FORECASTING SPANISH ELECTIONS

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Abstract

The behavior of the individual Spanish voter has come to be rather well-understood, thanks to a growing research literature. However, no models have appeared to explain, or to forecast, national election outcomes. The presence of this research gap contrasts sharply with the extensive election forecasting work done on other leading Western democracies. Here we fill this gap. The model, developed from core political economy theory, is parsimonious but statistically robust. Further, it promises considerable prediction accuracy of Spanish general election outcomes, six months before the contest actually occurs. After presenting the model, and carrying out extensive regression diagnostics, we offer an ex ante forecast of the November 2011 general election.

Over the last twenty years, statistical models to forecast election results have received considerable attention from political scientists [for recent reviews, see Lewis-Beck (2005) and Lewis-Beck and Tien (2011)]. Most published work has focused on the United States, although more is coming out on the leading Western European democracies, such as France, Germany, Italy and the United Kingdom [See the contemporary collection of papers on European election forecasting, Jérôme and Lewis-Beck (2010)]. Serious forecasting models are also appearing for the newer European democracies, such as Portugal (Magalhães and Aguiar-Conraria, 2009) and Hungary (Lewis-Beck and Stegmaier, 2009). It is high time Spain joins this dynamic literature.

That no election forecasting model has been proposed for Spain may seem odd. After all, voting behavior research in Spain has burgeoned, including the part that treats a central aspect of most election forecasting models: the role of the economy. Studies estimating functions for aggregate incumbent vote shares have shown them to be negatively affected by trends in unemployment and inflation (Bosch and Riba 2005). Similarly, in studies using individual-level data, Spain emerges as a case where individual voting decisions for or against the incumbent seem to be influenced by the perceived state of the economy (Lancaster and Lewis-Beck 1986; Fraile and Lewis-Beck 2010), and by objective economic indicators (Fraile and Lewis-Beck 2011). Furthermore, this relationship that seems to be particularly strong when looked at in comparative terms (Lewis-Beck 1988; van der Brug, Van der Eijk, and Franklin 2007; Duch and Stevenson 2008).

And yet, a deeper look into the Spanish voting behavior literature reveals a resilient uneasiness with the classic reward-punishment view (Key, 1966; Fiorina, 1981) about the role of the economy in elections. As early as 1986, McDonough, Barnes and López Pina (1986, 446-447) puzzled over the "widespread popularity" of the Socialist (PSOE) government in spite of

the highest levels of unemployment in Western Europe. Hamann (2000, 1043) was similarly struck by PSOE's victories in 1986, 1989, and 1993, ultimately suggesting that "no clear pattern exists between vote choice for the governing Socialist party and macroeconomic conditions." With time, several striking findings have feed this perspective. Some have found *positive* (rather than negative) effects of unemployment rates on aggregate levels of government popularity (Amor Bravo 1987; Mancha Navarro 1993). Also, there is the suggestion that the role of unemployment and inflation in shaping incumbent support in Spain has shifted through time, with inflation becoming more important since the 1990s (Bosch and Riba 2005). Still others have focused on the role of ideology and other enduring political predispositions in voting decisions, seeing them as trumping the effects of economic perceptions (Sáez Lozano and Jaime Castillo 2001), or even as mediating or shaping those very perceptions (Maravall and Przeworski 1999; Lago-Peñas and Lago-Peñas 2005; Sáez Lozano, Jaime Castillo and Danalache 2006). Yet others have found that the negative effect of unemployment on the PSOE electoral vote was neutralized, even reversed, both by the welfare policies of PSOE, and by voters' mistrust of the opposition's (the *Partido Popular*) stance on social policy (Maravall and Fraile 2001; Fraile 2005).

Although we can only speculate, it seems possible that the controversy generated by these findings, together with the massive 1982 electoral earthquake (the near eradication of the UCD, the incumbent), may have deterred election scholars from designing a forecasting model. However, we have decided to take up that task, approaching the problem in a straightforward way. On the one hand, we examine the "core political economy" model of forecasting, making electoral support of the incumbent party a function of political and economic performance [About this conceptual framework, see especially Lewis-Beck, Nadeau, and Bélanger (2004).].

On the other hand, we take stock of theoretical findings on both Spanish elections in particular and European elections generally, in an attempt to develop the model.

To be sure, election forecasting is never tantamount to theory-testing. Its aggregate level focus on prediction, coupled with the inevitably small number of observations (actual electoral outcomes) and the implied necessary parsimony of explanation, prevent forecasting models from being unambiguous validations of electoral behavior hypotheses. Still, to be of greater value than a mere parlor-game, forecasting models need to be theory-driven, so setting them apart from other forecasting approaches, such as opinion polls or political markets. As Lewis-Beck and Tien (2000, 98) observed: "Forecasting requires more than curve fitting. It wants good theory." With theory as a guide, we hope to construct a useful empirical forecasting model of Spanish elections. Below, we estimate and evaluate a limited set of models, interacting with theory and regression diagnostics, to arrive at a preferred specification. As a final exercise, we apply this model to forecasting the November 2011 Spanish election.

An Initial Model

The core political economy equation behind most election forecasting models is the following (see Lewis-Beck and Tien, 2011):

Incumbent Vote = f (Government Popularity, Economic Performance)

The incumbent's vote share is held to be a function of general government performance, indicated by a popularity measure, and general economic performance, indicated by a measure of the macroeconomy. Further, these variables are measured at the national level, typically in short time series across the post-World War II period [For a founding, global treatment of these issues,

see Lewis-Beck and Rice (1992)]. Applying these constraints to the Spanish case, we first find that government popularity, measured in a consistent fashion, is not available until the 1990s. The *Centro de Investigaciones Sociológicas* (CIS), the leading source of national survey data in Spain, only began collecting government approval data in October 1993, and then not on a monthly basis. Therefore, between October 1993 and July 2009, just 65 observations are available. If this popularity measure were used, no more than four general elections could be covered, an obviously insufficient number.

Fortunately, there is a popularity proxy variable available from the CIS surveys since June 1979: a general evaluation of the "political situation". On an almost monthly basis, the CIS "barometer" has posed the following question to respondents:

> "And talking about the general political situation in Spain, how would you describe it? Very good, good, so-so, bad, or very bad?"

The question is not deliberately aimed at government performance. However, it is to be expected that government performance would greatly influence the "general political situation," and so may serve as a useful proxy. In fact, the aggregate level correlation between this general political situation variable (percentage who answered "very good" or "good") and the government approval variable (also a percentage) is quite strong, at $r = .81$ (based on the 65 observations from 1993 to 2009). Hence, we employ this general political situation variable as a workable proxy for government popularity.[1]

What is the preferred macroeconomic indicator? There is no consensus on one "best" macroeconomic variable (see the discussion in Lewis-Beck, 2005). Nannestad and Paldam

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[1] We are extremely grateful to Belén Barreiro for making these data available to us.

(1994) have pointed to the "big two" of unemployment and inflation, although others point to the wide-spread use of growth and income (Lewis-Beck and Rice, 1992). In a study of the other Iberian case - Portugal - the economic growth rate was used, given the lack of reliable data on unemployment for part of the relevant period (Magalhães and Aguiar-Conraria 2009). However, in the case of Spain, such data are available throughout the entire series and can be used. Our expectation is that unemployment, as well as inflation, should be negatively related with incumbent vote share. Using the available data on the political situation, unemployment and inflation to devise a forecast model of the incumbent give us eight observations: on all legislative elections, 1982 - 2008.

We can further increase our sample size by including the other "national" election that takes place in Spain and is contested on a partisan basis: the elections to the European Parliament in 1987, 1989, 1994, 1999, 2004 and 2009. The parties that compete in these elections are roughly the same that compete in legislative elections, and the "incumbent party" and its vote share remain clearly identifiable concepts. This "pooling" strategy, combining legislative and European elections, has been successfully pursed in the examination of election outcomes in other European counties (e.g., see the French example in Lewis-Beck and Nadeau, 2000). The validity of such a pool rests on the notion that the forces acting on European Parliament voters are essentially the same ones operating on legislative election voters (see Franklin and van der Eijk, 1996).

It would be wrong, though, to assume that such European elections work in the exact same way as legislative elections. European elections have been famously described as "second-order" elections, characterized, first, by lower levels of turnout. Also, they are characterized by systematic losses for the governing parties, given voters' higher incentives to vote sincerely and

to punish governments without actually changing the governments (Reif and Schmitt 1980).[2] Thus, although the incumbent vote share can be predicted both for the legislative and European elections, our expectation is that the latter are marked by a dependable loss for the incumbent. In other words, we expect a negative sign on the coefficient associated with a "European election" dummy, comparable to that obtained in a relevant forecast model of the Italian elections (Bellucci 2010).

The vote function to be estimated reads as follows:

$$VOTE = B_0 + B_1 European + B_2 Inflation + B_3 Unemployment + B_4 PolSit + u \quad (1)$$

where VOTE is the proportion of the valid vote obtained by the incumbent party at each election, *European* is a dummy variable with value 1 in the case of European Parliament elections and 0 otherwise, *Inflation* is the percentage rate of inflation, *Unemployment* is the percentage rate of unemployment and *PolSit* is the percentage of individuals in the CIS surveys that rated the political situation as "good" or "very good". *Inflation*, *Unemployment* and *PolSit* are measured with a 6-month lag in relation to the month of the election.[3]

The lag structure merits special attention. A six-month lag permits a true forecast, well in advance of the election itself. Further, there is evidence that a six-month lag optimizes prediction accuracy. Lewis-Beck and Rice (1992, 123), in their experiments on the United States and France, found that the six-month offered more precision than alternatives. They concluded this was due, in part, to the fact that the forecasts were made "before the battle heats up." (Lewis-Beck and Rice, 1992, 123). More recently, Whiteley and colleagues (2010), commenting on their current election forecasting model for the United Kingdom, also found that the six-month

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[2] The exception to this pattern is provided by European elections that take place very early in the legislative election cycle, where "honeymoon effects" tend to prevail.

[3] Because of this lag structure, we excluded from the analysis the European election of 2004, which took place only three months after the 2004 legislative election that led to a change in the incumbent party, from the PP to PSOE.

lag was optimal. In our case, the fit of the model was also maximized with this lag structure. These data, along with measures on the other variables, are presented in the Appendix.

Table 1: Core Political Economy Election Forecast Model for Spain.

European election	-.047
	(.044)
Inflation (t-6 months)	-.018**
	(.006)
Unemployment (t-6 months)	.011
	(.007)
PolSit (t-6 months)	.005*
	(.003)
Constant	.222
	(.131)
R2	.68
Adjusted R2	.52
SEE	.068
N	13

Significance: *** .01, ** .05 and * .10; one-tailed test

The equation, as estimated with ordinary least squares (OLS), is presented in Table 1. These estimates do support this expression of the core political economy model, at least to some extent. Of the four independent variables, three have the expected signs: the model predicts an incumbent party will experience losses in European elections, have lower electoral support under higher levels of inflation, and greater electoral support when the political situation is more positive. Two of those three coefficients have p-values smaller than .10, and one smaller than .05. However, the coefficient for unemployment has the opposite sign to initial expectations (positive rather than negative) and lacks statistical significance at conventional levels. Further, the overall fit of the model is not particularly good, with R-squared = .68. Additionally, the

standard error of the estimate (SEE =.07), suggests that, for a typical future election, a forecast made from this model will be off by seven percentage points, not a particularly high level of precision. All things considered, it is worth examining how the model might be revised.

Revised Models

What to make of these first results in terms of possible refinements? A first approach would be to assume that something like Hibbs's (1977) *partisan theory* of macroeconomic policy, at least in what concerns the electoral effects of unemployment. Hibbs's argument is that parties are evaluated on the basis of economic objectives that have high priority for them, and seen as such by voters. Supposing left-wing parties are interested in reducing unemployment, changes in unemployment should affect their electoral performance and not the electoral performance of a right-wing incumbent. In other words, the reason we are not seeing an effect on unemployment here with model 1 is because such an effect – a negative one – might only exist for the case of PSOE as an incumbent.

A second approach would be to assume that *policy-oriented voting* (rather than incumbency-oriented) voting takes place in Spain. According to Kiewiet (1983), a heightened concern with unemployment will lead voters to support those parties that place such concern above others. In other words, increasing unemployment is not likely to hurt left-wing incumbents. Instead, given the parties different reputations, it is likely to benefit left-wing parties and hurt right-wing parties, regardless of which party might be the incumbent. In a model capturing such a phenomenon, therefore, high unemployment should increase the vote for the incumbent when that it is PSOE and decrease the vote for the incumbent when it is a party other

than PSOE (such as UCD in 1982 and PP in the 1999 European elections and the 2000 and 2004 legislative elections).

A final possible approach takes into account what several scholars studying economic voting in Spain have already detected. Although voters may be retrospective and incumbency-oriented, unemployment effects on incumbency support could have been neutralized by PSOE's positive stance on welfare policies, along with its ability to maintain protected incomes for the unemployed (Maravall and Fraile 2001; Fraile 2005). From this point of view, while we are likely to see higher levels of unemployment electorally punished when PSOE is not the incumbent, such punishment would be absent in when the Socialists are in power. We call this third approach the partisan *neutralizing* of potential negative outcomes.

Taking these approaches into account, in Table 2 we present estimates from two revised models. Model 2 reads as follows:

$VOTE$ = B_0 +B_1*European* + B_2*Inflation* + B_3*Unemployment*PSOE incumbent* + B_4*Unemployment*UCD/PP incumbent* + B_5*PolSit* + u (2)

Model 2 is different from Model 1 by containing two interaction terms, between the level of unemployment and two dummy variables capturing the partisan identity of the incumbent: PSOE (left) incumbent and UCD or PP (right) incumbent. On the one hand, if the partisan model holds for the case of unemployment, we should expect the former interaction to be negative and significant, signaling that the punishment for the incumbent as unemployment increases only occurs when PSOE has been in government. (And, we should expect the latter interaction to be close to zero, and not significant, since only PSOE is the electoral target). On the other hand, if the Spanish voter is policy-oriented, we should expect PSOE incumbents to be benefited and UCD or PP incumbents to be hurt in the electoral performance by higher levels of

unemployment. In other words, the former interaction would be positive and significant, and the latter interaction would be negative and significant.

Table 2: Election Forecast Model of Incumbent Support in Spain,

	Model 2	Model 3
European election	-.048**	-.039*
	(.017)	(.016)
Inflation (t-6 months)	-.014***	-.013***
	(.002)	(.002)
Unemployment (t-6months) * PSOE incumbent	.004	-
	(.003)	-
Unemployment (t-6months) * PP or UCD incumbent	-.007	-.011***
	(.004)	(.001)
PolSit (t-6 months)	.008***	.008***
	(.001)	(.001)
Constant	.307***	.368***
	(.050)	(.027)***
R2	.96	.95
Adjusted R2	.93	.93
SEE	.025	.027
N	13	13

Significance: *** .01, ** .05 and * .10; one-tailed test

Model 2's results are clearly interesting. In comparison with Model 1, European elections maintain their negative sign and size but the precision with which the coefficient is estimated clearly increases, with its p-value dropping below .05. The relationship between vote share for the incumbent and evaluations of the political situation also becomes stronger and is more precisely estimated, attaining significant at the .01 level. Importantly, the adjusted R-squared increases greatly (from .52 to .93), and the SEE diminishes considerably (from .07 to .025).

If the partisan model was supported, we should find the interaction between PSOE as incumbent and unemployment to be negative. However, this is clearly not the case: the coefficient is *positive* rather than negative. This calls attention to the policy-oriented model. In fact, in Model 2, the signs of the coefficients are as expected for the policy-oriented model (positive for PSOE Incumbent*Unemployment interaction and negative for the UCD or PP Incumbent*Unemployment interaction). However, each of these interaction coefficients falls short of statistical significance, because of a collinearity problem. Nevertheless, they are jointly highly significant (otherwise it would be impossible to observe such an increase in the R2 and in the adjusted R2).

The third approach, that of the partisan neutralizing of negative outcomes, can be tested via a simplification of Model 2. Instead of assuming that both incumbents are affected by unemployment, we merely test the hypothesis that PSOE has remained invulnerable to such effects. Model 3 thus drops the PSOE Incumbent*Unemployment interaction from Model 2, as follows:

$$VOTE = B_0 + B_1 European + B_2 Inflation + B_3 Unemployment*UCD/PP\ incumbent + B_4 PolSit + u \tag{3}$$

The estimates for Model 3 are extremely encouraging. The adjusted R-squared and SEE values remain virtually the same as in Model 2, despite dropping a variable. Further, the coefficients of all the variables have the expected signs, and all with p-values below .05; indeed, all but one is below .01. The results are clearly supportive of the partisan *neutralizing* model. In sum, while collinearity renders support for the policy-oriented model ambiguous, the

neutralization model is both endorsed by previous Spanish research, and is explicitly supported by our statistical analysis. Model 3 is, thus, our preferred forecast model.

A Preferred Model: Diagnostics

In what concerns Model 3, in-sample diagnostic tests show no evidence of heteroscedasticity (White test, p-values > .77) or non-normality (Kiefer and Salmon/Jarque-Bera tests, p-value = .64). With respect to outliers, they can be diagnosed through examination of studentized residuals (Beckman and Trussel 1974). One observes that only one is statistically significant (for the 1996 legislative elections; value = 2.15, significant at .05). The finding of this single significant residual is not troubling: with N = 13 the probability of having one false positive out of 13 is almost 50%.

The issue of the small sample size deserves further attention. Two main consequences of a small N are worth full discussion. The first consequence is larger standard errors, leading to lower t-statistics and a failure to reject the null when false. This problem does not appear in Model 3, since all the independent variable coefficients are statistically significant. The second consequence concerns the high sensibility of the estimates to small changes in the sample composition. First, we examine the condition index test (Belsley, 1991). The condition index bases itself on a simple idea. If the sample size is too small, then $X'X$ will be a near singular matrix. In that case, at least one of the eigenvalues of the matrix $X'X$ will be close to zero. Therefore, close to zero eigenvalues suggest that the small sample size may be a problem. The test involves the following steps: (1) standardization of the explanatory variables to mean zero and unit variance;[4] (2) computation of the eigenvalues of the standardized $X'X$; (3) calculation

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[4] This normalization is essential because the test is scale dependent.

of the condition index number given by $\sqrt{\lambda_{max}/\lambda_{min}}$, where $\lambda_{max}(\lambda_{min})$ is the highest (lowest) eigenvalue. Based on Monte Carlo simulations, Belsley (1991) finds evidence of severe linear dependence between the variables when the index exceeds 30. If the index is between 10 and 30, there is evidence of a moderate to severe sample problem. The condition index of Model 3 is 1.99, a value well below the suggested bounds.

Despite these encouraging results, it remains the case that inference from such a small sample is difficult to rely on. One can still argue that the lack of degrees of freedom may cause one observation to have a huge impact on the final results. Therefore, in order to increase the reliability of our results, we perform a more demanding analysis, by examining "out-of-sample" forecasts. We exclude each election, one at a time, and re-estimate the model with the remaining observations. Then, we check how the model forecasts the omitted observation. In this experiment, the largest out-of-sample error is for the 1982 election, with the incumbent vote overpredicted by 15 percentage points. But this election was highly peculiar, representing a major electoral realignment in the Spanish party system. The incumbent UCD, plagued by internal divisions, was deserted by its local notables and lost the leadership of both its founder (Adolfo Suárez) and its incumbent Prime Minister (Calvo Sotelo). It was nearly wiped out as a party, garnering less than 7 percent of the vote. If we restrict our analysis to the other 12 elections, the model out-of-sample forecasts perform quite well, with a mean absolute out-of-sample error = 2.8 percentage points.[5]

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[5] This is slightly better than the result of Magalhães and Aguiar-Conraria (2009), who also dealt with a comparably small sample in the case of Portugal.

Table 3. OLS and Jackknife estimates

	OLS estimates	Jackknife estimates (mean)	95% confidence interval
European election	-.039	-.037	[-.063,-.013]
Inflation (t-6 months)	-.013	-.012	[-.016,-.004]
Unemployment (t-6months) * PP or UCD incumbent	-.011	-.011	[-.013,-.005]
PolSit (t-6 months)	.008	.008	[.005,.010]
Constant	.368	.364	[.302,.403]

As a further out-of-sample test, we re-estimated the standard errors of the estimated slope coefficients, by means of Jackknife (delete-3) procedures.[6] Jackknife samples are "pseudo-samples" computed by leaving out three different observations at a time, eventually producing 286 samples. Then, for each sample Model 3 is re-estimated. From this procedure, an empirical distribution for the estimated coefficients is derived. The estimated coefficients prove to be very stable, as seen in Table 3. The first column shows the OLS estimates of Model 3 (from Table 2). The second column shows the average of the Jackknife estimates. We observe that the respective coefficient estimates are almost exactly equal. The third column presents the empirical 95% confidence interval around the Jackknife estimates, confirming the statistical significance of the average Jackknife estimate.
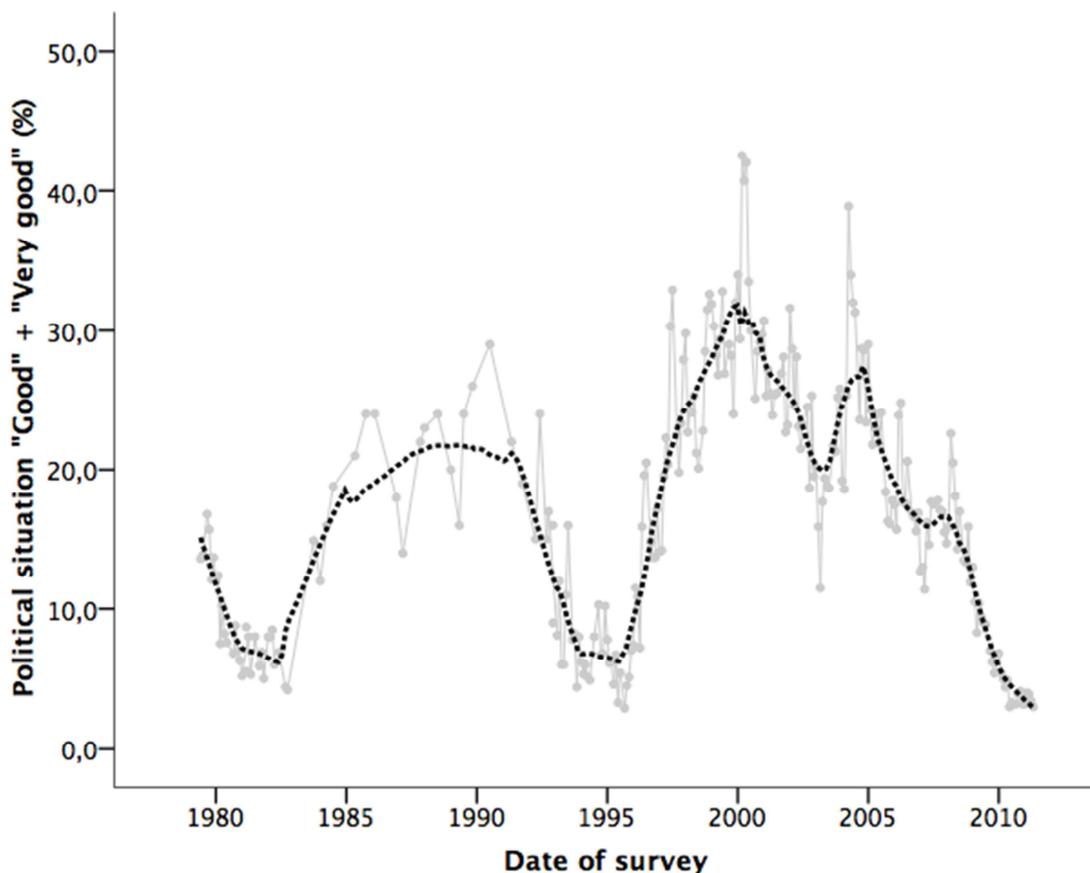
The November 2011 Spanish Legislative Elections: A True Out-of-Sample Forecast

The next national election in Spain was scheduled for March 2012, but it was advanced to November 2011. As of May 2011, we have all the data we need to produce an *ex ante* forecast of

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[6] Delete-1 and delete-2 yield similar results. However, the number of samples is rather small, due to the small original sample size.

the incumbent vote share in this election. The values of two variables are fixed: *UCD or PP Incumbent = 0* (since PSOE is the current incumbent); and *European = 0* (since this coming election is legislative). For the other two variables, *Inflation* and *PolSit*, we need their values for May 2011. In the CIS "Barómetro" (May 2011), the percentage of respondents who declare the current political situation "good" or "very good" was 3%, one of the very lowest scores ever recorded. Figure 1 shows the evolution of this variable since it has been recorded by CIS. In our sample of 13 elections, just the 1996 election has a lower value lower (2.9%). The inflation rate was 3.5%.

Figure 1: Evaluation of the current political situation in Spain (% "Good" + "Very good")

Note: The dotted line is a 10% bandwidth Kernel smoother

16

Table 4 shows the predicted incumbent vote share for the November 2011 legislative elections. These forecasts are derived from application of Model 3:

Table 4. Forecast

Inflation	Political Situation	Forecast	For. St. Error
3.5%	3%	0.345 (34.5%)	0.033

How do these results look historically for any incumbent Spanish party in general and for PSOE in particular? Our model spells doom for the Socialist incumbents. So far, only once has an incumbent party received a valid vote share below the forecasted 34.5%. (In the distant year of 1977, the UCD gained 34.4%). Of course, this was before the 1982 electoral realignment, and the consequent lower level of fragmentation for the Spanish party system that followed. Since 1982, the lowest share of the valid votes obtained by a *winning* party was 38.8%, when the PSOE very narrowly defeated the PP in the 1993 legislative election. A Socialist vote share now of just 34.5% would also mean their fourth worst electoral showing ever, only exceeding the 1977, 1979 and 2000 elections.

Conclusion

The scientific study of Spanish electoral behavior is a vigorous enterprise. Curiously, however, no systematic research has been appeared on Spanish election forecasting. Here we fill that gap. To begin, we formulate a classic core political economy model, which has well for forecasting election outcomes elsewhere. While empirically supported, this initial model does not yield enough accuracy to be of much use as a forecasting tool. In considering revisions, we were guided by competing partisan theories, and peculiar features of the Spanish polity. On the

latter, especially important is the partisan neutralization of the adverse electoral effects of unemployment, achieved by the Socialist party.

The preferred model holds incumbent vote share in Spanish national-wide elections to be a function of government popularity, inflation, and unemployment (for the PP only). This model fits the data extremely well and demonstrates considerable robustness, in the face of multiple diagnostics. Of particular interest are the out-of-sample tests, both ex post and ex ante. The ex post tests showed encouraging experimental results with omitted observations and Jackknife samples, especially in terms of model stability. The ex-ante test forecasts the November 2011 election, which has not occurred at the time of writing. However, because the model bases itself on an ample, six-month lag, we are already able to issue an unconditional estimate of the PSOE vote share. Clearly, on the basis of the theory and empirics considered here, the future success of election forecasting in Spain seems a reasonable expectation.

Appendix

Table A1. Election results and variables in the model

	Vote	European	Infl(-6)	Unem(-6)	POLSIT(-6)
1982M10	0.068	0	14.0	12.5	6.0
1986M06	0.441	0	8.2	17.7	24.0
1987M06	0.391	1	8.3	17.3	18.0
1989M06	0.422	1	5.8	14.8	20.0
1989M10	0.396	0	6.7	14.2	16.0
1993M06	0.388	0	5.3	16.4	12.5
1994M06	0.308	1	4.9	19.4	8.0
1996M03	0.376	0	4.4	18.5	2.9
1999M06	0.397	1	1.4	14.0	32.6
2000M03	0.445	0	2.5	12.2	29.0
2004M03	0.377	0	2.9	11.1	21.7
2008M03	0.439	0	2.7	8.4	17.8
2009M06	0.388	1	1.4	14.9	11.9
2011M11	?	0	3.5	20.9	3.0

Sources: OECD Main Economic Indicators for economic data and surveys from *Centro de Investigaciones Sociológicas* for political data.

References

Amor Bravo, E. M., 1987. Modelos politico-económicos en España. Revista del Instituto de Estudios Económicos 2, 189-213.

Beckman, R.J. and Trussell, H.J., 1974. The distribution of an arbitrary studentized residual and effects of updating in multiple regression. Journal of the American Statistics Association 69, 199-201.

Bellucci, P., 2010. Election cycles and electoral forecasting in Italy, 1994-2008. International Journal of Forecasting 26, 54-67.

Belsley, D., 1991. Conditioning Diagnostics: Collinearity and Weak Data in Regression. Wiley Series in Probability and Mathematical Statistics. John Wiley & Sons, New York.

Bosch, A. and Riba, C., 2005. Coyuntura económica y voto en España, 1985-1996. Papers 75, 117-140.

Duch, R., Stevenson, R. 2008. The Economic Vote: How Political and Economic Institutions Condition Election Results. Cambridge University Press, Cambridge.

Fiorina, M. 1981. Retrospective Voting in American National Elections. Yale University Press, New Haven.

Fraile, M. 2005. Cuando la economía entra en las urnas. El voto económico en España (1979-1996). Centro de Investigaciones Sociológicas. Colección Monografías, Madrid.

Fraile, M. and Lewis-Beck,M.S., 2011. Economics and Elections in Spain: Cross-Measures, Cross-Time. Paper presented at a conference, "Economic Crisis in Southern Europe," University of Siena, March 2011.

Fraile, M. and Lewis-Beck, M. S., 2010. Economic Voting in Spain: A 2000 Panel Test. Electoral Studies, Vol.29, No.2, pp.210-220.

Van der Eijk, C., and M. N Franklin. 1996. Choosing Europe?: the European electorate and national politics in the face of union. Univ of Michigan Pr.

Hamann, I. 2000. Linking policies and economic voting: Explaining reelection it the case of the Spanish Socialist Party. Comparative Political Studies 33 (8): 1018-1046.

Hibbs Jr., D.A., 1977. Political parties and macroeconomic policy. American Political Science Review 71, 1467-1487.

Jérome, B. and Lewis-Beck, M.S., 2010, European Election Forecasting, editors, Special Section, International Journal of Forecasting, Vol.25:1.

Key, V.O. Jr.1966. The Responsible Electorate: Rationality in Presidential Voting: 1936-1960. Harvard University Press, Cambridge.

Kiewiet, D. R. 1983. Macro-economics and Micro-politics: the Electoral Effects of Economic Issues. University of Chicago Press, Chicago.

Lago-Peñas, I. and Lago-Peñas, S., 2005. Does the economy matter? An empirical analysis of the causal chain connecting the economy and the vote in Galicia. Economics & Politics 17, 215-243.

Lancaster, T. and Lewis-Beck, M.S., 1986 "The Spanish Voter: Tradition, Economics, Ideology," Journal of Politics, Vol.48, No.3, August 1986, pp.648-674.

Lewis-Beck, M. S. and Nadeau, R., 2000 French Electoral Institutions and the Economic Vote, Electoral Studies, Vol.19 (Nos.2-3, June/September), pp.171-182.

Lewis-Beck, M. S. and Rice, T., 1992 Forecasting Elections, CQ Press, 1992.

Lewis-Beck, M. S. and Stegmaier, M., 2007. Economic Models of Voting in The Oxford Handbook of Political Behavior, eds., R. Dalton and H.-Di. Klingemann, pp.518-537.

Lewis-Beck, M. and Tien, C. (2000) 'The future in forecasting: prospective presidential models', in J. Campbell and J. Garand (eds), Before the Vote: Forecasting American National Elections (Thousand Oaks: Sage), 133–144

Lewis-Beck, M. S. and Tien, C. 2011. Election Forecasting in The Oxford Handbook of Political Methodology, eds., Michael Clements and David Hendry, chapter 24.

Lewis-Beck, M. S., 1988. Economics and Elections: The Major Western Democracies, University of Michigan Press.

Lewis-Beck, M. S., 2005, Election Forecasting: Principles and Practic. British Journal of Politics and International Relations, Volume 7,No.2,pp.145-164.

Lewis-Beck, M. S., Nadeau, R., and Bélanger, E., 2004. General Election Forecasts in the United Kingdom: A Political Economy Model. Electoral Studies 23, pp.279-290.

Magalhães, P. C. and Aguiar-Conraria, L., 2009. Growth, centrism, and semi-presidentialism: Forecasting the Portuguese general elections. Electoral Studies 28, 314-321.

Mancha Navarro, T., 1993. Economía y votos en España. Madrid: Instituto de Estudios Económicos.

Maravall, J. M. and Przeworski, A., 2001. Political reactions to the economy: the Spanish experience. In Stokes, S. C. (ed.), Public support for market reform in new democracies. Cambridge University Press.

Maravall, J. M., and Fraile, M., 2001. The politics of unemployment: the Spanish experience in comparative perspective. In Bermeo, N. (ed.), Unemployment in the new Europe. Cambridge University Press.

McDonough, P., Barnes. S. H., and Lopez Pina, A.. 1986. Economic policy and public opinion in Spain. American Journal of Political Science 30, 446-479.

Nannestad, P., and M. Paldam. 1994. The VP-function: A survey of the literature on vote and popularity functions after 25 years. Public Choice 79(3): 213–245.

Reif, K., and Schmitt, H. 1980. Nine second-order national elections – a conceptual framework for the analysis of European election results. *European Journal of Political Research* 8(1): 3-44.

Sáez Lozano, J.L. and Jaime Castillo, A. M., 2001. Estudio descriptivo del voto económico en España. Papeles de Trabajo del Instituto de Estudios Fiscales.

Sáez Lozano, J.L., Jaime Castillo, A.M. and Danalache, P. M., 2006. Atribución de la responsabilidad y voto económico en España e Andalucía. Centro de Estudios Andaluces.

Van der Brug, W., van der Eijk, C. and Franklin, M., 2007. The Economy and the Vote. Cambridge: Cambridge University Press.

Whiteley, Paul, David Sanders, Marianne Stewart, Harold Clarke. 2010. "Aggregate Level Forecasting of the 2010 General Elections in Britain: The Seats-Votes Model." Electoral Studies, 30:2, .pp.278-283.