serie ec
WP-EC 2010-11

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Ivie

Edita / Published by: Instituto Valenciano de Investigaciones Económicas, S.A.

Depósito Legal / Legal Deposit no.: V-3898-2010

Impreso en España (octubre 2010) / Printed in Spain (October 2010)

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Abstract

This paper examines the influence of Spanish major political events on the stock market performance. The analytical results demonstrate that there are no systematic differences in excess returns in the last two years preceding an election, that market responses are of the same magnitude when incumbents win or lose the election, and that there is no difference between the excess returns during left-leaning and right-leaning governments. Regarding to the stock market performance around election dates, negative price changes are observed in the days prior to elections, reverting to positive once the election takes place. Our results are in line with the work of Brown, Harlow and Tinic (1988) on the Uncertain Information Hypothesis that postulates that volatility of stock returns increases following the arrival of unexpected information and prices rise as uncertainty is resolved.

Keywords: politics, excess returns, stock market performance.
JEL classification: G14, D81, H11.

Resumen

Este trabajo examina la influencia de la política en el comportamiento del mercado bursátil español. Analíticamente se demuestra que no hay diferencias sistemáticas en los rendimientos anormales de las acciones durante los dos años anteriores a la celebración de elecciones, que la respuesta del mercado es la misma con independencia de que un determinado partido revalide su victoria electoral y que no existen diferencias entre los rendimientos anormales de las acciones observados bajo gobiernos de izquierdas o de derechas. Con respecto al comportamiento de las acciones durante el periodo anterior y posterior a la fecha de las elecciones, se observan disminuciones en los precios en los días previos a las elecciones convirtiéndose en incrementos con posterioridad a las mismas. Estos resultados son consistentes con la hipótesis de información incierta de Brown et al. (1988), de acuerdo con la cual, la volatilidad de los rendimientos de las acciones se incrementa con la aparición en el mercado de información que no se esperaba y los precios se recuperan a medida que desaparece la incertidumbre.

Palabras clave: política, rendimientos anormales, comportamiento del mercado bursátil

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* We would like to thank Richard Steel from MSCI Barra for providing us with the data used in this study. We are also grateful for the financial support of the Spanish Ministry of Science and Research and FEDER, under the project ECO2009-14457-C04-04, the Cátedra Finanzas Internacionales-Banco Santander and the Instituto Valenciano de Investigaciones Económicas (Ivie). Usual caveats apply.

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1. Introduction

Since Niederhoffer et al. (1970) analyzed the stock market movements in the days and weeks surrounding US presidential elections, the study of the relationships between politics and the stock market has generated much research of interest. Thus, a great number of studies have analyzed several topics such as the influence of economic events on election voting; the relationship of the expected stock return with economic factors; the link between stock markets performance and political election dates, and the explanatory power of political risk in emerging and developed markets.[1]

Recently, some studies have shed new empirical evidence that has boosted the interest for this type of financial literature. This is the case of the event study by Pantzalis et al. (2000) that examine stock market behavior around elections on an international scale (33 countries), and find that index returns are generally positive and significant in the 2 weeks prior to the election week. They find that this abnormal return is strongest for elections with the highest degrees of uncertainty, in particular, in countries with low rankings of political, economic, and press freedom, and elections in which the incumbent looses. Bialkowski et al. (2008) investigate a sample of 27 OECD countries to test whether national elections induce higher stock market volatility. Their empirical findings indicate that investors are still surprised by the ultimate distribution of votes. Stock prices react strongly in response to this surprise and temporarily elevated levels of volatility are observed.

Regarding the relationship between the political orientation of government and stock market returns, Santa-Clara and Valkanov (2003) and Booth and Booth (2003) show that US stock market returns are higher during Democratic than during Republican presidencies. Booth and Booth (2003) also find excess returns under Democratic presidents for a small-cap stock portfolio, while large-cap stock excess returns are not significantly different from each other during the 1926–1996 period. Moreover, US stock excess returns are significantly higher in the last two years than in the first two years of the presidential term. Vuchelen (2003) focuses on the Belgian market and concludes that when a centre-left coalition takes office after an election, stock prices slightly increase, whereas a centre-right coalition would push stock prices down. Recently, Bialkowski et al. (2007) has fuelled controversy in this topic. In a

[1] See Chen et al. (2005), Bohl and Gottschalk (2006), Döpke and Pierdzinoch (2006), and He et al. (2008), among others, for a comprehensive review of different studies that have analyzed the empirical relationships between stock markets and politics.

comprehensive analysis that takes into account 24 stock markets and 173 different governments, they do not observe statistically significant differences in returns between left-wing and right-wing executives.

Finally, both Foerster and Schmitz (1997) and Wong and McAleer (2009) show that US stock prices fell during the first half of a Presidency, reached a trough in the second year, rose during the second half of a Presidency, and reached a peak in the third or fourth year.

The rationale behind these studies is the theory of the Political Business Cycle (PBC) that was pioneered by Nordhaus (1975) who pointed out that "within an incumbent's term in office there is a predictable pattern of policy, starting with relative austerity in early years and ending with the potlatch right before elections" (see Nordhaus, 1975, p. 187). In the PBC literature, we find two schools that try to explain how the political process induces cycles in stock market performance. On one hand, the "opportunistic" PBC theory argues that the incumbent governments use expansionary policy measures to improve the economic situation just before an upcoming election. The existence of these government cycles, also known as presidential cycles in the case of the USA, would imply that significant and positive returns should be observed in the months preceding an election. On the other hand, the "partisan" PBC theory argues that a "partisan" cycle is detectable in stock market returns because left-wing governments, unlike right-wing governments, focus more on expansionary policies, while the right-wing governments are more worried about the control of the inflation. It implies that differences in the ideological composition of the governments will be reflected in economic policies and, as a consequence, in the stock price behavior.

It is worth noting that the "opportunistic" PBC implies that policy-makers systematically aim for a rise in stock prices preceding elections. Following Vuchelen (2003), this fact leads to comparable empirical implications as the Uncertain Information Hypothesis (UIH) proposed by Brown et al. (1988, 1993). The UIH assumes that investors set prices before an event takes place. In responding to the increased uncertainty, investors set stock prices below their fundamental values. An upward corrective trend in security prices will then follow as the election result becomes more certain. As election-induced uncertainty is reduced, the risk-adjusted expected return should fall and stock prices should rise. However, Mehdian et al. (2008) suggest that the greatest degree of uncertainty resolution and thus the highest observed

returns should be expected in the time period immediately preceding the election date as this is when media coverage and campaigning are at their peak.

The aim of this paper is to study the link between politics and the Spanish stock exchange by testing both the empirical implications of the two schools of the Political Business Theory and the Uncertain Information Hypothesis. As far as we know, this is the first study that analyzes all these topics for the Spanish stock exchange at a country level. Furthermore, the case of Spain presents some interesting peculiarities that deserve special attention. Firstly, attending to the 1985 Electoral Law in Spain (art 69.7), no pre-election polls may be published or divulged by any communications media in the five days preceding the date of polling. Secondly, Spain has a proportional electoral system and, in such countries, the main political event is not the elections result but the final composition of the multi-party coalition. Finally, besides the Spanish national left or right-wing parties, the Spanish map is comprised of independent parties in some regions that have shown to be of great importance for the stability of the national government.[2]

The remainder of the paper is structured as follows. Section 2 describes the financial and electoral data used in the study. Section 3 is concerned with testing the empirical implications of the Political Business Cycle theory. In section 4, the analysis of the stock market performance, not only in terms of the mean returns but also of the volatility, around election-related events is carried out. Finally, section 5 summarizes with some concluding remarks.

2. Data

The financial data have been obtained from *MSCI Barra* and cover the period from January 1976 to October 2008. We utilize daily stock return data for MSCI Spain Index and MSCI World Index. These indices are free float-adjusted market capitalization weighted indices and both of them are expressed in US dollar terms. The MSCI Spain Index comprises of Spanish equities listed in Spain, while the MSCI World Index is designed to measure the equity market performance of the most developed markets. Panel A of Table 1 presents the descriptive statistics of returns on MSCI Spain Index and MSCI World Index. The sample period consists of 7726 observations.

[2] Pantzalis et al. (2000) and Bialkowski et al. (2008) include six and seven general elections in Spain in their respective event studies. However, both analysis are carried out at an international level and mixing countries with different types of elections (presidential and parliamentary). Following Vuchelen (2003, p. 87), this fact could be relevant given that in two-party political systems, elections remove all uncertainty concerning future policies.

Skewness and kurtosis measures and Bera-Jarque test show substantial departures from normality in both indices. [3]

Table 1. Summary Statistics

Panel A displays some descriptive statistics of the MSCI Spain index and the MSCI World index returns series. Panel B shows the results of the Augmented Dickey–Fuller (ADF) and the Elliot, Rothenberg and Stock Point Optimal (ERS) unit root tests. The critical values of the ADF (ERS) test for the rejection of the null hypothesis of the existence of a unit root are -3.96, -3.41 and -3.12 (3.96, 5.62 and 6.89) for the series in levels and -3.4336, -2.8621 and -2.5671 (1.99, 3.26 and 4.48) for the series in differences for 1%, 5%, and 10% significance levels, respectively.

Panel A. Descriptive Statistics

	MSCI Spain Index returns	MSCI World Index returns
Mean (%)	0.017	0.031
Median (%)	0.003	0.054
Standard Deviation (%)	1.360	0.813
Minimum	-0.224	-0.104
Maximum	0.092	0.081
Skewness	-0.785	-0.514
Kurtosis	17.597	13.052
Bera-Jarque (p-value)	69388.69 (0.0000)	32869.22 (0.0000)

Panel B. Unit Root Tests

	MSCI Spain Index		MSCI World Index	
	In levels	In returns	In levels	In returns
ADF Statistic	-2.39	-78.92	-1.98	-59.35
ERS Statistic	35.01	0.01	13.47	0.13

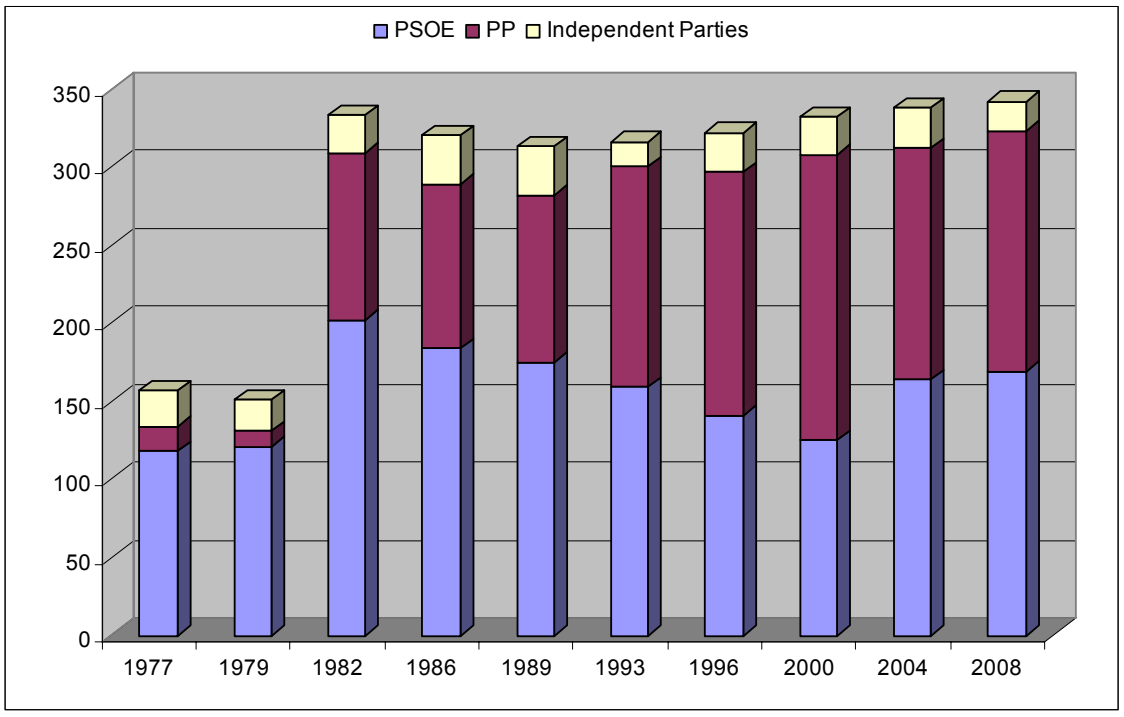
Political election details have been obtained from the website of the Spanish Ministry of Interior (www.mir.es). Democracy in Spain was reinstalled following the death of Dictator Francisco Franco in 1975, who governed since the end of the Spanish Civil War in 1939. The first election in the democratic transition took place in June 1977 and the winner was the party *Unión de Centro Democrático* (UCD) whose leader was Adolfo Suárez. The Spanish Constitution, approved in 1978, established Spain as a

[3] See further details about the methodology about index definitions at www.mscibarra.com (last accessed 4/6/2009).

parliamentary monarchy, with the President of the Government and a Spanish Congress of 350 members elected every 4 years. The evolution of the number of seats got by party in the Spanish General Elections from the democratic transition until 2008 is represented in Figure 1. After a short period of unstable UCD governments the *Partido Socialista Obrero Español* (PSOE) led by Felipe González got the absolute majority in October 1982 and the PSOE ruled for the next 13 years. In March 1996, the *Partido Popular* (PP) of José María Aznar obtained a relative majority that implied a change from a left-wing government to a right-wing government. Since then, the PP governed during eight years, until the 2004 elections in which the PSOE and its leader, José Luis Rodríguez Zapatero, won the elections and repeated victory in 2008 elections.

Figure 1. Seat evolution in Spain

Evolution of the number of seats got by party in the Spanish General Elections from the democratic transition until 2008. The figure represents the evolution of the number of seats got by the *Partido Socialista Obrero Español* (PSOE) and the *Partido Popular* (PP), and the sum of seats got by all independent parties from Catalonia and Basque Country. The Spanish Congress has 350 members; therefore the absolute majority is reached with 176 seats. Source: Spanish Ministry of Interior.



It is important to remark that the Spanish Constitution of 1978 allowed for the creation of regional governments. In March 1980, the first regional elections were held

in the Basque Country and Catalonia, and since then in the rest of the 17 regions that constitute Spain. It is worth noticing that independent parties in both regions have had a significant presence in the regional and national governments and they have been of great importance for the stability of the national government when the winner parties did not get the absolute majority (less than 176 seats). For these reasons, we have also considered in our study the effects of the regional elections that have taken place in the above mentioned regions since 1980. On the whole, the election information that we have selected includes the election date and the election outcome of 10 national elections, 16 regional elections, 5 European elections, 4 general referendums, and the corresponding dates of investiture of national and regional elections.

3. Political business cycle in Spanish stock market

Two theories try to explain how politics affects stock market performance. On the one hand, the theory of "opportunistic" PBC is based on the assumption that voters take into account their financial situation when voting. According to that theory, the incumbent government would have an incentive to implement short-term policies oriented to promote rising stock prices as election date approaches. In this sense, it should be noted that the larger the number of voters that invest on the stock market, the greater the incentive for the incumbent government to use policy instruments that increase the stream of expected dividends.

On the other hand, the "partisan" PBC theory maintains that the ideology of a government also matters, since differences in ideology will lead to policy differences and will consequently have a different impact on stock prices. Further, effects may be temporary and disappear once election results are known (rational party models), or permanent over the term of the government (traditional party models).

3.1. The "opportunistic" PBC theory at the Spanish stock exchange

To test empirically whether these hypothesis hold for the Spanish case, we use a model based on the International Market Model (IMM) within a GARCH(1,1) framework to test the empirical implications of the model because it is especially suitable for analyzing daily data with leptokurtosis and volatility clustering. The IMM model allows us to remove the global influences from the local return series, since it proposes a single-factor return-generating process in which returns of the country are sensitive to movements in a World market index. The return on the MSCI World index

is used as a proxy for the market portfolio. The IMM can be modelled with the following model:

$$\begin{aligned} RS_t &= \alpha + \beta \cdot RW_t + \varepsilon_t \\ h_t &= \gamma_0 + \gamma_1 \cdot h_{t-1} + \gamma_2 \cdot \varepsilon_{t-1}^2 \end{aligned} \tag{1}$$

where RS_t is the return on Spanish index at time t, RW_t is the return on the World index at time t, ε_t is the residual Spanish return at time t, and h_t is the conditional volatility of ε_t. γ_0 denotes the long term mean or unconditional variance, γ_1 reflects the dependence of the current volatility upon news about volatility from the previous period and γ_2 reflects the dependence of the current volatility on the conditional variance of the previous period. Finally, $\gamma_1 + \gamma_2$ indicates the degree of volatility persistence.

Note that both RS_t and RW_t represent the time series of returns computed directly from the logged differences in the levels of MSCI Spain Index and MSCI World Index, respectively. Before undertaking the estimation, both series were tested for stationary using the Augmented Dickey-Fuller stationarity (ADF) and the Elliot, Rothenberg, and Stock Point Optimal (ERS) tests. The use of returns, as in Model (1), is helpful to transform the underlying series into stationary. Indeed, as shown in Panel B of Table 1, the ADF statistic value is -2.39 (-1.98), which is greater than the critical values at the 1%, 5% and 10% levels, so that the unit-root hypothesis cannot be rejected for the MSCI Spain Index (MSCI World Index) series in levels. However, both the MSCI Spain Index and the MSCI World Index series in compound returns are stationary processes, with an ADF statistic value of -78.92 and -59.35, respectively. Similarly, the ERS statistic values for the MSCI Spain and World indices series in levels respectively are 35.01 and 13.47, meaning that the null of a unit root cannot be rejected at the 1% level (critical value 3.96). The ERS statistic values are 0.01 and 0.13 respectively for the MSCI Spain index and the MSCI World index in compound returns. In both cases, they are lower than 1.99 (critical value at the 1% level), which lead us to conclude that these series are stationary.

It should be noticed that the returns on the Spanish and the World Index are measured contemporaneously, assuming that the explanatory variable is available on a timely basis and have an immediately influence over the return series. This assumption follows prior literature and is consistently with the timely incorporation of price information in financial markets (see Pantzalis et al. (2000) and Bialkowski et al.

(2008)). To be precise, fifty percent of stocks that makes up of the MSCI World index are available at the same time than those of the MSCI Spanish index, while the remaining (mostly non-European) fifty per cent keeps on being traded after the Spanish Market closing (17:35 Madrid time). We would like to note that we have regressed the MSCI Spanish index return on the one-lagged MSCI World index return and the estimation result does not improve in accordance with the adjusted R-squared, the minimized Akaike information criterion (AIC), and Schwartz criterion (SC)[4]. This result is not surprising at all, merely reflecting the fact that Spanish stocks are more correlated to European stocks than to those from American markets.

Additionally, given that the majority of the elections have been held on weekends,[5] we have taken into account the results found in Peiró (1994) for the Monday effect in the Spanish Market. Specifically, Peiró (1994) found that Spanish stock returns exhibited daily seasonality that was specially marked in positive Monday returns due to the clearing procedure employed until 25 November 1991. Indeed, the so-called Monday effect stopped playing a role in determining Spanish returns once the clearing procedures changed. A dummy variable called M_t designed to capture such an effect is included in the model, taking the value 1 whenever t is any Monday before the mentioned date, and 0 otherwise.

$$\begin{aligned} RS_t &= \alpha + \beta \cdot RW_t + \delta \cdot M_t + \varepsilon_t \\ h_t &= \gamma_0 + \gamma_1 \cdot h_{t-1} + \gamma_2 \cdot \varepsilon_{t-1}^2 \end{aligned} \tag{2}$$

Estimation results of Model (2) are presented in Table 2. The coefficient on the market portfolio is significant and positive, revealing the strong relationship between the Spanish index returns and the World index returns. The coefficient on the Monday effect is also significant and positive, which is consistent with Peiró (1994) findings. However, the model still shows large serial correlation via Durbin-Watson and LJung-Box Q-statistics (see panel B of Table 2). The AR(1) component of the mean equation of the return is aimed at controlling for serial correlation.

$$\begin{aligned} RS_t &= \alpha + \beta \cdot RW_t + \chi \cdot RS_{t-1} + \delta \cdot M_t + \varepsilon_t \\ h_t &= \gamma_0 + \gamma_1 \cdot h_{t-1} + \gamma_2 \cdot \varepsilon_{t-1}^2 \end{aligned} \tag{3}$$

[4] The adjusted R-squared drastically drops from 24.42% to 0.10% and the AIC and SC respectively pass from -6.21 to -5.91 and from -6.20 to -5.90.
[5] It is the case of all national elections from 1986 onward and of every regional election with the only two exceptions of 1980 and 2006 Catalan regional elections.

A potential problem in the estimation of Model (3) is the possible correlation among the explanatory variables. However, the correlation matrix of the explanatory variables indicates that there is no reason of concern[6]. From panel B of Table 2, it can be observed that serial correlation has been removed from the disturbances, according to Durbin-Watson and Ljung-Box Q-statistics.

Table 2. Estimates of Models 2 and 3

Panel A presents the estimates of Model (2) and Model (3). RS_t is the return on Spanish index at time t, RW_t is the return on the World index at time t, M_t is a dummy variable capturing the Monday effect on Spanish returns before 25 November 1991. Panel B reports the Adjusted R^2, the Akaike Information Criteria (AIC) the Schwarz Criteria (SC), the Durbin-Watson statistic (D-W), and the Ljung-Box Q-statistic for standardized (Ljung-Box Q1) and standardized squared residuals (Ljung-Box Q2) with the p-values in parenthesis. * denotes statistical significance at the 1% level.

Panel A	Model 2		Model 3	
Variable	Coefficient	t-statistic	Coefficient	t-statistic
α	-3.95E-05	-0.3549	-3.84E-05	-0.3512
RW_t	0.8774*	81.772	0.8702*	80.877
RS_{t-1}	-	-	0.0494*	5.4183
M_t	0.0028*	6.4413	0.0028*	6.5081
γ_0	1.17E-06*	9.7964	1.22E-09*	9.3293
h_{t-1}	0.0657*	22.948	0.0674*	21.0055
ε_{t-2}^2	0.9306*	368.616	0.9291*	323.678

Panel B	Model 2		Model 3	
Adjusted R^2	24.81%		25.46%	
AIC	-6.21		-6.21	
SC	-6.20		-6.20	
D-W	1.87		1.97	
	Ljung-Box Q 1	Ljung-Box Q 2	Ljung-Box Q 1	Ljung-Box Q 2
Lag(1)	26.653 (0.000)	0.3692* (0.543)	2.224 (0.136)	0.313 (0.576)
Lag(2)	27.181 (0.000)	0.3692* (0.831)	2.495 (0.287)	0.322 (0.851)
Lag(3)	28.272 (0.000)	0.6093* (0.894)	3.515 (0.319)	0.593 (0.898)
Lag(4)	28.437 (0.000)	0.6259* (0.960)	3.605 (0.462)	0.625 (0.960)
Lag(5)	28.643 (0.000)	0.8822* (0.971)	3.814 (0.577)	0.881 (0.972)
Lag(36)	54.972 (0.022)	9.3156* (1.000)	3.814 (0.702)	8.357 (1.000)

[6] Specifically, the correlations for each pair of explanatory variables are World return/one-lagged Spanish return (0.05), World return/Monday (-0.02) and one-lagged Spanish return/Monday (0.004).

Booth and Booth (2003) report that the US stock market tends to perform better in the second half of the presidential term, which is consistent with the "opportunistic" PBC theory. Following that theory, short-term policies may be used by the incumbent government with the main aim to increase stock prices and therein to win votes.

Table 3. Estimates of Models 4 and 5

Panel A presents the estimates of Model (4) and Model (5). $Pc1_t$ and $Pc2_t$ are dummy variables related to political cycle. RS_t is the return on Spanish index at time t, RW_t is the return on the World index at time t, M_t is a dummy variable capturing the Monday effect on Spanish returns before 25 November 1991, $Pc1_t$ is a dummy variable taking the value one if t belongs to the second half of each government's term, and 0 otherwise, $Pc2_t$ is a dummy variable that equals one if the incumbent is re-elected and *t* is in the first half of his new government's term. Panel B reports the Adjusted R^2, the Akaike Information Criteria (AIC) and the Schwarz Criteria (SC), and the Durbin-Watson statistic (D-W). * (**) denotes statistical significance at the 1% (10%) level.

Panel A	Model 4		Model 5	
Variable	Coefficient	t-statistic	Coefficient	t-statistic
α	0.0001	0.6464	-0.0002	-1.3277
RW_t	0.8770*	80.7967	0.8692*	81.0792
RS_{t-1}	0.0495*	5.4178	0.0493*	5.4073
M_t	0.0029*	6.6844	0.0028*	6.4149
$Pc1_t$	-0.0003	-1.2063		
$Pc2_t$			0.0004**	1.6575
γ_0	1.23E-06*	9.2707	1.25E-06*	9.3003
h_{t-1}	0.0678*	21.0570	0.0682*	20.9272
ε_{t-2}^2	0.9287*	320.5593	0.9282*	318.8165

Panel B	Model 4	Model 5
Adjusted R^2	25.43%	25.43%
AIC	-6.21	-6.21
SC	-6.20	-6.20
D-W	1.97	1.97

To check this hypothesis for the Spanish case, the mean equation in Model 3 is then augmented with the political-cycle variable which is the variable of interest

$$\begin{aligned} RS_t &= \alpha + \beta \cdot RW_t + \chi \cdot RS_{t-1} + \delta \cdot M_t + \phi_1 \cdot Pc1_t + \varepsilon_t \\ h_t &= \gamma_0 + \gamma_1 \cdot h_{t-1} + \gamma_2 \cdot \varepsilon_{t-1}^2 \end{aligned} \tag{4}$$

where $Pc1_t$ is a dummy variable that takes the value 1 if t belongs to the second half of each government's term and 0 otherwise.[7]

Estimation results of Model (4) allow us to conclude that Spanish excess returns have not been statistically significant higher during the second half of government's term, meaning that there is no evidence supporting the theory of "opportunistic" PBC for the Spanish case. Indeed, the coefficient on the political cycle variable, *Pc1*, is not significantly different from zero (see Table 3). In this sense, it is useful to remark that, according to Block and Vaaler (2004), contrarily to developing countries in which empirical works coincide in asserting that there is a link between elections and the implementation of policies consistent with incumbent aims of retaining office, the evidence of political business cycles in industrialized countries is mixed.

As an alternative way to test for the same hypothesis, the $Pc1_t$ variable is replaced by $Pc2_t$, which is a dummy variable equal to one if the incumbent is re-elected and t is in the first half of his new government's term, and zero otherwise. Then, the resulting Model (5) is estimated. In this case, one should expect that the coefficient on $Pc2_t$ will be significantly negative under hypothesis of political business cycle.

$$\begin{aligned} RS_t &= \alpha + \beta \cdot RW_t + \chi \cdot RS_{t-1} + \delta \cdot M_t + \phi_2 \cdot Pc2_t + \varepsilon_t \\ h_t &= \gamma_0 + \gamma_1 \cdot h_{t-1} + \gamma_2 \cdot \varepsilon_{t-1}^2 \end{aligned} \tag{5}$$

As shown in Table 3, the estimation results lead to the same conclusion, given that φ_2 is statistically positive at the 10% level. It implies that Spanish excess returns are significantly positive during the first half of the new government's term after the incumbent's re-election, and this result is just the opposite to what expected following the "opportunistic" PBC theory that presumed a correction in returns after elections.

3.2. The "partisan" PBC theory at the Spanish stock exchange

We then investigate whether the ideological composition of the government may affect the performance of the Spanish stock market, as the "partisan" PBC theory

[7] We obtain similar results if we define the political-cycle dummy variable to take on increasing numeric values during the first half of a government's term and decreasing numeric values during the second half of a government's term.

postulates. Following Vuchelen (2003), we distinguish between temporary and permanent effects on economic variables. The former effects are tested by adding three dummy variables to the mean equation of Model (3) that take the value 1 when a particular ideological party wins:

$$\begin{aligned} RS_t &= \alpha + \beta \cdot RW_t + \chi \cdot RS_{t-1} + \delta \cdot M_t + \phi_1 \cdot UCD\_w_t + \\ &+ \phi_2 \cdot PSOE\_w_t + \phi_3 \cdot PP\_w_t + \varepsilon_t \\ h_t &= \gamma_0 + \gamma_1 \cdot h_{t-1} + \gamma_2 \cdot \varepsilon_{t-1}^2 \end{aligned} \tag{6}$$

i_w_t equals 1 if t is the election day, or the first trading day after elections if election day takes place during the weekend, and the 'i' party has won elections, where i= *UCD* (centre), *PSOE* (left-wing), *PP* (right-wing),

Estimation results from Model (6) are reported in Table 4. Note that the coefficients of the variables that respectively capture the effects of a victory of the UCD (ϕ_1) and the PP (ϕ_3) parties are significantly negative, whereas the coefficient of the variable related to the victory of the PSOE party (ϕ_2) is not significantly different from zero. This result indicates that Spanish returns react negatively to the victory of the UCD party and, to a lesser extent, PP party, while there is no impact when PSOE wins elections.

To test the presence of permanent effects, these dummy variables are replacing by UCD_t, $PSOE_t$ and PP_t that equal 1 over the term of the centre, left-wing and right-wing governments:

$$\begin{aligned} RS_t &= \alpha + \beta \cdot RW_t + \chi \cdot RS_{t-1} + \delta \cdot M_t + \omega_1 \cdot UCD_t + \omega_2 \cdot PSOE_t + \\ &\omega_3 \cdot PP_t + \varepsilon_t \\ h_t &= \gamma_0 + \gamma_1 \cdot h_{t-1} + \gamma_2 \cdot \varepsilon_{t-1}^2 \end{aligned}$$

However, the above model cannot be directly estimated, since the correlation values of each pair of the three political dummies are high enough to infer that multicollinearity may be present. Hence, these variables are not bundled together into one equation in order to avoid multicollinearity problems. In contrast, we estimate separately three equations:

$$RS_t = \alpha + \beta \cdot RW_t + \chi \cdot RS_{t-1} + \delta \cdot M_t + \omega \cdot i_t + \varepsilon_t$$
$$h_t = \gamma_0 + \gamma_1 \cdot h_{t-1} + \gamma_2 \cdot \varepsilon_{t-1}^2 \qquad (7)$$

where i= *UCD* (centre) or *PSOE* (left-wing) or *PP* (right-wing).

As shown in Table 4, the variable testing for the permanent effects in all three cases is not statistically significant. As an overall conclusion of this section, it can be

Table 4. Estimates of Models 6 and 7

Panel A presents the estimates of Model (6) and Model (7). UCD_w_t, PSOE_w_t, and PP_w_t, (UCD_t, $PSOE_t$ and PP_t) are dummy variables to test for temporary (permanents) effects of the ideological composition of the government on economic variables. RS_t is the return on Spanish index at time t, RW_t is the return on the World index at time t, M_t is a dummy variable capturing the Monday effect on Spanish returns before 25 November 1991. Panel B reports the Adjusted R^2, the Akaike Information Criteria (AIC), the Schwarz Criteria (SC), and the Durbin-Watson statistic (D-W). * (**) denotes statistical significance at the 1% (10%) level.

Panel A	Model 6		Model 7.1		Model 7.2		Model 7.3	
Variable	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.
α	-4.39E05	-0.396	-2.13E-05	-0.191	0.0002	1.071	-0.0001	-0.922
RW_t	0.8680*	80.773	0.8700*	80.441	0.8670*	80.489	0.8701*	80.974
RS_{t-1}	0.0543*	5.934	0.0492*	5.403	0.0496*	5.430	0.0494*	5.418
M_t	0.0028*	6.636	0.0023*	6.451	0.0029*	6.626	0.0029*	6.571
UCD_w_t	-0.0603*	-61.718						
PSOE_w_t	-0.0016	-0.401						
PP_w_t	-0.0319*	-22.703						
UCD_t			-0.0006	-1.412				
$PSOE_t$					-0.0003	-1.392		
PP_t							0.0003	1.346
γ_0	1.41E-06*	9.6577	1.22E-06*	9.251	1.24E-06*	8.980	1.24E-06*	9.350
h_{t-1}	0.0751*	21.4740	0.0670*	20.847	0.0675*	21.001	0.0673	20.882
ε_{t-2}^2	0.9200*	303.1680	0.9295*	325.00	0.9288*	315.504	0.9291	322.44

Panel B	Model 6	Model 7.1	Model 7.2	Model 7.3
Adjusted R^2	24.74%	25.49%	25.44%	25.48%
AIC	-6.22	-6.20	-6.21	-6.21
SC	-6.21	-6.21	-6.20	-60.20
D-W	1.97	1.97	1.97	1.97

stated that with respect to elections, considered as political events, the experience of the Spanish Stock Exchange weakly supports the rational "partisan" theory, given that excess returns are temporarily affected only by the victory of the centre and right-left parties.

4. Elections and stock market performance

As previously reported, Brown et al. (1988, 1993) developed the so-called "Uncertain Information Hypothesis" (UIH) noting that when election-induced uncertainty is reduced, the risk-adjusted expected return falls and stock prices rise. Therefore, positive price changes should be expected following the election as uncertainty about the election outcome is resolved.

In this section, we investigate the impact of political events on the information assimilation process of Spanish stock markets. Politics in Spain presents some interesting and distinctive features. Firstly, the Spanish election law forbids that pre-election polls may be released by any communications media in the five days preceding the date of polling. Thus, according to the Uncertain Information Hypothesis (UIH) proposed by Brown et al. (1988, 1993), we would expect a peak of uncertainty resolution only when official election outcomes are made public. Secondly, given that Spain has a proportional electoral system, we have also analysed the Spanish stock market performance when the uncertainty about the composition of the government is eliminated, namely in the date of investiture session. Finally, due to the importance of Catalan and Basque independent parties for the stability of the national government, we also consider the date of regional elections and regional investiture.

4.1. Response of returns to political events

An important topic is whether stock prices are politically sensitive and returns react positively (or negatively) to elections and other elections-related political events. To answer this question, we perform the analysis following a stepwise scheme, starting with the model presented in Model (3) and progressively expanding it with the inclusion of new regressors in order to assess separately the effect of the different political events on stock returns. To discriminate between different model specifications, we use the likelihood ratio test as a test of the validity of one model relative to the other, which is summarized as follows.

Suppose that M_1 is a model with parameter vector θ, and M_0 is the subset of model M_1 obtained by constraining *k* of the components of θ to be zero. Let $l_0(M_0)$ and $l_1(M_1)$ be the maximized value of the log-likelihood for models M_0 and M_1 respectively. M_0 can be rejected in favour of M_1 at the α level of significance if $D=2[l_1(M_1) - l_2(M_2)] > c_\alpha$, where c_α is the (1-α) quantile of the x_k^2 distribution and *k* is the difference in the dimensionality of M_1 and M_0. D is known as the deviance statistic.

Firstly, to examine whether returns are sensitive to election news, three dummy variables are included into the expression of Model (3) so that the following model is estimated:

$$\begin{aligned} RS_t &= \alpha + \beta \cdot RW_t + \chi \cdot RS_{t-1} + \delta \cdot M_t + \pi_1 BN_t + \pi_2 N_t + \\ &+ \pi_3 AN_t + \varepsilon_t \\ h_t &= \gamma_0 + \gamma_1 \cdot h_{t-1} + \gamma_2 \cdot \varepsilon_{t-1}^2 \end{aligned} \tag{8}$$

where BN_t takes the value 1 if *t* is one of the ten previous days to national election day, and 0 otherwise; N_t takes the value 1 if *t* is the election day or the day after the election day if election day takes place during the weekend or on a bank holiday, and 0 otherwise; and AN_t takes the value 1 if *t* is one of the five next days, and 0 otherwise. The choice of the number of days respectively included in the previous and the next period to national election day has been made in accordance with the minimized AIC and SC.

Estimation results are reported in Table 5. The deviance statistic highly exceeds the critical value at the 1% significance level, implying that the inclusion of these three political dummy variables improves the overall goodness-of-fit of the model. Consistently with the UIH, our findings show that excess returns are statistically negative prior to elections while they are significantly positive once elections' outcome is known. Interestingly, excess returns remain statistically negative the first day after elections, as indicated by the value of π_2. This result can be explained by the fact that the market needs time to obtain complete information about the forthcoming policies and information is transmitted gradually to market. As Pantzalis et al. (2000) point out, if the outcome of the election does not allow investors to immediately assess the effect on country's future, positive changes should be expected following the election as uncertainty about those policies is resolved.

Table 5. Estimates of Models 8, 9 and 10

Panel A presents the estimates of Model (8), (9) and (10). BN_t, N_t, and AN_t, are dummy variables to test for any effect of the national elections on returns during the ten previous days (BN_t), the election day or the first trading day after elections if elections take place on weekend (N_t) and the five days after elections (AN_t), respectively. BI_t, I_t and AI_t are dummy variables to test for any effect of the day prior to national investiture session, the national investiture session day and the day after the national investiture session, respectively. Similarly, BR_t, R_t and AR_t are dummy variables capturing the effect, if any, on the day prior to regional elections, the regional elections day and the day after, respectively. RS_t is the return on Spanish index at time t, RW_t is the return on the World index at time t, M_t is a dummy variable capturing the Monday effect on Spanish returns before 25 November 1991. Panel B reports the Adjusted R^2, the Akaike Information Criteria (AIC), the Schwarz Criteria (SC), and the Durbin-Watson statistic (D-W). Panel C shows the Benchmark Model and the corresponding deviance Statistic (critical values in parenthesis). * denotes statistical significance at the 1% level.

Panel A	**Model 8**		**Model 9**		**Model 10**	
Variable	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.
α	-2.94E-05	-0.265	-2.88E-05	-0.258	-3.36E-05	-0.301
RW_t	0.8665*	80.601	0.8666*	80.136	0.8661*	80.461
RS_{t-1}	0.0513*	5.684	0.0515*	5.651	0.0516*	5.705
M_t	0.0029*	6.770	0.0029*	6.797	0.0029*	6.821
BN_t	-0.0040*	-5.654	-0.0040*	-5.654	-0.0040*	-5.664
N_t	-0.0212*	-20.046	-0.0212*	-19.960	-0.0212*	-19.978
AN_t	0.0079*	8.400	0.0078*	8.400	0.0078*	8.380
BI_t			-0.0038	-0.970		
I_t			0.0025	0.599		
AI_t			-0.0012	-0.322		
BR_t					0.0014	0.7370
R_t					-0.0022	-0.6478
AR_t					0.0024	0.8820
γ_0	1.31E-06*	8.204	1.31E-06*	7.886	1.31E-06*	8.201
h_{t-1}	0.0745*	20.657	0.0745*	20.646	0.0747*	20.641
ε_{t-2}^2	0.9214*	300.54	0.9214*	296.55	0.9213*	299.77

Panel B	**Model 8**	**Model 9**	**Model 10**
Adjusted R^2	24.79%	24.79%	24.78%
AIC	-6.22	-6.22	-6.22
SC	-6.21	-6.21	-6.21
D-W	1.96	1.96	1.97

Panel C	**Model 8**	**Model 9**	**Model 10**
Benchmark Model	Model 3	Model 8	Model 8
Deviance Statistic	88.40* (13.4)	1.72 (13.4)	2.44 (13.4)

In countries with proportional representation, as it is the Spanish case, sometimes governments are multi-party coalitions whose composition is difficult to predict from the election results. In these cases, as stated by Vuchelen (2003), the main political event may be the composition of the coalition instead of election results themselves, although election outcome will however still have some effects on the stock market since the uncertainty is reduced.

Hence, the analysis is extended to explore the responses, if any, of the market to the final composition of the government. It is in the Parliamentary investiture session that the candidate in the most voted party at the national elections presents his program with the aim to obtain the support from a majority in Congress. Thus, we introduce a dummy variable to capture the impact of the composition of the government derived from the investiture session. Also included are two dummy variables to pick up the previous day effects and the next day effects, respectively. Then, the regression to estimate is:

$$\begin{aligned} RS_t &= \alpha + \beta \cdot RW_t + \chi \cdot RS_{t-1} + \delta \cdot M_t + \pi_1 BN_t + \\ &\pi_2 N_t + \pi_3 AN_t + \phi_1 BI + \phi_2 I_t + \phi_3 AI_t + \varepsilon_t \\ h_t &= \gamma_0 + \gamma_1 \cdot h_{t-1} + \gamma_2 \cdot \varepsilon_{t-1}^2 \end{aligned} \tag{9}$$

where BI_t is a dummy variable taking the value 1 if t is the day prior to investiture session and 0 otherwise; I_t is a dummy variable taking the value 1 if t is the investiture session day and 0 otherwise; and AI_t is a dummy variable taking the value 1 if t is the day after the investiture session and 0 otherwise.

As reported in Table 5, none of the coefficients on the new variables of interest are statistically significant, indicating that there is no impact of the outcome of investiture sessions on Spanish returns. Obviously, the goodness-of-fit of the model does not improve with the inclusion of the dummy variables related to investiture session, according to the log likelihood test (See panel C in Table 5).

In this sense, it is important to remark the fact that along the history of Spanish elections from the beginning of the transition to Democracy in 1975, only in two of the ten national elections there has been no clear winner, in the sense that the most voted party's candidate was obliged to form a coalition to become president[8]. Thus, in eighty

[8] These two elections were the 1993 elections, won by PSOE, and the 1996 elections, won by PP (see Figure I).

percent of the cases, uncertainty around elections outcome has disappeared some days after election's day and it has been no need to pact with the opposition so as to gain sufficient support for holding the office. In spite of that, except for the cases of absolute majority,[9] all candidates to Presidency have made efforts to make pacts with the other parties to assure further support during their government term. Furthermore, although not shown, we have re-estimated the Model (9) by replacing the dummy variables related to the investiture session by similar dummy variables that only consider the elections won without majority and focusing not only in the investiture session day but also on the day of the announcement of pacts or agreements between the candidate and the rest of the parties to obtain the required support. Results do not vary. Therefore, our findings show that Spanish excess returns are sensitive to national elections outcome only during the period surrounding elections, while are not sensitive to investiture sessions as political events.

We next focus our attention on the regional elections and on their effects on stock exchange. In particular, as indicated previously, we only consider Catalan and Basque elections, mainly due to the fact that they have traditionally played an important role in the multi-party coalition governments' formation and that these elections do not coincide in time with national elections. A total of sixteen (Catalan and Basque) regional elections have taking place in Spain from the very first one, Basque elections in 1980, to the last (included) Catalan elections in 2006. To assess whether these regional elections have had any effect on the Spanish excess returns, three dummy variables are added to Model (8) as follows:

$$\begin{aligned} RS_t &= \alpha + \beta \cdot RW_t + \chi \cdot RS_{t-1} + \delta \cdot M_t + \pi_1 BN_t + \pi_2 N_t + \\ &\pi_3 AN_t + \delta_1 BR_t + \delta_2 R_t + \delta_3 AR_t + \varepsilon_t \\ h_t &= \gamma_0 + \gamma_1 \cdot h_{t-1} + \gamma_2 \cdot \varepsilon_{t-1}^2 \end{aligned} \tag{10}$$

where BR_t is a dummy variable taking the value 1 if t is the day prior to regional elections and 0 otherwise; R_t is a dummy variable taking the value 1 if t is regional elections day or the day after the election day if regional elections day takes place during the weekend or on a bank holiday, and 0 otherwise; and AR_t is a dummy variable taking the value 1 if t is the day after regional elections and 0 otherwise.

The conclusion drawn from estimation results reported in Table 5 is similar to that of investiture session's impacts on the Spanish stock exchange. We obtain no

[9] Absolute majority has been got once by PSOE (1982 elections) and once by PP (2000 elections).

evidence on the excess returns, derived from the Catalan and Basque regional elections taking place, since the coefficients on the dummy variables picking up such an impact are not significantly different from zero. Although not presented here, the same results are achieved when including separate dummy variables for the Basque and the Catalan regional elections, to check if there is any difference between them. Furthermore, note that the deviance statistic is not statistically significant, so that Model (10) does not fit better than Model (8) according to the likelihood test ratio.

We also check whether there is any impact of regional investiture sessions on excess returns by substituting the dummy variables related to regional elections day with other similar dummy variables referred to regional investiture session day. The resultant model, Model (11), is:

$$\begin{aligned} RS_t &= \alpha + \beta \cdot RW_t + \chi \cdot RS_{t-1} + \delta \cdot M_t + \pi_1 BN_t + \pi_2 N_t + \\ &\pi_3 AN_t + \rho_1 BRI_t + \rho_2 RI_t + \rho_3 ARI_t + \varepsilon_t \\ h_t &= \gamma_0 + \gamma_1 \cdot h_{t-1} + \gamma_2 \cdot \varepsilon_{t-1}^2 \end{aligned} \tag{11}$$

where BRI_t is a dummy variable taking the value 1 if t is the day prior to regional investiture session, and 0 otherwise; RI_t is a dummy variable taking the value 1 if t is the regional investiture session day, and 0 otherwise; and ARI_t is a dummy variable taking the value 1 if t is the day after the regional investiture session, and 0 otherwise.

The results lead us to conclude that there is no influence of regional elections on Spanish excess returns, neither surrounding the regional elections day, as previously reported, nor surrounding the regional investiture session day (see Table 6).

To make a complete analysis of the influence of elections as political events on the Spanish stock exchange, European elections are additionally considered. Our sample includes five European elections taking place in 1987, 1989, 1994, 1999 and 2004. Once more, three dummy variables capturing the effects of these elections on the Spanish excess returns in the previous day, the day in which elections took place and the day after elections are added to Model (8):

$$\begin{aligned} RS_t &= \alpha + \beta \cdot RW_t + \chi \cdot RS_{t-1} + \delta \cdot M_t + \pi_1 BN_t + \pi_2 N_t + \\ &\pi_3 AN_t + \nu_1 BE_t + \nu_2 E_t + \nu_3 AE_t + \varepsilon_t \\ h_t &= \gamma_0 + \gamma_1 \cdot h_{t-1} + \gamma_2 \cdot \varepsilon_{t-1}^2 \end{aligned} \tag{12}$$

where BE_t is a dummy variable taking the value 1 if t is the day prior to European

Table 6. Estimates of Models 11, 12 and 13

Panel A presents the estimates of Model (11), (12) and (13). BN_t, N_t, and AN_t, are dummy variables to test for any effect of the national elections on returns during the ten previous days (BN_t), the election day or the first trading day after elections if elections take place on weekend (N_t) and the five days after elections (AN_t), respectively. BRI_t, RI_t and ARI_t are dummy variables to test for any effect of the day prior to regional investiture session, the regional investiture session day and the day after the regional investiture session, respectively. BE_t, E_t and AE_t are dummy variables capturing the effect, if any, on the day prior to European elections, the European elections day and the day after, respectively. BGR_t, GR_t and AGR_t are dummy variables to test for any effect on the day prior to general referendum taking place, the general referendum day and the day after, respectively. RS_t is the return on Spanish index at time t, RW_t is the return on the World index at time t, M_t is a dummy variable capturing the Monday effect on Spanish returns before 25 November 1991. Panel B reports the Adjusted R^2, the Akaike Information Criteria (AIC), the Schwarz Criteria (SC), and the Durbin-Watson statistic (D-W). Panel C shows the Benchmark Model and the corresponding deviance Statistic (critical values in parenthesis). * denotes statistical significance at the 1% level.

Panel A	Model 11		Model 12		Model 13	
Variable	Coefficient	t-stat.	Coefficient	t-stat.	Coefficient	t-stat.
α	-2.93E-05	-0.263	-3.06E-05	-0.274	-2. 62E-05	-0.235
RW_t	0.8667*	80.505	0.8666*	80.514	0.8670*	80.686
RS_{t-1}	0.0512*	5.671	0.0512*	5.665	0.0513*	5.681
M_t	0.0030*	6.770	0.0029*	6.692	0.0029*	6.762
BN_t	-0.0040*	-5.641	-0.0040*	-5.623	-0.0040*	-5.659
N_t	-0.0212*	-20.060	-0.0212*	-20.084	-0.0211*	-19.934
AN_t	0.0079*	8.389	0.0078*	8.377	0.0078*	8.348
BRI_t	0.0004	0.1112				
RI_t	-0.0017	-0.8084				
ARI_t	0.0006	0.2719				
BE_t			-0.0014	-0.215		
E_t			-0.0016	-0.133		
AE_t			0.0070	0.556		
BGR_t					-0.0022	-0.1865
GR_t					-0.0060	-1.1659
AGR_t					0.0036	0.4277
γ_0	1.31E-06*	8.178	1.31E-06*	8.196	1.30E-06*	8.177
h_{t-1}	0.0744*	20.650	0.0744*	20.660	0.0747*	20.680
ε_{t-2}^2	0.9216*	300.36	0.9215*	301.03	0.9213*	300.55

Table 6. Estimates of Models 11, 12 and 13 (continued)

Panel B	Model 11	Model 12	Model 13
Adjusted R^2	24.77%	24.78%	24.73%
AIC	-6.22	-6.22	-6.22
SC	-6.21	-6.21	-6.21
D-W	1.96	1.96	1.96

Panel C	Model 11	Model 12	Model 13
Benchmark Model	Model 8	Model 8	Model 8
Deviance Statistic	0.64* (13.4)	2.26 (13.4)	2.42 (13.4)

elections, and 0 otherwise; E_t is a dummy variable taking the value 1 if t is European elections day or the first trading day after the election day if European elections day takes place during the weekend or on a bank holiday, and 0 otherwise; and AE_t is a dummy variable taking the value 1 if t is the day after European elections, and 0 otherwise.

From Table 6, it is shown that the coefficients on these three dummy variables are not significant, so that it can be stated that there is no impact of European elections on the Spanish stock exchange.

Lastly, we have wanted to consider general referendums as political events that may influence the Spanish stock exchange. To do so, we proceed similarly to before. Three dummy variables are included to capture the effects of general referendum on the Spanish excess returns in the previous day, the referendum day and the day after. National referendums included in our analysis are those of December 1978 for the ratification of the Spanish Constitution, March 1986 for the permanence of Spain in the NATO and February 2005 for the Spanish ratification of the European Constitution. Model (8) is adapted as follows:

$$\begin{aligned} RS_t &= \alpha + \beta \cdot RW_t + \chi \cdot RS_{t-1} + \delta \cdot M_t + \pi_1 \cdot BN_t + \pi_2 \cdot N_t + \\ &\pi_3 \cdot AN_t + \varsigma_1 \cdot BGR_t + \varsigma_2 \cdot GR_t + \varsigma_3 \cdot AGR_t + \varepsilon_t \\ h_t &= \gamma_0 + \gamma_1 \cdot h_{t-1} + \gamma_2 \cdot \varepsilon_{t-1}^2 \end{aligned} \tag{13}$$

where BGR_t is a dummy variable taking the value 1 if t is the day prior to general referendum, and 0 otherwise; GR_t is a dummy variable taking the value 1 if t is general referendum day or the day after the election day if general referendum day takes place during the weekend or on a bank holiday, and 0 otherwise; and AGR_t is a dummy variable taking the value 1 if t is the day after general referendum, and 0 otherwise.

Coming back to Table 6, results show that Spanish excess returns have been no affected by general referendum taking place, indicating that there is likely no substantial information embedded into these political events' outcome.

As an overall conclusion of this section, Spanish stock exchange only reacts to general elections and, in this case, the exhibited behaviour is consistent with the UIH, since excess returns become positive as uncertainty is reduced. Other political events such as investiture sessions, regional elections, European elections or general referendum are shown not to have any impact on the Spanish bourse.

4.2. Response of volatility to political events

Uncertainty regarding the policies that will be carried out by the future government is likely to increase stock market volatility. In fact, prices are expected to (sometimes abruptly) adjust to the new information arriving to the market. It is therefore interesting to further examine the link between politics and stock market behaviour by focusing on election-induced volatility. In order to address this question, we follow two different approaches.

The first approach consists of comparing the volatility before and after each elections day, over several time horizons, i.e. 5 days, 10 days, 15 days and 20 days. We take the residuals from the estimation of Model (3) and test the null hypothesis that the volatility is equal to zero. The Brown-Forsythe (modified Levene) test is employed to determine if there are significant differences in volatility over the reported intervals.

Table 7 shows the probability of rejecting the null of equal variances before and after national elections. We note that there are no meaningful differences in the volatility of returns over the considered time horizons, except for the case of 1996 national election, in which volatility computed, once the election outcome is known,

appears to be higher than before election day, for the ten-day and the fifteen-day intervals.

Table 7. Test of equality of variances

This table presents the test of equality of variances before and after national elections over several daily intervals shown in the first column. The reported probability value is the p-value, or marginal significance level, against a two-sided alternative. If this probability value is less than the size of the test, say 0.05, we reject the null hypothesis.

	1977	**1979**	**1982**	**1986**	**1989**	**1993**	**1996**	**2000**	**2004**	**2008**
5	0.4532	0.1556	0.9173	0.7739	0.3766	0.4605	0.1037	0.3068	0.5577	0.6804
10	0.2466	0.2269	0.6252	0.7972	0.2353	0.4573	**0.0470**	0.3237	0.5967	0.9089
15	0.2110	0.2861	0.9743	0.7729	0.5990	0.9233	**0.0430**	0.1378	0.8061	0.4358
20	0.2788	0.3605	0.7753	0.4134	0.5403	0.9956	0.1743	0.3114	0.6663	0.2525

However, a word of caution is needed. Indeed, according to Kalev et al. (2004), the use of unconditional volatility often generates peak or inconclusive results regarding the news-volatility relation whenever heteroskedasticity is present. Hence, as a robustness check of the results, we also analyze the impact of elections on volatility by employing the conditional volatility in order to take the volatility persistence effect into account.

Thus, within the second approach, the dummy variables capturing the effect of national elections on the Spanish index returns are also set as exogenous variables in the conditional variance equation of the GARCH (1,1) specification, Model (8), as follows:

$$\begin{aligned} RS_t &= \alpha + \beta \cdot RW_t + \chi \cdot RS_{t-1} + \delta \cdot M_t + \pi_1 BN_t + \\ &\pi_2 N_t + \pi_3 AN_t + \varepsilon_t \\ h_t &= \gamma_0 + \gamma_1 \cdot h_{t-1} + \gamma_2 \cdot \varepsilon_{t-1}^2 + \lambda_1 BN_t + \lambda_2 N_t + \lambda_3 AN_t \end{aligned} \qquad (14)$$

As shown in Table 8, Model (14) performs better than Model (8), according to deviance statistic. Several results are derived from the estimation of the above model. Firstly, the coefficient on the dummy variable capturing the effect of national elections on the index return during the previous days to the election date on the mean equation, π_1, has become statistically insignificant, while the coefficient on the dummy variable related to the days after elections is significant only at the 10% level with the inclusion of the dummy variables in the variance equation. The significance of the rest of the

coefficients of the mean equation remains unchanged. Secondly, regarding the potential effect of national elections on the volatility of returns, the coefficients on the dummy variable for the election day, λ_2, and on the dummy variable for the five days after the election day, λ_3, are significant and respectively positive and negative, indicating that volatility increases on the election day whereas decreases during the following days, as uncertainty gradually vanishes. Indeed, it appears that investors are waiting for the definitive distribution of votes and until such uncertainty does not disappear high levels of volatility are observed. It should be noticed, however, that the magnitude of each coefficient is quite low, suggesting that the impact of national elections on the volatility of returns is somewhat limited. The log likelihood measure increases significantly, implying that the inclusion of these dummy variables into the variance equation improves the overall goodness-of-fit of the model. Furthermore, the GARCH effect does not disappear entirely (as shown by the statistically significant γ_1 and γ_2), indicating that the days surrounding national elections do not logically cover all the sources of information. These results are in accordance to those obtained by Bialkowski et al. (2008), who reported an abnormal rise in volatility in the elections day that continued for a number of days thereafter and only started to decrease around fifteen days after elections. These authors justified such a prolonged reaction arguing that the official results may not be immediately released.

5. Summary and conclusions

In this paper we look into the link between politics and the Spanish stock exchange. Specifically, we have studied the empirical implications of both the Political Business Cycle Theory and the Uncertain Information Hypothesis. Our results indicate that there are no systematic differences in excess returns in the last two years preceding an election, that market responses are of the same magnitude when incumbents win or lose the election, and that there is no difference between the excess returns during left-wing and non-left-wing governments. In overall, all these results indicate that there is not evidence in favour of a government cycle in Spain.

Regarding to the stock market performance around election dates, volatility is shown to increase in the elections day (or the day after if elections take place during the weekend) and subsequently it decreases which could be explained in terms of different levels of uncertainty. The greater is the uncertainty, the greater is the volatility.

Table 8. Estimates of Model 14

Panel A presents the estimates of Model (14). BN, N_t, and AN_t, are dummy variables to test for any effect of the national elections on returns during the ten previous days (BN_t), the election day or the first trading day after elections if elections take place on weekend (N_t) and the five days after elections (AN_t), respectively. These three dummies have been included also into the conditional variance equation of the GARCH(1,1) specification to test the effects of national elections on volatility. RS_t is the return on Spanish index at time t, RW_t is the return on the World index at time t, M_t is a dummy variable capturing the Monday effect on Spanish returns before 25 November 1991. Panel B reports the Adjusted R^2, the Akaike Information Criteria (AIC), the Schwarz Criteria (SC), and the Durbin-Watson statistic (D-W). Panel C shows the Benchmark Model and the corresponding deviance Statistic (critical values in parenthesis). * (**) denotes statistical significance at the 1% level.

Panel A	Model 14	
Variable	Coefficient	t-stat.
α	-2.18E-05	-0.197
RW_t	0.8633**	80.837
RS_{t-1}	0.0528**	5.888
M_t	0.0029**	6.802
BN_t	-0.0012	-1.114
N_t	-0.0574**	-8.269
AN_t	0.0054*	1.633
γ_0	1.51E-06**	8.758
h_{t-1}	0.0710**	20.522
ε_{t-2}^2	0.9205**	306.314
BN_t	-4.48E-07	-0.127
N_t	0.0013**	4.145
AN_t	-0.0002**	-3.898

Panel B	Model 14
Adjusted R^2	22.90%
AIC	-6.23
SC	-6.22
D-W	1.98

Panel C	Model 14
Benchmark Model	Model 8
Deviance Statistic	93.56* (13.4)

Furthermore, negative price changes are observed in the days prior to elections, reverting to positive once the election takes place. Our results are in line with the work of Brown, Harlow and Tinic (1988, 1993) on the Uncertain Information Hypothesis that postulates that volatility of stock returns increases following the arrival of unexpected information and prices should rise as uncertainty is resolved. The negative return on the first day following the election date could be interpreted as the market needs time to assess the elections' impact following the vote count and/or the forthcoming policies.

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