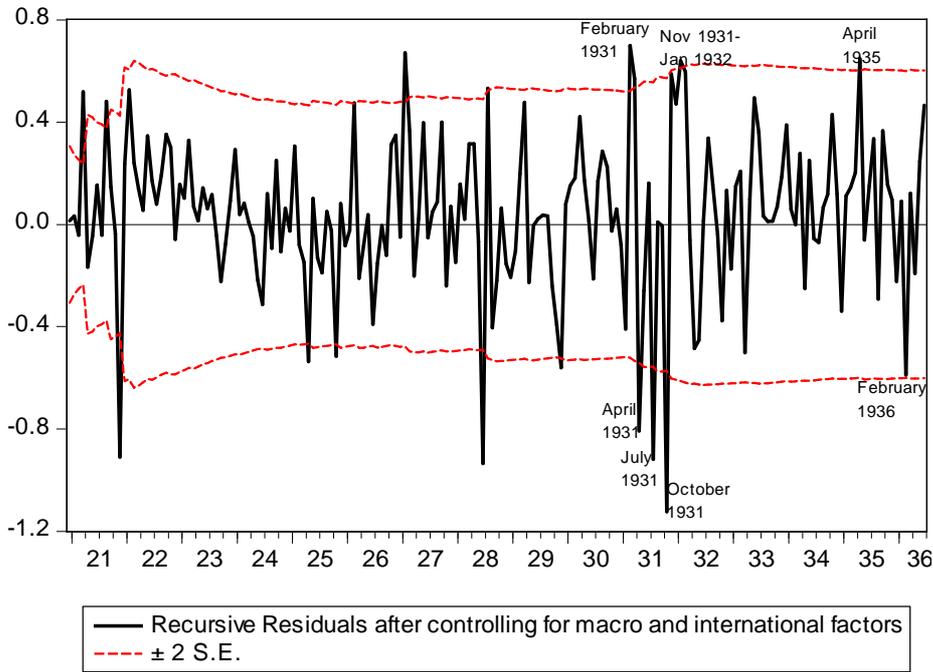**Spanish sovereign bonds' spreads**

Figure 9
"Political shocks"

Stock market returns

Changes in the bond yield spread