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## ABSTRACT

### Consumer Confidence and Elections\*

We investigate the behavior of consumer confidence around national elections in the EU-15 countries during 1985:1-2007:3. Consumer confidence increases before the date of elections and falls subsequently by almost the same amount. It is able to predict the strength of the performance of the incumbent party and its probability of re-election both alone and in the presence of macro- economic and fiscal variables. The post-election drop is negatively related to the previous run up and is a function of the political - but not the economic - environment. A similar rise and fall characterizes consumer confidence in the United States.

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# 1 Introduction

We examine the behavior of consumer confidence around national elections. The motivation for our study is simple, practical and intuitive. If consumers are optimistic about their own future or their country's future, they are more likely to vote for the incumbent party rather than against it. This basic intuition suggests that there ought to be a positive association between consumer confidence and the electoral performance of the incumbent. Indeed, while no empirical study up to now has examined in detail the connection between consumer confidence with election outcomes, political leaders do recognize the fact that a positive association exists between the feelings and well-being of their constituency and their own chances of being re-elected. Most of them follow closely the various survey polls that are conducted by independent agencies or by themselves long before the date of the elections in order to adjust their policies, and often in countries with no fixed electoral cycle, in order to time the elections at the most favorite moment for their party.

Any study of the connection between citizens' optimism / pessimism on their well-being and election results is usually plagued by a lack of a sufficient number of data points, which are needed for a precise statistical analysis. In a given country, the number of national election events is small and, hence, the available time series limited. Moreover, going very far back in the past in order to gain data points on election events, compromises the reliability of the required economic data. Economic data of the distant past are scarce and usually carry a different informational content than they do today. This problem is particularly serious in the case when one is interested to capture citizens' expectations or attitudes. Surveys do not go very far back in time and if they do, they typically vary in content across the time periods.

Our study escapes this small sample criticism by exploring a unique data set, which has gone largely unnoticed by economists and political scientists. The data set consists of the index of consumer confidence in those European countries which joined the European Union. Since 1985, this index is measured in an identical way across all European Union countries, using the same questionnaire and the same statistical methodology. From 1985 through early 2007, we thus have the ability to analyze 77 different national European elections, during which we can also measure in a consistent fashion the level of consumer confidence.

There is an enormous theoretical and empirical literature both in Economics and in Political Science that deals with the connection between economic variables and election results. Some of the economics literature is reviewed in the next section. This literature typically deals with the connection between the electoral cycle and macroeconomic variables and has evolved into a whole new field in Economics. Our contribution consists of focusing on consumer confidence. Consumer confidence has never been used before to explain election results. The research on consumer confidence is so far focused on its relation to macroeconomic variables, like future consumption.

Our aim is to investigate the relationship between consumer confidence and electoral outcomes in a systematic way. We perform two types of analysis: An event-study, which describes in detail the evolving behavior of consumer confidence and other macroeconomic variables around elections, plus an econometric analysis which investigates further the evidence that is uncovered by the event study. The econometric analysis attempts to explain the behavior of consumer confidence both before and after the elections. The behavior of consumer confidence before national elections is essentially an exploration into the ability of the index of consumer confidence to predict electoral outcomes, in particular, whether it has marginal predictive power over and above the same ability of macroeconomic variables. To our knowledge, this is the first paper that tries to extract useful conclusions from analyzing election results, macroeconomic/fiscal variables and consumer confidence, all three sets of variables together in a consistent empirical framework. The behavior of consumer confidence after the elections makes the econometric analysis complete.

A key finding in the paper is the distinct pattern in the evolution of consumer confidence around election times, as it rises substantially before the elections and falls by an approximately equal amount afterwards. Another key finding is its distinct pattern between elections the incumbent wins and loses. Consumer confidence does have substantial predictive power for the electoral outcome. Our results, in fact, suggest that not only the level but also the rate of change in consumer confidence is related to electoral outcomes. We find that an increase in consumer confidence in the last few months before the elections hurts rather than helps the incumbent party's chances for reelection, suggesting that it is difficult for the incumbent to manipulate consumer confidence in the last minute in order to gain an electoral advantage. The consumer confidence behavior after the elections seems to be driven by the political environment, not so by the economic environment.

The rest of our paper is organized as follows: Section 2 presents a brief review of the relevant literature. Section 3 describes the data, including their construction and sources. Section 4 explores the behavior of average consumer confidence around national elections using an event-study methodology. Section 5 presents the econometric analysis of the ability of consumer confidence to predict the election outcome in the presence of other macroeconomic variables that were used in the earlier economics literature. Section 6 summarizes the evidence and concludes. Finally, in a short appendix we present visual evidence for the United States, which shows that the basic relationship we find in Europe, characterizes the evolution of US consumer confidence around US elections as well.

## **2 A Brief Review of the Literature**

Economists have long recognized the connection between the state of the economy and the electoral cycle. There is an old and fairly large literature on this connection. The early attempts focused on the effects of the state of the economy on the political outcomes and contained little discussion of the issues that evolved later into the political business cycle literature. Briefly, this line of research goes back to the seminal work of Stigler (1973), who examined the connection between the share of votes of the incumbent party and various economic variables in the context of US elections. His work was partly motivated by a paper of Kramer (1971) in the political science literature. Many other papers have followed that work, for example, Arcelus and Meltzer (1975), Bloom and Price (1975), Fair (1978) and Peltzman (1987).

In the later political business cycle literature, the direction of causality seems to have been reversed. Now the emphasis was in explaining output fluctuations using the evolution of various political variables, including electoral ones and assuming rational expectations in a game-theoretic framework. The seminal work of Nordhaus (1975) was followed by a long line of papers like McCallum (1978), Tufte (1978), Paldam (1979), Cuckierman and Meltzer (1986), Alesina (1987, 1988a and 1988b), Alesina and Sachs (1988), Rogoff and Sibert (1988), Nordhaus (1989), Persson and Tabellini (1990), and Alesina and Roubini (1992).

There is also a long line of relatively recent papers, which continue to work on the connection between the state of the economy and electoral outcomes, with the causality running in either direction.

Anderson et al. (in press) examine the post-election satisfaction of electoral outcomes as a function of various economic and political variables. der Brug, der Eijk and Franklin (2003) try to explain party preferences via economic and political variables. Dubois (2003) considers both directions of causality, trying to predict (for France) economic growth with political variables, as well as the incumbent's share of votes with economic growth. Jordahl (2006) attempts the same for Sweden. Besley and Case (2002) relate policy outcomes to the importance of institutional variables. Galeotti and Salford (2001) examine the potential manipulation of electoral cycles and work with empirical models that assume bidirectional causality (growth regressions and incumbent's share of votes regressions). For an extended review and additional references on the economic determinants of electoral outcomes see the paper by Lewis-Beck and Stegmaier (2000).

In another more recent strand of related literature, a series of papers by Leigh, Snowberg, Wolfers and Zitzewitz, attempt to connect electoral outcomes with the state of the economy through the use of "prediction markets", opinion polling and voter rationality.<sup>1</sup> We selectively mention Leigh and Wolfers (2006), who examine three competing approaches to forecasting elections (econometric models, opinion polling and election betting); Snowberg, Wolfers and Zitzewitz (2005), who examine the partisan impact of elections on the economy; Wolfers (2005), who links voter rationality and the state of the economy in gubernatorial elections in the US; or Leigh (2004), who examines the connections between the state of national and the world economy and electoral outcomes.

Since our paper focuses on consumer confidence and elections, we now turn to the literature on consumer confidence. Most of that work focuses on the link between consumer confidence and economic variables. For the bulk of the work, consumer confidence is considered an explanatory variable, one that can potentially improve the predictive performance of models for spending and consumption. We selectively mention Carroll, Fuhrer and Wilcox (1994), Allenby, Jen and Leone (1996), Batchelor and Dua (1998), Bram and Ludvigson (1998), Howrey (2001), Souleles (2002), Martinez-Serna and Navarro-Arribes (2003), Garret, Hernandez-Murillo and Owyang (2005).

We found two papers which reverse the direction of causality, namely they try to explain consumer confidence using macroeconomic and political variables. Vuchelen (1995) explores this direction of causality for Belgium, where he examines the impact of economic and political variables on the change

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<sup>1</sup>See Wolfers and Zitzewitz (2004, 2005, 2006) for more on prediction markets.

in consumer confidence. deBoef and Kellstedt (2004) do the same for the US, where they examine the impact on consumer confidence of both actual economic conditions and the perceptions of the public about the President's management of the economy. Yet, in none of the above lines of research can we find evidence on the predictive ability of consumer confidence for election outcomes.

The direction of "causality" from consumer confidence to election outcomes is left untouched in the previous literature, perhaps due to the overwhelming amount of work on the connection between economic variables and electoral outcomes. Most authors probably assumed that consumer confidence contains no additional information that is not already incorporated into economic variables. As we see later, our results suggest the contrary: consumer confidence contains idiosyncratic information in predicting electoral outcomes.

### 3 Data and Statistics for Consumer Confidence

#### 3.1 Data Sources and Construction of Consumer Confidence

Our analysis is based on data for the 15 countries of the European Union, before its recent enlargement. These countries are: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Ireland, Luxembourg, Netherlands, Portugal, Spain, Sweden and the United Kingdom.

Our data were obtained from various sources. Data on European national elections are available on various places on the internet. We got ours from the "Parties and Elections in Europe" website<sup>2</sup>; it has one of the most comprehensive historical databases that covers most countries in Europe. From the raw data of the above website, we constructed the political variables of interest, described in the next section. The sample period in the analysis is constrained by the data availability on consumer confidence. The harmonized consumer confidence index starts in 1985, hence it becomes the starting year for all electoral data. A brief summary of the sample EU electoral statistics is provided in Table 1. We analyze 92 electoral outcomes in 66 of which the incumbent party wins with an average vote share of 35.9%.

European consumer confidence data are publicly available in the European Commission "Business

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<sup>2</sup>Web link at <http://www.parties-and-elections.de>

and Consumer Surveys” website<sup>3</sup>. The consumer confidence data are responses to consumer surveys, based on the joint harmonized EU program of consumer surveys. There are five surveys that are conducted on a monthly basis: Industry (since 1962), Construction (1966), Consumers (1972), Retail Trade (1984) and Services (1996). Consumer Surveys were integrated into the harmonized program in January 1985 (for 9 EU countries, while the rest were gradually incorporated until May 2001).<sup>4</sup> The monthly surveys are carried out in the first fortnight of each month. There are 12 questions per month in the survey plus 3 additional questions per quarter.

The Consumer Confidence Indicator (our variable of interest) is the arithmetic average of the balances, B, (in percentage points) of 4 out of the 12 monthly questions. The four questions are:

1. How do you expect the financial position of your household to change over the next 12 months? (6 options for the answer)
2. How do you expect the general economic situation in this country to develop over the next 12 months? (6 options for the answer)
3. How do you expect the number of people unemployed in this country to change over the next 12 months? (6 options for the answer)
4. Over the next 12 months, how likely is it that you save any money? (5 options for the answer)

Observe that the questionnaire indicator is forward looking, in the sense that it asks consumers to provide an opinion for the year ahead. The indicator summarizes opinions on the household finances, the whole economy, unemployment and household savings.

The answers to the questions are usually given by choosing one of six options: PP (very positive), P (positive), Neutral, N (negative), NN (very negative), Do not know. Aggregate balances are calculated for each question. Balances are the difference (in percentage points of total answers) between positive

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<sup>3</sup>Web link at [http://europa.eu.int/comm/economy\\_finance/indicators/businessandconsumersurveys\\_en.htm](http://europa.eu.int/comm/economy_finance/indicators/businessandconsumersurveys_en.htm)

<sup>4</sup>The exact starting dates of availability are as follows: January 1985 for Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Netherlands and UK; January 1986 for Spain and Portugal; November of 1987 for Finland; October 1995 for Austria and Sweden; and January of 2002 for Luxembourg. These different dates of initial availability reduce our effective sample size from 92 to 77 observations.

and negative answers and are given from the formula:

$$B = (PP + 0.5P) - (0.5N + NN)$$

Sometimes, the question does not include the Neutral option. In such a case the definition of B remains as above. In the event that the question does not include the strongly positive, PP, and the strongly negative, NN, options, the balance B is calculated simply as  $B = P - N$ . Note that theoretically, B can range from -100 to +100.

Finally, macroeconomic data were obtained from DataStream. We obtained monthly or quarterly data for nominal GDP, real GDP, total government spending, revenues from indirect taxes, long term interest rates, the unemployment rate and the Consumer Price Index. As long-term rates, we used the yields of the 10-year government bonds. Inflation was defined using the CPI, and output growth using real GDP. The growth rates of government spending and indirect taxes were obtained after expressing the corresponding variables as percentages of nominal GDP.<sup>5</sup> The macroeconomic data span the period from 1984 to early 2007.

### 3.2 Distributional and Temporal Statistics for Consumer Confidence

Tables 2A and 2B contain extensive descriptive statistics on the time series properties of consumer confidence, on a country-by-country basis. Table 2A contains the statistics on the distributional properties, while Table 2B contains statistics on the temporal properties of the series. Observe that consumer confidence is not available from the beginning of 1985 for some of the EU-15 countries. In nine countries, there is a complete time series of 267 monthly observations. All nine countries are old members of the European Union.<sup>6</sup> Spain and Portugal joined the European Union a bit later, thus they began recording consumer confidence in June 1986. Austria, Finland and Sweden joined the European Union much later in time. Hence, their monthly observations are fewer. All in all, the

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<sup>5</sup>Problems of availability, at the monthly or even the quarterly frequency, do exist for the fiscal data and they are another reason of the effective sample size reduction.

<sup>6</sup>Luxembourg is one of the oldest members as well, but the country is too small to apparently afford recording all the statistics required by the European Union. It only began recording consumer confidence in January 2002 and, since that time, only one election took place. That election is included as an observation in the full cross-sectional analysis. However, Luxembourg does not appear in the individual country statistics of Tables 2A, 2B, 3.

number of national elections, during the period when consumer confidence is also available, declines from 92 to 77.

Table 2A shows that in ten countries average consumer confidence is negative and in four countries (Denmark, Netherlands, Finland and Sweden) positive. Greece has the lowest average consumer confidence (-28.07) and Finland the highest (15.04). The standard deviations of the level of consumer confidence vary across the countries. The largest one is encountered in Ireland (14.18), followed by Portugal (12.06) and the Netherlands (11.59); the smallest in Finland (3.72). In the remaining countries standard deviations vary in the range between 6.64 (Austria) and 9.69 (Denmark). The Cramer Von-Misses test for normality rejects the hypothesis of an underlying normal distribution (at the 5% level) for all but 5 out the 14 countries.<sup>7</sup> Only 3 out of the 14 countries have kurtosis in excess of 3 (Greece with 3.53, Spain with 4.11 and Italy with 4.53). The other countries have sample kurtosis either close to or below 3. Finally, 9 out of the 14 countries have negative skewness, with Italy and Spain taking the most negative values, while the rest of the 5 countries exhibit zero or positive skewness, with Greece taking the most positive value.

The statistics in Table 2B are surprisingly similar across all countries. Consumer confidence has very high persistence, which is consistent with the possibility of long memory. We report the autocorrelation coefficients  $r(1)$ ,  $r(12)$  and  $r(24)$  for lags 1, 12 and 24 months, and an estimate of the long memory coefficient,  $\hat{d}$ .<sup>8</sup> The estimated first-order autocorrelation is in excess of 0.90 for all 14 countries. Despite the very high first-order autocorrelation, the rapid decay of the autocorrelations at longer lags provides support for the hypothesis of long-memory rather than the hypothesis of unit-root non-stationarity.

Turning to the fractal analysis, observe that the estimates of the long memory coefficient  $\hat{d}$  are practically identical across all series and just within the range of stationarity: All are higher than 0.49, but significantly different than 0.50 (the  $p$ -values of the corresponding test are zero to more than 4 decimals). These estimates, along with the rate of decay of the autocorrelations, strongly suggest the presence of long memory in all consumer confidence series. All in all, the series are best characterized as being stationary but having strong long memory.

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<sup>7</sup>We use this test as it has better properties when the underlying series exhibits long memory, see below.

<sup>8</sup>The estimate of the long memory coefficient was obtained using the representation of the time series as fractionally differenced white noise  $(1 - L)^{d_i} X_{it} = \epsilon_{it}$ , where  $d_i \in (-0.5, 0.5)$  is the long memory coefficient for country  $i$ .

## 4 Event-Study Analysis: The Evolution of Consumer Confidence around the Time of Elections

In this section we analyze the evolution of average consumer confidence before and after the national elections, both on a country-by-country basis and across all EU-15 countries. We also examine the evolution of consumer confidence according to whether the incumbent wins or loses the elections. More specifically, we examine the following questions:

- Q1. Is there a pattern in the behavior of average consumer confidence, within and across countries, around the time of elections (12 months before and 12 months after the elections)?
- Q2. Is the behavior of average consumer confidence different in countries with fixed electoral cycles from countries with variable electoral cycles?
- Q3. Is the behavior of average consumer confidence different at times when the incumbent party is re-elected from the times it is voted out of office?
- Q4. Are there any differences in the behavior of major macroeconomic variables before and after the elections?

Our focus is on the first three questions, as the fourth one can probably be considered a confirmatory analysis for the results of the political business cycle literature. The chosen period of 25 months around elections is arbitrary, but we think is long enough to capture any interesting patterns in the data without risking a significant overlap with an earlier or a later election in a given country.

### 4.1 Country-by-Country Analysis

In Table 3 we compute statistics on the average behavior of consumer confidence around election months and compare them to the rest of the sample period. The variable of analysis is the difference in the standardized consumer confidence from month  $t - k$  to month  $t$ ,  $y_{it}(k) \stackrel{\text{def}}{=} X_{it} - X_{i,t-k}$ .<sup>9</sup> Two sets

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<sup>9</sup>Our analysis is done for  $k = 3, 6, 9$  and  $12$ . Results are reported for  $k = 3, 12$  as the rest are qualitatively similar and are available upon request. Consumer confidence is standardized by dividing it by its own times series standard deviation,  $s_{ci}$ . Thus the original consumer confidence series  $C_{it}$  becomes  $X_{it} \stackrel{\text{def}}{=} C_{it}/s_{ci}$ . This transformation does not

of comparisons are made per country: In the first two rows of each country in Panel A, the statistics are intended to provide a comparison between the months before the elections (row *Before*) with the rest of the sample (row *All but Before*), excluding the months before elections. In rows three and four of each country, the statistics are calculated in order to facilitate the comparison between the months after the elections (row *After*) with the rest of the sample (row *All but After*), excluding the months after the elections. In Panel B, these comparisons are formalized via a t-test.<sup>10</sup>

Our interest centers now on the following questions: (a) Does the behavior of consumer confidence change from the time before to the time after the elections? (b) If such a change in behavior does occur, how does it compare to the overall temporal behavior of the series, when we exclude elections from the sample? The answers to both questions (a) and (b) can be seen clearly in Figure 1, where we plot the country average changes from the rows labeled *After* and *Before* in Table 3. We can see a marked difference in those means before and after elections: The average change in consumer confidence before elections is typically positive, while the average change after elections is typically negative.

Next, we assess whether the pattern of rising and falling consumer confidence is significant when compared to the evolution of  $y_{it}(k)$  in other, non-election months. In Panel B of Table 3 we present a simplified  $t$ -test statistic, which compares the averages in the change in consumer confidence in all other months except the time period before elections with the months before elections, and similarly for after elections. The statistic is computed under the hypothesis that there are no differences between these means. The results from this test confirm those seen visually in Figure 1. The statistic  $\mathcal{T}_{i,s}(k)$  is very large for all countries and values of  $k$  for which a discernible difference could be seen in the graphs. Take, for example, the cases of Germany and the UK for  $k = 3$ . For Germany, we have that  $\mathcal{T}_{i,s}(3)$  is larger than 2 for both  $s = \textit{After}, \textit{Before}$  (-11.81 and 11.85 respectively). For the UK, we have that  $\mathcal{T}_{i,b}(3)$  is again larger than 2 for both  $s = \textit{After}, \textit{Before}$  (9.08 and -12.69 respectively), as is also seen in Figure 1. Similar results hold for  $k = 12$  for various countries. From a total of 56 cell entries in Panel B of Table 3, only 6 or 10% of the cases are lower than 2, strongly suggesting that the pattern of consumer confidence in Figure 1 is statistically significant.

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alter the temporal dependence properties of the series, but makes country sample moments and tests computed from them, comparable across countries.

<sup>10</sup>For further details please see the notes of Table 3 and Appendix 2.

Figure 2 contains 15 graphs, each one showing the evolution of consumer confidence in a given country  $i$ ,  $\bar{Z}_i$ ,  $i = 1, 2, \dots, 14$ , around the dates of elections, from 12 months before to 12 months following the elections. Months are labeled according to their time distance from the election month. The data for each month are simple averages of the consumer confidence of that particular month across the available election dates of a country. The construction of the average variable  $\bar{Z}_i$  is described in Appendix 2. Figure 2 provides a sharp visual picture of the evolution of consumer confidence, which is consistent with the results of Table 3: With the exceptions of Belgium and Finland, consumer confidence rises before the elections and falls afterwards.

## 4.2 EU-15 Average Consumer Confidence

We have an unbalanced panel of  $N = 15$  countries over a period of 22 years, which gives us a total of 77 national elections for which consumer confidence is also available. We now treat each election event as a separate sample point and analyze the behavior of consumer confidence and other macroeconomic variables during the period that begins 12 months before the election and ends 12 months after the election, i.e. a period of 25 months. Our graphical analysis in this section takes cross-sectional averages across the sample of 77 election events, separately for each month from -12 to +12, with 0 being the election month. This way we construct the average pattern of consumer confidence and of other macro-variables over a two-year period around election events. We use a similar analysis across the 77 election events to construct standard deviations and to perform further statistical tests. The formal statistical analysis is described separately in Appendix 2.<sup>11</sup>

We begin our discussion with the plot of  $\bar{Z}$ , the average sequence for the main variable of interest, consumer confidence. Figure 3 presents its evolution from month -12 to month +12, revealing a similar pattern to the ones observed in the graphs of Figure 2 for the individual countries, but much more sharply. It is very clear that there is an inverted U-pattern in the temporal evolution of consumer sentiment before and after elections. Consumer confidence rises sharply as we approach the election

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<sup>11</sup>Note that the major usefulness of averaging the information of individual countries arises from the fact that our sample increases and we are able to perform tests of interesting hypotheses that we are unable to do in individual countries. Also, it is important to realize that in the present event-study context, we have no particular interest in the calendar (absolute) time dimension of the dataset, apart from the need to keep track of the sequence of elections in each country; this is required in defining certain variables in the later analysis.

month and falls sharply after the elections.

The rise and the fall of average consumer confidence in Figure 3 is economically and statistically significant: The rise and subsequent fall are of about 5 points, which is more than twice the standard deviation measure  $\hat{\sigma}$ , calculated at 1.65 points. Figure 4 takes a more formal step and presents the plot of a sequence of paired  $t$ -tests for the mean difference in consumer confidence between the election month and all other months. We can clearly see in the figure that the differences are significant for all months, save the month immediately following the election.

Next, we examine whether the rise and fall of average consumer confidence around elections are of equal magnitude. Fitting two straight lines in the rising and falling segments of the sequence, we find that the marginal effect per month is about the same before and after the elections: Letting  $m = -12, -11, \dots, -1, 0, 1, \dots, +11, +12$  denote months before and after the election,  $I_{m,1} \stackrel{\text{def}}{=} I(m \leq 0)$  and  $I_{m,2} \stackrel{\text{def}}{=} 1 - I_{m,1}$ , the estimated equation is given by (standard errors in parentheses):

$$\hat{z}_m = \underbrace{-5.76_{(0.27)} \cdot I_{m,1} + 0.40_{(0.04)} \cdot m \cdot I_{m,1}}_{\text{months before the elections}} \overbrace{-5.82_{(0.32)} \cdot I_{m,2} - 0.44_{(0.04)} \cdot m \cdot I_{m,2}}^{\text{months after the elections}}$$

A test for the hypothesis of equal trend coefficients with opposite signs, i.e. a test for the equality of the coefficients in front of  $m \cdot I_{m,1}$  and  $m \cdot I_{m,2}$  has a p-value of 54%; therefore, consumer sentiment falls as fast as it rises.

### 4.3 Consumer Confidence in Countries with Fixed and Variable Electoral Cycles

Figure 5 presents a very interesting partition of the information provided by earlier Figure 3. The countries are split according to whether they have a fixed or variable electoral cycle.<sup>12</sup> If the election date can be chosen by the incumbent party, one would naturally expect that the incumbent would choose to hold elections when sentiment is on an upward momentum. The observed rise in consumer sentiment in Figure 3 may then simply be the outcome of smart election timing. In countries with fixed election dates, this timing is, by definition, non-existent. Yet, we observe that even in countries with fixed electoral dates, consumer sentiment rises before the elections. Thus, a simple hypothesis

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<sup>12</sup>From the 77 election cases for which consumer confidence is available, 12 correspond to fixed electoral cycles (France-5, Luxemburg-1, Finland-3, Sweden-3) and 65 to variable electoral cycles.

of timing based on the momentum of consumer confidence seems not able to explain why consumer sentiment rises before the elections.

More formally, we test the market timing hypothesis by fitting a time trend on the evolution of consumer confidence before the elections, separately for countries with fixed and variable election dates, and compare statistically the size of the two slope coefficients. For completeness, we also fit a second, post-election time trend, as was done above for the full sample. For countries with fixed electoral dates, the estimates equation is as follows:

$$\hat{z}_m^{FIX} = \underbrace{-1.33_{(0.28)} \cdot I_{m,1} + 0.38_{(0.04)} \cdot m \cdot I_{m,1}}_{\text{months before the elections}} \overbrace{-3.15_{(0.32)} \cdot I_{m,2} - 0.01_{(0.04)} \cdot m \cdot I_{m,2}}^{\text{months after the elections}}$$

The interesting coefficient here is the slope coefficient of the time trend before the elections, 0.38, which is statistically significant. The remaining coefficients are also significant *except* the one of the interaction term *after* the elections, i.e. the -0.01 estimate, which is insignificant. Repeating the estimation for the case of the countries with a variable electoral cycle, we obtain:

$$\hat{z}_m^{VAR} = \underbrace{-6.58_{(0.32)} \cdot I_{m,1} + 0.41_{(0.04)} \cdot m \cdot I_{m,1}}_{\text{months before the elections}} \overbrace{-6.27_{(0.38)} \cdot I_{m,2} - 0.51_{(0.05)} \cdot m \cdot I_{m,2}}^{\text{months after the elections}}$$

Here all coefficients are significant. The interesting test is the test of the hypothesis that the slope coefficient of the time trend before the elections of 0.38 in the first equation is equal to the corresponding slope coefficient of 0.41 in the second equation. The hypothesis of equality which indicates lack of market timing - cannot be rejected, as its p-value is 62.6%. The two sets of elections do differ, however in the post-elections behavior of consumer confidence. In the second equation, the post-elections slope coefficient of the time trend is negative, large, -0.51, and statistically significant, whereas in the first equation there is no time trend, confirming the visual impression of Figure 5: The reversal in consumer confidence after the elections occurs only in countries with variable election dates. That reversal is complete in the sense that the size of the negative slope, -0.51, is statistically not different from the size of the earlier positive slope, 0.41 (p-value of 13.1%).

#### 4.4 Consumer Confidence across Winning and Losing Elections

Next, we separate the election dates by whether or not the incumbent party won the elections.<sup>13</sup> We then calculate the average consumer confidence series  $\bar{Z}^{IW}$  and  $\bar{Z}^{IL}$  separately for winning and losing elections and plot them in Figure 6. Clearly, there is a visual difference between the two sequences both before and after the elections. The sequence  $\bar{Z}^{IW}$  that corresponds to re-election of the incumbent is always above the sequence  $\bar{Z}^{IL}$  that corresponds to the incumbent being voted out of office.

The visual impression in Figure 6 is confirmed by the tests of differences, which are presented in the first column of Table 4. If we consider all 25 observations of the 25 months together in a set, we see that there is a statistically significant difference in the mean and underlying distribution of the two sequences,  $\bar{Z}^{IW}$  and  $\bar{Z}^{IL}$  (but not in their variance).<sup>14</sup>

As in the case of  $\bar{Z}$  in Figure 3, we would also like to know if the observed difference in trends before and after the elections for the  $\bar{Z}^{IW}$  and  $\bar{Z}^{IL}$  sequences in Figure 6 are of equal absolute magnitude. We run trend regressions as before, but separately for the two cases. The estimated equation for the  $\bar{Z}^{IW}$  series is given by:

$$\hat{z}_m^{IW} = \underbrace{-4.05_{(0.27)} \cdot I_{m,1} + 0.38_{(0.04)} \cdot m \cdot I_{m,1}}_{\text{months before the elections}} \overbrace{-4.51_{(0.32)} \cdot I_{m,2} - 0.48_{(0.04)} \cdot m \cdot I_{m,2}}^{\text{months after the elections}}$$

The estimated equation for the  $\bar{Z}^{IL}$  series is given by:

$$\hat{z}_m^{IL} = \underbrace{-9.46_{(0.37)} \cdot I_{m,1} + 0.43_{(0.05)} \cdot m \cdot I_{m,1}}_{\text{months before the elections}} \overbrace{-8.77_{(0.43)} \cdot I_{m,2} - 0.30_{(0.06)} \cdot m \cdot I_{m,2}}^{\text{months after the elections}}$$

When comparing the trend coefficients across the two sequences,  $\bar{Z}^{IW}$  and  $\bar{Z}^{IL}$ , we observe a major difference in the period after the elections. A test for the equality of the trend coefficients before

<sup>13</sup>The corresponding election cases were 50 when the incumbent won the elections and 27 when the incumbent lost the elections.

<sup>14</sup>To corroborate our results in Table 4 we performed an additional test using a different form of average consumer confidence. Instead of averaging across countries and elections, we averaged across months  $j$  of the period before and the period after the elections (see equation 1 and preceding discussion), as well as across all 25 months surrounding the election month. Then we examined whether each of these averages differ according to whether the incumbent gets re-elected or not. Our results from this approach are qualitatively similar to those in Table 4. In particular, we find that there is a statistically significant difference in consumer confidence across the two cases during the 12 months before the election, but not during the 12 months after the election.

the election has a p-value of 42%, while a similar test for the trend coefficients after the election has a corresponding p-value of 1.43%. Consumer confidence drops more sharply in times of incumbent re-election.

#### 4.5 Macroeconomic Variables across Winning and Losing Elections

The event study analysis is now repeated for six core macroeconomic variables: The quarterly real GDP growth (p.a.), the unemployment rate, the long-term (10-year) interest rate, the quarterly inflation rate (p.a.), government spending as a percent of GDP, and indirect taxes as a percent of GDP. Figure 7 includes the corresponding six graphs, each one containing two diagrams, one for the cases the incumbent wins,  $\bar{Z}^{IW}$ , and a second for the cases when the incumbent loses the elections,  $\bar{Z}^{IL}$ .

The evidence in Figure 7 is quite striking and, visually, a lot sharper than the evidence provided by the earlier political business cycle literature: In the group of elections that the incumbent wins, GDP is higher, unemployment is lower, inflation is higher and nominal interest rates are higher relative to the group of elections that the incumbent is not re-elected. All four variables show that aggregate demand in the economy is stronger at times that the incumbent wins.<sup>15</sup>

When the incumbent wins the elections, quarterly GDP growth is consistently higher in all nine quarters surrounding the quarter of elections. The difference between the two series  $\bar{Z}^{IW}$  and  $\bar{Z}^{IL}$  ranges from less than 1% one quarter before the elections to about over 2% one quarter after the elections. The unemployment rate is also consistently lower in all 25 months surrounding the month of the elections. The negative unemployment gap between the two figures widens as the date of elections approaches and continues to widen past the elections month. Twelve months before the elections, the gap is at its minimum, -0.75%, on the month of the elections it is slightly over -1%, and six months after the elections, it has gone up to over -1.20%. The inflation rate is on average 0.70% higher over the 25 months. The long rate in Figure 7 is also consistently higher in all 25 months surrounding the month of elections with the gap widening as we move on and pass the election month. In fact, the average difference in long term interest rates across the two cases, which is 1.40%, is a lot larger than the corresponding average difference in annualized inflation, which is 0.70%. To the extent

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<sup>15</sup>We have re-calculated the figures using deviations from the corresponding country means, to account for possible fixed effects. The resulting figures were qualitatively identical.

that current inflation is a good proxy for expected inflation, the evidence suggests that at times when the incumbent wins, real interest rates are higher as well.

Turning to the fiscal variables, there are clear differences across the winning and losing elections by the incumbent, but the interpretation of the evidence is not as straightforward. Observe that in the group of elections that the incumbent wins, government spending as a percent of GDP is higher before the elections and lower during the electoral quarter and afterwards. This evolution is consistent with the hypothesis that the incumbent is trying to spend its way towards the elections, an act it reverses afterwards. On the other hand, indirect taxes as a percent of GDP are higher when the incumbent wins. This latter empirical regularity is not consistent with notion that the incumbent attempts to manipulate the tax system to gain an electoral advantage, unless indirect taxes are viewed as a way of earning revenues without the public realizing it.

In Table 4, we compute statistics for mean, variance and distributional differences for each macroeconomic variable of Figure 7. We clearly reject the null hypothesis of equal means and same distributions for all variables considered.<sup>16</sup>

## 5 Consumer Confidence and Electoral Outcomes: An Econometric Analysis

In the previous section we discovered there is a distinct trend pattern in the behavior of consumer confidence around elections, rising by approximately 5 points before the elections and falling by about the same amount after the elections. Consumer confidence is on average higher when the incumbent wins, but its trend patterns share similarities with the case when the incumbent loses the elections. Macroeconomic variables also show a differential behavior across winning and losing elections, a result that was expected.

In the present section we dig a bit deeper into the meaning of the previous behavioral pattern of consumer confidence using econometric analysis. We examine the behavior of consumer confidence both before and after the elections. First, we examine whether the level and the rise in consumer

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<sup>16</sup>We repeated the tests using the approach given in footnote 12. The results for the macroeconomic variables were, again, qualitatively identical to those in Table 4.

confidence prior to the elections does have the ability to partially predict the election results. We would also like to know if the information on consumer confidence can be combined with information on the evolution of macroeconomic variables to make better electoral predictions. Second, we would like to know the reasons behind the drop in consumer confidence following the elections. This drop appears more mysterious than the earlier rise in consumer confidence. Is part of the drop in consumer confidence the bursting of a possible bubble in earlier consumer optimism? Is it related to other political and economic factors? The earlier event-study analysis exposes the empirical regularity and hints at possible solutions, but does not come up with answers.

## 5.1 Econometric Methodology

We work with two types of electoral variables: A binary indicator for re-election of the incumbent party and, its continuous analogue, the incremental share of votes of the incumbent party relative to the runner-up. The latter is a measure of the electoral strength of the incumbent. Both variables are described in detail later in this section and are defined in Table 5.

Let us denote by  $y_{itm}$  the value of the dependent variable in the models presented below for country  $i$  at electoral time  $t$  and at election month  $m$ . Correspondingly, let us denote by  $\mathbf{X}_{itm} \stackrel{\text{def}}{=} [y_{i,t-p,m-q}, \mathbf{x}_{i,t-p,m-q}^\top]^\top$  the value of the  $(k \times 1)$  vector of explanatory variables. The dimension  $k$  of this vector is not constant across the different models that we consider. Our models fall into the GLIM (generalized linear model) class and can be generically represented by:

$$g(\mu_{itm}) = \mathbf{X}_{i,t-p,m-q}^\top \boldsymbol{\beta} \quad (1)$$

for some  $0 \leq p$  and some  $0 < q \leq 12$ . For monthly and quarterly data we set  $p = 0$  and  $q \geq 1$ ; for annual data we set  $p = 1$  and  $q \geq 1$ . That is, we are interested in the response of the dependent variable to changes in the explanatory variables in the months or quarters or year preceding the elections.

In the above equation,  $g(\cdot)$  denotes the link function,  $\mu_{itm} \stackrel{\text{def}}{=} \mathbb{E}[y_{itm} | \mathbf{X}_{i,t-p,m-q}]$  is the conditional mean of the dependent variable and  $\boldsymbol{\beta}$  is the vector of coefficients of interest. When the dependent variable is the binary dummy  $R_{itm}$ , which denotes re-election of the incumbent party, then we use the logistic link  $g(x) = \log[x/(1-x)]$  where, as usual, the conditional mean is given by  $\mu_{itm} \stackrel{\text{def}}{=} [1 + \exp(-\mathbf{X}_{i,t-p,m-q}^\top \boldsymbol{\beta})]^{-1}$ . When the dependent variable is the incremental share  $S_{itm}$

of the incumbent, then we use the identity link  $g(x) = x$  and the model is simply a linear regression. Note that the relatively high cross-sectional dimension of the data set does not allow precise modeling of country differences, say through fixed effects. The number of elections in each country is small to allow precise estimation of country-specific effects via an equivalent number of parameters. In estimation, we therefore use either a common constant term and apply maximum likelihood when  $y_{itm} = R_{itm}$ , and pooled or random effects (RE) Generalized Least Squares (GLS) with country weights when  $y_{itm} = S_{itm}$ . We can summarize the estimation methods for our models as follows: When the dependent variable is the binary dummy of re-election,  $R_{itm}$ , we use a logit link, estimate the respective coefficients by maximum likelihood, and assess significance using a heteroskedasticity-consistent coefficient covariance. When the dependent variable is the incremental share of the incumbent,  $S_{itm}$ , we use an identity link, estimate the respective coefficients by pooled or random effects GLS using country weights, and assess significance using a heteroskedasticity-consistent coefficient covariance.

In our econometric framework, the explanatory variables are predetermined with respect to the month of the election, as can be seen from the notation of  $\mathbf{X}_{i,t-p,m-q}$ . Yet, endogeneity can be a problem. This is because the anticipation of elections can induce the government to take measures ahead of time in order to boost consumer confidence and citizens' feeling of overall well being. Nevertheless, our later results show that a last minute possible attempt by the government to increase consumer confidence would hurt rather than help its re-election chances.

Even if the government were incapable of manipulating the economy or the sentiment of consumers in order to gain an electoral advantage, endogeneity can still exist in countries with no fixed electoral dates. In these countries, the government has the discretion to call early elections. Hence, the government could try to time the election date so that it coincides with favorable poll results or favorable economic conditions and consumer sentiment. This type of behavior is not uncommon and would naturally generate endogeneity. In practice, it is extremely hard to circumvent such an endogeneity because it is difficult to find instruments that are correlated with consumer confidence and simultaneously unrelated to the governments decision to adjust the date of elections. We have taken two steps to address this issue. First, earlier in the event-study analysis of Section 4.3, we compared the behavior of consumer confidence in countries with fixed election dates with the corresponding behavior in countries with variable dates. We provided evidence that the behavior of consumer confidence before the

elections is similar across the two groups, suggesting a potential absence of market-timing endogeneity. Second, in the present econometric analysis, we partially account for potential endogeneity problems by providing a robustness check, using instrumental variables in the context of a GMM-based model.<sup>17</sup> As we will see, our results still hold even when we use this alternative estimation method.

## 5.2 Does Consumer Confidence have Predictive Power?

We next turn our attention to the estimation results on the predictive ability of consumer confidence for the probability of the incumbent party to be re-elected as well as its relative electoral strength in terms of share of votes. Table 5 presents all the definitions of the variables used in the econometric analysis. Subsequently, Tables 6A and 6B present the estimation results.

To ease the exposition, we have categorized the included explanatory variables of Tables 6A-6B into six groups of variables: The  $\mathcal{M}_1$  group of variables includes the level of consumer confidence during the month before the elections,  $C1$ , plus the recent trend in consumer confidence from 7 months prior to the election to the month before the election,  $C1 - C7$ . The  $\mathcal{M}_2$  group of variables includes three macroeconomic variables: the annual real GDP growth up to the quarter of the elections,  $RGDP$ , the monthly inflation of the month before the elections,  $INF$ , and the level of the average 10-year government bond yield in the month before the election,  $BYLD$ . The  $\mathcal{M}_3$  group of variables is the union of the previous two groups, as it includes both the consumer confidence variables and the macroeconomic variables. The  $\mathcal{M}_4$  group of variables adds to the  $\mathcal{M}_3$  group, the growth in government spending as a fraction of GDP from the quarter before the elections to the quarter of the elections,  $G/GDP$ . The  $\mathcal{M}_5$  group of variables adds to the  $\mathcal{M}_3$  group, the growth in indirect taxes as a fraction of GDP from the quarter before the elections to the quarter of the elections,  $T/GDP$ . Finally, the  $\mathcal{M}_6$  group of variables includes the  $\mathcal{M}_1$  group plus a lagged dependent variable - this corresponds to the model estimated by GMM for robustness checking.

The two consumer confidence variables, when included alone in the models, are very strong in predicting the relative share of the incumbent. The coefficient 0.14 of  $C1$  in the random effects model implies that, *ceteris paribus*, if the level of consumer confidence is higher by 10 points, then

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<sup>17</sup>We treat the problem as one of estimation method and not as one of choice of instruments, as we have little or no choice of other instruments in the context of our dataset.

the incumbent's relative share of votes increases by 1.4 percentage points. This is a large increase compared to the sample average relative share which is 4.9 percentage points (see Table 1). The trend coefficient -0.27 in the same model, implies that, *ceteris paribus*, if the level of consumer confidence one month before the elections rises by an extra 10 points relative to 7 months before the elections, then the incumbent's relative share of votes decreases by 2.7 percentage points. The negative coefficient in the trend suggests that it does not help to raise consumer confidence a few months before the elections. If consumer confidence is to be of any help to the incumbent, it better be high up at least 7 to 9 months before the elections. When it comes to the probability of winning the elections, the results are similar to the results from the models of the relative share of votes. The coefficient of  $C1$  is positive and the coefficient of the trend  $C1 - C7$  is negative, albeit not as statistically strong as in the other models. Note that in all three models with the  $\mathcal{M}_1$  group of variables, the explanatory power of the two consumer confidence variables is not very high, approximately 5% (see Table 6B).

When the macro variables are alone in the models as in the  $\mathcal{M}_2$  group, they tend to explain anywhere from 17% to 23% of the variation of the dependent variable. Real GDP and the long-term interest rate have the strongest explanatory power. Inflation is significant only in the logit estimation of the probability of re-election.<sup>18</sup> The coefficient signs are intuitive and consistent with earlier Figure 7: A higher level of GDP is associated with a higher probability of re-election for the incumbent plus a bigger (more positive) difference in votes from the runner up. For example, an extra percentage point in real GDP growth relates to an extra 1.03 or 1.25 percentage point in votes above the runner up. Recall that in the economics literature from the US electoral cycle, this positive association is very weak (Alesina and Roubini [1992]). Here the evidence is clear. Observe also that a higher long-term rate is also good news for the incumbent, as Figure 7 has already shown. Apparently, at times when the economy does well, interest rates are high, as aggregate demand is high. Finally, consistent with the argument of Nordhaus (1975), a higher inflation hurts the incumbent, decreasing its probability of re-election and the extra votes it may get relative to the runner up.<sup>19</sup> Note that in Figure 7 we have that inflation is higher when the incumbent gets re-elected. However, in the econometric analysis

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<sup>18</sup>The unemployment rate loses its statistical significance in the presence of the other three macro variables. Hence, it is not included in the current discussion.

<sup>19</sup>In the econometric analysis with the  $\mathcal{M}_2$  group of variables, the number of observations declines from 92 to 78 because in some countries the long-term interest rate is not available.

we control for other economic variables and we get a negative sign in the corresponding coefficient estimate.

When both the consumer confidence variables and the macro variables are included in the models in the  $\mathcal{M}_3$  group of variables, the results remain qualitatively the same, while the joint explanatory power shoots up to anywhere from 22% to 32%. Statistically, the consumer confidence variables become substantially stronger, while the macro-variables stay as before. Hence, it becomes evident that consumer confidence has extra predictive power for the probability of re-election of the incumbent party and for its electoral strength over and above the information that is already captured by the macroeconomic variables. This result is quite impressive, particularly if one were to also take into account the fact that some of the macro variables are not fully publicly available at the time before the elections. Some of those macro variables are, in fact, substantially revised well after the period they are originally announced. By including variables that describe the macro-economy and are potentially correlated with consumer confidence, but are not clearly observed by consumers or anyone else, we tend to take away some of the extra explanatory power of consumer confidence.

The predictive power of consumer confidence is also evident in Figure 8, which plots the cumulative probability of re-election as a function of the level of consumer confidence. It is clear from the figure that positive levels of consumer confidence are associated (on average) with probability of re-election exceeding 80%. For negative levels of consumer confidence, there is a linear increase in the probability of re-election for every point increase in consumer confidence. We fit two linear regressions for the segments  $[-40,0]$  and  $[0,+40]$  of consumer confidence to obtain a quantitative measure of the effect of increases in consumer confidence on the probability of re-election. For the first segment, a 10 point increase in consumer confidence leads to an average increase of 11% in the probability of re-election. For the second segment, a 10 point increase in consumer confidence leads to an average increase of 4% in the probability of re-election. To gauge the magnitude of these estimates remember that average consumer confidence for the 12 month period before the election was in the range of about -10 to -5 with an overall standard deviation of 1.65.<sup>20</sup>

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<sup>20</sup>The probability distribution appearing in the figure was calculated from model  $\mathcal{M}_3$  for consumer confidence taking values in a discrete grid from -40 to +40 and the rest of the variables being fixed at their respective sample means. Results from other models were qualitatively similar.

Next, we add to the previous list of consumer confidence and macro variables two fiscal variables, in turn, government spending in the  $\mathcal{M}_4$  group of variables, and indirect taxes in the  $\mathcal{M}_5$  group of variables. The number of available observations is now much smaller, as the two fiscal variables are not as easily available on a quarterly frequency. The explanatory power of the earlier variables remains and the fiscal variables have the intuitive sign. Namely, when incumbents spend more they get re-elected more easily. When they raise indirect taxes, they lower their probability of re-election. It is interesting to note that the econometrics provides a more intuitive story here than the event study graph for indirect taxes did in Figure 7. In that figure, indirect taxes seemed to have a positive association with the probability of re-election, yet when one controls for all the macro-economic information, the association is negative, as expected.<sup>21</sup>

The GMM model of the  $\mathcal{M}_6$  group of variables provides a robustness check against the possibility of endogeneity and, alternatively, as a check against the GLS estimation method. Here we use a dynamic panel model, which includes a lagged dependent variable, with dynamic instruments coming only from lags of the dependent variable. In this way we remain agnostic about the nature of other explanatory variables as instruments and can provide a robustness check for our earlier results. The results are even more strongly supportive of the ability of consumer confidence to predict the election strength of the incumbent. Consumer confidence remains highly significant while from the other economic variables only the long-term rate remains significant. However, one should interpret the results with some caution as the use of dynamic instruments reduces the sample size drastically.

### 5.3 Why does Consumer Confidence Fall after the Elections?

So far we investigated the predictive ability of consumer confidence for the electoral outcome. In this subsection, we explore the behavior of consumer confidence after the elections. Our event study in Section 4 documented that consumer confidence declines following the elections by as much as it rises before the elections. The present econometric analysis tries to explain the behavior after the elections using predetermined variables.

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<sup>21</sup>These specifications probably bare the highest similarity to the specifications and results in Galeotti and Salford (2001), who estimate a vote function with dependent variable the share of votes for the incumbent. Their explanatory variables include GDP, inflation, unemployment, public spending and tax revenues.

We first investigate whether the fall in consumer confidence is related to the earlier rise in a systematic way. We, therefore, regress the change in the level of consumer confidence 7 months after the elections,  $Ca7 - C0$ , on the size of the previous run up,  $C0 - C7$ . The results are presented in the first two rows of Table 7. Indeed, as expected, the association is negative, i.e. the larger the rise in consumer confidence up to the elections, the larger the fall after the elections. This coefficient is robust, as it remains the same in all specifications. This negative association suggests that part of the earlier rise was due to unwarranted optimism. The slope coefficient is, however, lower than unity, implying that only about a third of the previous rise may be due to overly optimistic expectations, i.e. for every 10-point increase in consumer confidence in the seven months prior to elections, consumer confidence drops by only a 3 points after the elections.

Next, we add some political variables of interest in order to capture the possibility that the political environment may be associated with the decline in consumer sentiment. One such variable is the winner's share  $WSH$ , which represents the percentage of votes the winner earns during the elections, whether the winner happens to be the incumbent or not. This variable captures a somewhat similar effect as the pre-election rise in consumer confidence: the higher it is, the stronger was pre-election enthusiasm for the winning party. The results are presented in rows three and four of Table 7. The explanatory power in the cross-sectional regression now shoots up to 21-22%. Indeed, we find a strong negative association between the size of the winner's share of votes and the change in consumer confidence. The more votes the winner gets, the larger the disappointment. Note that the presence of  $WSH$  makes the pre-election trend,  $C0 - C7$ , less significant than before, when it entered the regression as a single explanatory variable. This suggests that both variables capture a common pre-election enthusiasm, perhaps by different groups of voters, which then transforms into post-election disappointment.

We subsequently augment the set of explanatory variables by adding the winner's orientation  $WO$  (a dummy variable that takes the value of unity if the winner is a center-right party), its interaction with the pre-election trend in consumer confidence  $WO \times C0 - C7$  and a dummy variable  $D30$  that proxies for the effects of small winning parties and coalition governments.<sup>22</sup> The winner's political

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<sup>22</sup> $D30$  takes the value of unity if the winner's share of votes is less than 30% and zero otherwise. The 30% cut-off point corresponds to about one-fourth of the sample observations.

orientation seems to matter. There is a fixed component of extra disappointment, worth 4.6 (in the pool-GLS estimation) or 3.4 (in the RE-GLS estimation) points if the winner is center right, with a simultaneous absence of a relation to the previous run up in consumer confidence. The latter is due to the fact that the relation of  $Ca7 - C0$  to  $C0 - C7$  in the cases the winner is center-right is approximately zero: the sum of the relevant coefficients almost cancel one another. Finally, the effects of  $D30$  suggest that cases of smaller winners and coalitions are associated with less post-election disappointment compared to large, one-party governments. Note that the presence of small winning parties mitigates the negative effects of a center-right winner; a test for equal coefficients with opposite signs for the  $WO$  and  $D30$  variables yields p-values equal to 22% and 71% for the pooled GLS and random effects GLS respectively.

Finally, in the above framework, we included several economic variables but none of them came out (individually or jointly) significant.

## 6 Summary and Conclusions

In the paper we explore the link between consumer confidence and electoral outcomes, a relationship that has so far escaped the attention of both economists and political scientists. Yet, there is a strong relation between the two variables, with consumer confidence rising before the elections and falling afterwards. Our analysis first focused on the temporal evolution of consumer confidence around the time of national elections, over a 25-month interval from month -12 to month +12, in which we ignored the calendar date and defined as month 0, the month of elections. In this event-type of study, we uncovered that consumer confidence rises substantially before the elections and falls subsequently in the overwhelming majority of EU-15 countries. This empirical regularity is particularly striking when we plot the average index of consumer confidence across all EU-15 election dates for each month in the 25-month interval, as in Figure 3. Average consumer confidence rises by about five points in the 12-month period prior to the elections, which is an economically and statistically significant increase. In the 12 months after the elections, consumer confidence moves in the opposite direction, falling by approximately the same amount, 5 points.

The event-study uncovered two additional regularities: First, the rise in consumer confidence prior

to elections is similar across countries with fixed and countries with variable electoral dates, suggesting the absence of an obvious timing in the government's decision to call early elections based on the level of consumer sentiment. Second, consumer confidence is uniformly higher over the 25-month period during the elections the incumbent wins relative to those elections the incumbent loses. Yet, in both cases, the inverted U-shaped pattern remains.

The event-study was also carried over to some key macroeconomic and fiscal variables. This evidence is confirmatory of the earlier literature, yet visually a lot sharper. Annual GDP growth over the nine quarters around the elections in the cases when the incumbent wins is higher by about half a percentage point than the cases when the incumbent loses the elections. Unemployment is similarly lower and the gap is rising after the elections to over one percentage point. The long term interest rate is higher when the incumbent wins, with the difference getting bigger after the elections to about two percentage points. Inflation is similarly higher. All four variables point to high aggregate demand in the economy at times the incumbent wins the elections. Government spending as a fraction of GDP is also higher during the elections that the incumbent wins.

The econometric analysis that followed clarified some of the regularities that the event-study uncovered. We examined the behavior of consumer confidence both before and after the elections. We found that consumer confidence can predict the size of votes the incumbent will get relative to its opponents as well as the probability of winning the elections. This informational content is distinct from that of standard macroeconomic variables. A variety of econometric specifications indicate that consumer confidence has extra predictive power, not included in the usual macroeconomic variables of output, unemployment, interest rates, inflation, government spending or taxes. Moreover, it is the level of consumer confidence that predicts positively the electoral outcome, not the rise in consumer confidence in the last few months. Our variable which captures the upward trend in consumer confidence prior to the elections carries a negative sign, suggesting that the incumbent party cannot easily manipulate the level of consumer confidence in the last few months prior to the elections in order to gain an electoral advantage. Put differently, a sudden rise in consumer confidence in the last 7 months prior to elections is a sign of possible defeat. Consumer confidence has to be at a relatively high level at least 7 months before the elections for it to give an electoral advantage to the incumbent party.

The behavior of consumer confidence after the elections is driven by what happened before the

elections and by the political environment. We found that the higher the previous upward trend, the larger the subsequent fall. Hence the post-elections disappointment seems to be related to the pre-elections consumer optimism. This disappointment is also larger, the bigger the share of votes the winner gets, suggesting a pre-election abnormal enthusiasm for the winner. The political orientation of the winner and the possibility of large party governments also explain a component of post-election disappointment.

Overall, there is a systematic pattern in consumer confidence and major macroeconomic variables around election times, which shows a sharp distinction across the cases the incumbent party wins and loses. An appendix provides a similar visual story for consumer confidence in the United States.

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## Appendix 1

### Consumer Confidence and Elections: Not Just a European Phenomenon Event Study Analysis for the United States

Our analysis in the main part of the paper is confined to EU-15 but it is of considerable interest to examine whether a similar relationship between consumer confidence and elections exists for the United States. The US has a considerably lengthier record for the index of consumer confidence from two different sources, the University of Michigan and the Conference Board. While a formal econometric analysis would be restricted by the sample length, we can easily produce figures similar to Figures 3 and 6 about the behavior of consumer confidence around elections and about the behavior when the elections data points are split into two groups according to the election result.<sup>23</sup>

Using data from both the University of Michigan (monthly from 1978) and the Conference Board (bi-monthly, from 1967 though mid-1977, monthly afterwards), we construct four additional figures about the evolution of consumer confidence over the 25-month period surrounding US elections, from month -12 to month +12. Our electoral data are outcomes of US presidential elections from 1980 to 2004 for the University of Michigan data and from 1968 to 2004 for the Conference Board data. The results are summarized in Figure 9, top panel, for the University of Michigan data, and in Figure 9, lower panel, for the Conference Board data.

The University of Michigan data provide results that are in close agreement with the results presented in the main part of the paper. The inverted U shape in the evolution of consumer confidence appears again and the average levels of consumer confidence are systematically higher when the incumbent is re-elected. Specifically, let  $\Delta\bar{C}_- \stackrel{\text{def}}{=} \bar{C}_0 - \bar{C}_{-12}$  and  $\Delta\bar{C}_+ \stackrel{\text{def}}{=} \bar{C}_{+12} - \bar{C}_0$ , where  $\bar{C}_t$  denotes the average (across elections) consumer confidence at month  $t$ . For the series in the left top panel of Figure 9 we have that  $\Delta\bar{C}_- = 9.25$  and  $\Delta\bar{C}_+ = -6.82$ ; for the two series in right top panel in Figure 9 we have  $\Delta\bar{C}_-^{IW} = 8.5$  and  $\Delta\bar{C}_+^{IW} = 0.37$ , when the incumbent is re-elected, and  $\Delta\bar{C}_-^{IL} = 10.00$  and  $\Delta\bar{C}_+^{IL} = -14.00$ , when the incumbent is not re-elected. These numbers are in accord with the empirical findings for the European Union: consumer confidence rises before the elections and falls thereafter, with the pre-election rise being faster in the case when the incumbent is not re-elected.

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<sup>23</sup>The questionnaires in the two surveys differ from the questionnaire in the European survey, thus the results ought to be analyzed separately. A lengthier analysis of the US surveys is beyond the scope of the present paper.

The Conference Board data provide a similar but not identical pattern. There is still a discernible inverted U shape in the evolution of consumer confidence, but that shape is not as symmetric as before and the peak in average consumer confidence occurs one month after the elections. When we split the sample into two groups of elections according to the election outcome, we continue to observe a clear dominance in consumer sentiment during those elections when the incumbent is re-elected, except for months -12 through -8. The differences  $\Delta\bar{C}_-$  and  $\Delta\bar{C}_+$  for the series in the left lower panel of Figure 9 are 8.34 and -4.93 respectively, still showing that consumer confidence rises before the elections and falls after. For the two series in the right lower panel in Figure 9, when the incumbent gets re-elected  $\Delta\bar{C}_-^{IW} = 12.12$  and  $\Delta\bar{C}_+^{IW} = 5.7$ ; here consumer confidence continues to rise, albeit more slowly than it did before the elections. When the incumbent does not get re-elected,  $\Delta\bar{C}_-^{IW} = 4.56$  and  $\Delta\bar{C}_+^{IW} = -13.08$ ; here consumer confidence does not rise as fast as it subsequent drops, something that we have not seen in previous figures, either for the US or the European Union.

All in all, there is a similar pattern in the evolution of consumer confidence in the case of US elections to the pattern we observed in Europe. This finding further corroborates our arguments in the main text and calls for further research in the relationship between consumer confidence and electoral outcomes.

## Appendix 2

### The Construction of Average Statistics for the Event-Study

Let us create an artificial time index - corresponding to electoral time - where we group together elections across countries: for  $t = 1$  we group the first 15 available elections, the first election of each country in the sample. These elections differ on their calendar time, i.e. some occurred in 1985, others in 1986 and so on. For  $t = 2$  we group the next 15 (or less) available elections, i.e. the second election of each country in the sample for the countries that it exists. We continue to do that for each country until we run out of election events. Let  $n_{ie}$  denote the number of election events in country  $i$ . Our index  $t$  will run from  $t = 1$  to  $t = n_e$ , where  $n_e \stackrel{\text{def}}{=} \max_i n_{ie}$ , denotes the maximum  $n_{ie}$  across the 15 countries. Note that there is an overlap of calendar years with this timing scheme, but that is of no consequence in the ensuing analysis as there is no overlap of elections for each country in the panel.

Next, let us denote by  $z_{itm}$  the value of any variable of interest for country  $i$ , at electoral time  $t$  where the election occurs in month  $m$ . The first step in our analysis is to examine the temporal evolution of such a variable around election time, specifically twelve months prior and twelve months after the election month. That is, we want to examine the time path of the sequence  $Z_i \stackrel{\text{def}}{=} (z_{it,m-12}, \dots, z_{it,m-1}, z_{it,m}, z_{it,m+1}, \dots, z_{it,m+12})$ . We are mainly interested in the evolution of the country averages and EU averages for each month. Thus, we compute the country  $i$  average sequence  $\bar{Z}_i \stackrel{\text{def}}{=} (\bar{z}_{i,-12}, \dots, \bar{z}_{i,-1}, \bar{z}_{i,0}, \bar{z}_{i,+1}, \dots, \bar{z}_{i,12})$  and EU average sequence  $\bar{Z} \stackrel{\text{def}}{=} (\bar{z}_{-12}, \dots, \bar{z}_{-1}, \bar{z}_0, \bar{z}_{+1}, \dots, \bar{z}_{+12})$  where we define:

$$\bar{z}_{i,j} \stackrel{\text{def}}{=} \frac{\sum_{t=1}^{n_{ie}} z_{it,m-j}}{n_{ie}}, \quad \bar{z}_j \stackrel{\text{def}}{=} \frac{\sum_{i=1}^N \sum_{t=1}^{n_{ie}} z_{it,m-j}}{n_N} \quad (2)$$

for  $j = -12, \dots, 1, 0, 1, \dots, 12$  and  $n_N \stackrel{\text{def}}{=} \sum_{i=1}^N n_{ie}$  denotes all available observations in month  $j$  before or after the elections.

In order to gauge the relative magnitude of the values a sequence like  $\bar{Z}$  from month to month we need some measure of overall ‘standard deviation’. For this purpose we compute the standard deviation of the average  $\bar{z}_j$  for each month  $j$  around the elections and then take the average of these standard deviations. That is, if we denote by  $s_j$  the sample standard deviation of  $z_{it,m \pm j}$ , denote by

$\hat{\sigma}_j$  the corresponding standard deviation of  $\bar{z}_j$  and by  $\hat{\sigma}$  the overall standard deviation, we have:

$$s_j^2 \stackrel{\text{def}}{=} \frac{\sum_{i=1}^N \sum_{t=1}^{n_{ie}} (z_{it,m-j} - \bar{z}_j)^2}{n_N - 1}, \quad \hat{\sigma}_j \stackrel{\text{def}}{=} s_j / \sqrt{n_N - 1}$$

$$\hat{\sigma} \stackrel{\text{def}}{=} \frac{1}{25} \sum_{j=-12}^{12} \hat{\sigma}_j \quad (3)$$

A similar procedure is used to compute a measure  $\hat{\sigma}_i$  for each individual country.

Of additional interest is the average temporal evolution of a variable when the incumbent party wins the election and when the incumbent party loses the election.<sup>24</sup> In a way similar to the one above, we compute two sequences of country averages which we denote by  $\bar{Z}^{IW}$ , when the incumbent wins, and by  $\bar{Z}^{IL}$ , when the incumbent loses. Let  $R_{itm}$  denote a binary dummy variable that takes the value of one when the incumbent party is re-elected.<sup>25</sup> Then, the  $j^{\text{th}}$  elements of the two sequences above are computed as:

$$\bar{z}_j^{IW} \stackrel{\text{def}}{=} \frac{\sum_{i=1}^N \sum_{t=1}^{n_{ie}} R_{itm} z_{it,m-j}}{\sum_{i=1}^N \sum_{t=1}^{n_{ie}} R_{itm}}, \quad \bar{z}_j^{IL} \stackrel{\text{def}}{=} \frac{\sum_{i=1}^N \sum_{t=1}^{n_{ie}} (1 - R_{itm}) z_{it,m-j}}{\sum_{i=1}^N \sum_{t=1}^{n_{ie}} (1 - R_{itm})} \quad (4)$$

We can now use these two sequences of averages to examine the possible distributional differences that exist between the cases when the incumbent is re-elected and not re-elected.

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<sup>24</sup>Note that this kind of analysis, taking into account whether the incumbent wins or not, could not be done effectively in the country-by-country setting because of the limited number of elections in our sample. Therefore, the results of this section are novel and are not just “average duplicates” of those of the previous section.

<sup>25</sup>As incumbent party at electoral year  $t$  is defined the party with the highest percentage of votes in the elections of electoral year  $t - 1$ ; this is the party that we consider as the “winner” of the elections at  $t - 1$ , even if the party does not form an autonomous government. Therefore, our variable is formally defined as  $R_{itm} \stackrel{\text{def}}{=} I(\text{winner of elections at year } t - 1 \text{ wins again at year } t)$ , where  $I(\cdot)$  is the indicator function.

## Tables and Figures

**Table 1: Statistics on EU National Elections, 1985:1-2007:3**

Total sample size: 92 National Elections

	Share of Winner in all elections	Share of Runner-up in all elections	Elections when Incumbent Wins	Incremental Share of Incumbent in all elections	Elections when Center-Right Wins
# Observations	92	92	66	92	41
Average share	35.3%	26.9%	35.9%	4.9%	35.6%
Std. Deviation	8.7%	7.7%	8.4%	9.4%	9.2%

1. The 92 elections over the period 1985:1-2007:3 are distributed as follows: Austria 7, Belgium 6, Denmark 7, Finland 6, France 5, Germany 6, Greece 7, Ireland 5, Italy 6, Luxembourg 5, Netherlands 7, Portugal 7, Spain 6, Sweden 7, United Kingdom 5.
2. Average share and standard deviation refer to the sample average percentage of votes and corresponding sample standard deviation for each variable.
3. “Winner” refers to the party with the highest percentage of votes in an election; “runner-up” refers to the party with the second highest percentage of votes in the same election.
4. The incremental share of the incumbent refers to the difference in the percentage of votes between the incumbent and the winner (when the incumbent loses the election and is, therefore, a negative number) or the incumbent and the runner-up (when the incumbent wins the election and is, therefore, a positive number).

**Table 2A: Descriptive Statistics for Consumer Confidence  
Distributional Characteristics**

	Obs.	Sample Begins	Elections	Mean	Std.Dev.	Skewness	Kurtosis	N-test
Belgium	267	Jan. 85	6	-6.74	9.32	-0.07	2.94	0.10
Denmark	267	Jan. 85	7	3.86	9.69	-0.44	2.12	0.00
Germany	267	Jan. 85	6	-8.54	8.46	-0.25	2.09	0.00
Greece	267	Jan. 85	7	-28.07	8.18	0.81	3.53	0.00
Spain	250	Jun. 86	6	-10.76	8.41	-0.76	4.11	0.00
France	267	Jan. 85	5	-18.19	8.42	0.05	2.37	0.00
Ireland	267	Jan. 85	5	-8.24	14.18	0.06	1.93	0.00
Italy	267	Jan. 85	6	-12.93	6.88	-0.93	4.34	0.00
Netherlands	267	Jan. 85	7	4.53	11.59	0.15	2.48	0.26
Austria	138	Oct. 95	4	-0.62	6.64	-0.15	2.40	0.05
Portugal	250	Jun. 86	6	-21.28	12.06	-0.20	1.89	0.00
Finland	137	Nov. 95	3	15.04	3.72	-0.29	2.36	0.07
Sweden	138	Oct. 95	3	8.18	7.22	0.07	2.80	0.37
United Kingdom	267	Jan. 85	5	-8.07	7.62	-0.50	2.44	0.00

Notes:

1. All results are based on the original consumer confidence series  $C_{it}$ .
2. Sample ends on March 2007 for all countries.
3. Mean, standard deviation, skewness and kurtosis correspond to the usual sample moments.
4. N-test gives the  $p$ -value of the Cramer Von-Misses test for normality.
5. Luxembourg began recording Consumer Confidence statistics in January 2002. One election has occurred since then.

**Table 2B: Descriptive Statistics for Consumer Confidence  
Temporal Characteristics**

	$r(1)$	$r(12)$	$r(24)$	$\hat{d}$
Belgium	0.938	0.372	0.126	0.499
Denmark	0.957	0.717	0.524	0.499
Germany	0.961	0.387	-0.058	0.499
Greece	0.918	0.105	-0.109	0.498
Spain	0.952	0.627	0.265	0.499
France	0.931	0.324	0.049	0.499
Ireland	0.970	0.744	0.450	0.499
Italy	0.931	0.342	-0.089	0.498
Netherlands	0.963	0.523	0.233	0.499
Austria	0.902	0.350	-0.056	0.498
Portugal	0.973	0.671	0.378	0.499
Finland	0.869	0.138	-0.007	0.496
Sweden	0.927	0.094	-0.010	0.498
United Kingdom	0.929	0.526	0.151	0.499

Notes:

1. Sample sizes as in Table 2A.
2.  $r(k)$  corresponds to the  $k$ -th order sample autocorrelation.
3. The standard error for  $r(k)$  under the hypothesis of no autocorrelation is  $1/\sqrt{n}$ , where  $n$  is the number of observations. It is 0.06 for all countries except Austria, Finland and Sweden where it is 0.08.
4.  $\hat{d}$  is the estimate of the long memory coefficient in the representation of the series as fractional noise as in  $(1 - L)^{d_i} X_{it} = \epsilon_t$ . All p-values of the hypothesis  $\hat{d} = 0.5$  are zero at the fourth decimal place.

**Table 3: Differences in Average Change of Consumer Confidence  
3 and 12 Months around Elections**

Country	Mean Type	Panel A $\bar{y}_{i,j}$ means for $j = ab, b, aa, a$		Panel B $\mathcal{T}_{i,s}(k)$ statistic for $s = a, b$	
		3	12	3	12
Belgium	<i>All but Before</i>	0.05	0.05		
	<i>Before</i>	0.02	-0.27	-0.76	-4.87
	<i>All but After</i>	0.02	0.17		
	<i>After</i>	0.07	0.30	1.29	2.07
Denmark	<i>All but Before</i>	0.01	-0.01		
	<i>Before</i>	0.38	0.37	15.29	8.51
	<i>All but After</i>	0.01	0.10		
	<i>After</i>	-0.34	-0.34	-14.47	-9.91
Germany	<i>All but Before</i>	-0.01	-0.11		
	<i>Before</i>	0.34	0.93	11.81	14.65
	<i>All but After</i>	0.01	-0.04		
	<i>After</i>	-0.34	-0.80	-11.85	-10.74
Greece	<i>All but Before</i>	-0.08	-0.40		
	<i>Before</i>	1.09	1.82	29.25	27.97
	<i>All but After</i>	-0.08	-0.33		
	<i>After</i>	-0.43	-1.68	-8.66	-17.00
Spain	<i>All but Before</i>	-0.01	0.10		
	<i>Before</i>	0.19	0.14	7.34	0.64
	<i>All but After</i>	-0.00	-0.06		
	<i>After</i>	-0.00	0.14	0.02	3.52
France	<i>All but Before</i>	0.01	0.26		
	<i>Before</i>	0.51	0.76	13.97	7.12
	<i>All but After</i>	0.02	-0.02		
	<i>After</i>	-0.12	-0.10	-4.07	-1.10
Ireland	<i>All but Before</i>	0.01	0.10		
	<i>Before</i>	0.08	0.26	3.22	3.92
	<i>All but After</i>	0.02	0.05		
	<i>After</i>	-0.11	-0.03	-6.21	-1.94

*Table continued in next page*

Table 3 (cont.) Differences in Average Change of Consumer Confidence  
3 and 12 Months around Elections

Country	Mean Type	Panel A		Panel B	
		$\bar{y}_{i,j}$ means		$\mathcal{T}_{i,s}(k)$ statistic	
		for $j = ab, b, aa, a$		for $s = a, b$	
		3	12	3	12
Italy	<i>All but Before</i>	-0.00	-0.02		
	<i>Before</i>	0.18	0.25	5.12	3.62
	<i>All but After</i>	-0.02	0.00		
	<i>After</i>	0.20	-0.63	5.97	-8.65
Netherlands	<i>All but Before</i>	-0.01	0.02		
	<i>Before</i>	-0.01	0.41	-0.03	6.34
	<i>All but After</i>	0.03	0.08		
	<i>After</i>	-0.08	-0.52	-3.78	-9.84
Austria	<i>All but Before</i>	0.02	0.15		
	<i>Before</i>	0.75	1.52	13.31	15.87
	<i>All but After</i>	0.05	0.36		
	<i>After</i>	-0.12	-1.13	-3.15	-17.26
Portugal	<i>All but Before</i>	-0.03	-0.19		
	<i>Before</i>	0.24	0.59	11.42	15.35
	<i>All but After</i>	-0.03	-0.03		
	<i>After</i>	-0.13	-1.02	-4.37	-19.57
Finland	<i>All but Before</i>	0.05	0.10		
	<i>Before</i>	-0.18	-0.29	-3.22	-3.29
	<i>All but After</i>	0.04	0.17		
	<i>After</i>	-0.00	1.17	-0.56	8.52
Sweden	<i>All but Before</i>	0.05	0.10		
	<i>Before</i>	0.40	1.15	7.07	9.25
	<i>All but After</i>	0.06	0.32		
	<i>After</i>	-0.32	0.03	-7.76	-2.56
United Kingdom	<i>All but Before</i>	-0.00	-0.11		
	<i>Before</i>	0.32	1.24	9.08	22.22
	<i>All but After</i>	0.02	0.04		
	<i>After</i>	-0.43	-0.59	-12.69	-10.40

Notes: please see the next page.

Notes to Table 3:

1. Sample sizes as in Table 2A.
2. All reported results are for the change in standardized consumer confidence  $y_{it}(k)$ , equal to  $C_{it}/s_{ic}$ , where  $s_{ci}$  is the corresponding standard deviation from Table 2. This was done in order to make the changes comparable across countries.
3. The row labeled  $ab=All\ but\ Before$  has the mean of  $y_{it}(k)$  for  $k = 3, 12$  for the all months in the sample *except the  $k$  months before each election*, given by  $\bar{y}_{i,ab}(k) \stackrel{\text{def}}{=} 1/(n_{ik} - kn_{ie}) \sum_{t=1}^{n_{ik}} y_{it}(k) I_t^B$ .
4. The row labeled  $b=Before$  has the mean across elections of  $y_{it}(k)$  *only for the  $k$  month before each election* given by  $\bar{y}_{i,b}(k) \stackrel{\text{def}}{=} 1/n_{ie} \sum_{j=1}^{n_{ie}} y_{i,t_j-k}(k)$ .
5. The row labeled  $aa=All\ but\ After$  has the mean of  $y_{it}(k)$  for all months in the sample *except the  $k$  months after each election*, given by  $\bar{y}_{i,aa}(k) \stackrel{\text{def}}{=} 1/(n_{ik} - kn_{ie}) \sum_{t=1}^{n_{ik}} y_{it}(k) I_t^A$ .
6. The row labeled  $a=After$  has the mean across elections of  $y_{it}(k)$  *only for the  $k$  month after each election*, given by  $\bar{y}_{i,a}(k) \stackrel{\text{def}}{=} 1/n_{ie} \sum_{j=1}^{n_{ie}} y_{i,t_j+k}(k)$ .
7.  $n_{ik}$  denotes the total available observations for  $y_{it}(k)$ ,  $n_{ie}$  denotes the number of elections that occur at dates  $t_j$  for  $j = 1, 2, \dots, n_{ie}$ ,  $I_t^B$  is an indicator function that removes observations  $k$  months before each election, taking the value of 0 in the set  $B \stackrel{\text{def}}{=} \{t, t-1, \dots, t-k : t = t_j\}$  and the value of 1 otherwise. Similarly,  $I_t^A$  is an indicator function that removes observations  $k$  months after each election, taking the value of 0 in the set  $A \stackrel{\text{def}}{=} \{t+k, t+k-1, \dots, t : t = t_j\}$  and the value of 1 otherwise.
8. The statistic  $\mathcal{T}_{i,s}(k)$  is defined as  $\mathcal{T}_{i,s}(k) \stackrel{\text{def}}{=} \frac{\sqrt{n_{ik} - n_{ie}} [\bar{y}_{i,s}(k) - \bar{y}_{i,as}(k)]}{s_{yi}(k)}$ ,  $s = a, b$ , where  $s_{yi}(k)$  is full sample standard deviation and is computed under the hypothesis that there are no mean differences.

**Table 4: Tests for Differences across Winning & Losing Elections of the Incumbent**

	Consumer Confidence	Quarterly GDP Growth	Unemployment	Long-Term Interest Rate	Quarterly Inflation
<i>F</i> -test	0.28	0.38	0.36	0.00	0.06
<i>t</i> -test	0.00	0.00	0.00	0.00	0.00
<i>KS</i> -test	0.00	0.00	0.00	0.00	0.00

Notes:

1. All descriptive statistics and tests were calculated for the two series ( $\bar{Z}^{IW}, \bar{Z}^{IL}$ ) of monthly averages for consumer confidence and the macroeconomic variables listed, for the period of all 25 months before and after the election.
2. Table entries are the p-values for tests of equality of variance (*F*-test), mean (*t*-test) and distribution (*KS*-test, Kolmogorov-Smirnov).
3. The tests of Table 4 were also performed for each of the months before the elections, for the variable of consumer confidence. The hypothesis of no mean differences was rejected at the 10% level for 9, 8, 7, 6 and 5 months before the elections, while the hypothesis of no variance differences was rejected at the 10% level only for months 9 and 4 before the elections. The *KS* test rejects the hypothesis of equal distributions for months 7, 5 and 4 before the elections at the 10% level.

**Table 5: Definitions of Model Variables**

Variable Name	Definition
$R_{itm}$	binary indicator of re-election of incumbent government taking the value of zero when the incumbent is not re-elected and unity when it is re-elected
$S_{itm}$	is the difference in the percentage of votes between the incumbent and the winner (when the incumbent loses the election) or the incumbent and the runner-up (when the incumbent wins the election)
$C1$	Level of consumer confidence index (CCI) one month before the elections
$C1 - C7$	Change in the level of CCI in the 6-month period preceding the month of elections calculated as $cc_{im} \stackrel{\text{def}}{=} C_{i,m-1} - C_{i,m-7}$ , where $C_{is}$ denotes the level of the CCI at month $s$ and where the election occurs at month $m$
$RGDP$	real GDP growth in the 4-quarter period ending on the quarter of the elections as $y_{ij} \stackrel{\text{def}}{=} \ln Y_{i,j-0} - \ln Y_{i,j-4}$ , where $Y_{is}$ denotes real GDP at quarter $s$ and where the election occurs in a month of the $j^{\text{th}}$ quarter
$INF$	Change in consumer prices in the month before the elections calculated as $\pi_{im} \stackrel{\text{def}}{=} \ln P_{i,m-1} - \ln P_{i,m-2}$ , where $P_{is}$ denotes CPI at month $s$ and where the election occurs at month $m$
$BYLD$	Long rate, level of 10-year bond yield in the month before the elections
$G/GDP$	Growth of total government revenues as a % of GDP from the quarter period preceding the month of elections calculated as $g_{ij} \stackrel{\text{def}}{=} \ln G_{i,j-0} - \ln G_{i,j-1}$ , where $G_{is}$ denotes government spending as a % of GDP at quarter $s$ and where the election occurs in a month of the $j^{\text{th}}$ quarter
$T/GDP$	Growth of revenues of indirect taxes as a % of GDP from the quarter period preceding the month of elections calculated as $t_{ij} \stackrel{\text{def}}{=} \ln T_{i,j-0} - \ln T_{i,j-1}$ , where $T_{is}$ denotes indirect taxes as a % of GDP at quarter $s$ and where the election occurs in a month of the $j^{\text{th}}$ quarter
$Ca7 - C0$	Change in in the level of CCI in the 7-month period after the elections, calculated as $C_{i,m+7} - C_{i,m}$
$C0 - C7$	Change in the level of CCI in the 7-month period before the elections, calculated as $C_{i,m} - C_{i,m-7}$
$WSH$	The share of votes of the winning party in each election
$WO$	Binary indicator for the orientation of the winning party in each election, taking the value of zero when the winner is center-left and unity when the winner is center-right
$D30$	Binary indicator for a winning party with less than 30% share of electoral votes
$VT$	Voter turnout, the share of voters in each election relative to all registered voters

**Table 6A: The Influence of Consumer Confidence and Macroeconomic Variables on the Probability of Re-election and on the Incremental Share of the Incumbent**

Dep. Var./Model	Explanatory Variables					
	<i>C1</i>	<i>C1 – C7</i>	<i>RGDP</i>	<i>INF</i>	<i>BYLD</i>	<i>G/GDP</i> <i>T/GDP</i>
<i>M<sub>1</sub> : Only Consumer Confidence Variables</i>						
<i>R<sub>itm</sub></i> /Logit	0.03* (0.08)	-0.07 (0.13)				
<i>S<sub>itm</sub></i> /Pool-GLS	0.09* (0.10)	-0.36*** (0.00)				
<i>S<sub>itm</sub></i> /RE-GLS	0.14** (0.05)	-0.27** (0.02)				
<i>M<sub>2</sub> : Only Macroeconomic Variables</i>						
<i>R<sub>itm</sub></i> /Logit			0.44*** (0.00)	-1.64** (0.05)	0.30** (0.02)	
<i>S<sub>itm</sub></i> /Pool-GLS			1.25*** (0.00)	-1.14 (0.56)	1.22*** (0.00)	
<i>S<sub>itm</sub></i> /RE-GLS			1.03*** (0.00)	-0.35 (0.89)	1.20*** (0.00)	
<i>M<sub>3</sub> : Consumer Confidence + Macroeconomic Variables</i>						
<i>R<sub>itm</sub></i> /Logit	0.05** (0.02)	-0.09* (0.10)	0.44** (0.04)	-1.73* (0.09)	0.46** (0.02)	
<i>S<sub>itm</sub></i> /Pool-GLS	0.16*** (0.00)	-0.25*** (0.00)	0.95** (0.03)	-2.44 (0.29)	1.67*** (0.00)	
<i>S<sub>itm</sub></i> /RE-GLS	0.17*** (0.00)	-0.35*** (0.00)	1.15** (0.03)	-0.90 (0.78)	1.47*** (0.00)	

*Table continued in next page*

**Table 6A (cont.) The Influence of Consumer Confidence and Macroeconomic Variables on the Probability of Re-election and on the Incremental Share of the Incumbent**

Dep. Var./Model	Explanatory Variables						
	<i>C1</i>	<i>C1 – C7</i>	<i>RGDP</i>	<i>INF</i>	<i>BYLD</i>	<i>G/GDP</i>	<i>T/GDP</i>
<i>M<sub>4</sub> : Consumer Confidence + Macroeconomic + Gov. Spending Variables</i>							
<i>R<sub>itm</sub></i> /Logit	0.03 (0.23)	-0.10 (0.20)	0.59*** (0.00)	-2.37** (0.03)	0.56** (0.03)	0.03 (0.54)	
<i>S<sub>itm</sub></i> /Pool-GLS	0.11* (0.09)	-0.26** (0.04)	1.29*** (0.00)	-3.14 (0.22)	1.69*** (0.00)	0.09*** (0.01)	
<i>S<sub>itm</sub></i> /RE-GLS	0.10* (0.10)	-0.32*** (0.00)	1.40*** (0.00)	-1.31 (0.65)	1.43*** (0.00)	0.14** (0.02)	
<i>M<sub>5</sub> : Consumer Confidence + Macroeconomic + Ind. Taxes Variables</i>							
<i>R<sub>itm</sub></i> /Logit	0.05 (0.12)	-0.14* (0.08)	1.04*** (0.00)	-1.26 (0.27)	0.36 (0.14)		-0.61*** (0.00)
<i>S<sub>itm</sub></i> /Pool-GLS	0.10* (0.10)	-0.48*** (0.00)	1.98*** (0.00)	-3.24 (0.13)	1.68*** (0.00)		-0.88* (0.06)
<i>S<sub>itm</sub></i> /RE-GLS	0.10 (0.12)	-0.39*** (0.00)	1.71*** (0.00)	-1.38 (0.47)	1.47*** (0.00)		-0.28 (0.81)
<i>M<sub>6</sub> : Consumer Confidence + Macroeconomic via Dynamic GMM</i>							
<i>S<sub>itm</sub></i> /GMM	0.39*** (0.00)	-0.68*** (0.00)			2.17*** (0.00)		

Notes:

1. The dependent variables are:  $R_{itm}$ , the binary indicator for incumbent re-election and  $S_{itm}$ , the relative share of votes of the incumbent.
2. For variables definitions, please see Table 5.
3. The estimation is performed via Maximum Likelihood (logit model), pooled/random effects Generalized Least Squares (GLS), and the Generalized Method of Moments (GMM) with dynamic instruments.
4. The significance tests are based on robust standard errors. p-values are inside the parentheses. Asterisks denote significance levels at: 1% \*\*\*, 5% \*\* and 10% \*.
5. Model  $\mathcal{M}_6$  also contains a dynamic term, the lag of the dependent variable  $S_{i,t-1,m}$ , which is estimated at 0.14 and has a p-value of 0.05. In model  $\mathcal{M}_6$ , the macroeconomic variables were insignificant, with the exception of the bond-yield.

**Table 6B: Summary Statistics for the Models of Table 6A.**

Dep. Var./Model	Summary		
	Obs.	LR/F-test	R <sup>2</sup>
	$\mathcal{M}_1$		
$R_{itm}/\text{Logit}$	74	0.103	4.89%
$S_{itm}/\text{Pool-GLS}$	74	0.056	3.25%
$S_{itm}/\text{RE-GLS}$	74	0.121	5.22%
	$\mathcal{M}_2$		
$R_{itm}/\text{Logit}$	78	0.001	16.60%
$S_{itm}/\text{Pool-GLS}$	78	0.000	22.72%
$S_{itm}/\text{RE-GLS}$	78	0.000	22.63%
	$\mathcal{M}_3$		
$R_{itm}/\text{Logit}$	66	0.002	22.44%
$S_{itm}/\text{Pool-GLS}$	66	0.000	29.24%
$S_{itm}/\text{RE-GLS}$	66	0.000	31.51%
	$\mathcal{M}_4$		
$R_{itm}/\text{Logit}$	50	0.015	25.21%
$S_{itm}/\text{Pool-GLS}$	50	0.000	29.73%
$S_{itm}/\text{RE-GLS}$	50	0.010	32.93%
	$\mathcal{M}_5$		
$R_{itm}/\text{Logit}$	40	0.013	31.86%
$S_{itm}/\text{Pool-GLS}$	40	0.001	27.12%
$S_{itm}/\text{RE-GLS}$	40	0.068	31.31%
	$\mathcal{M}_6$		
$S_{itm}/\text{GMM}$	38	0.000	5.88%

Notes:

1. The models correspond to those of Table 6A and include:  $\mathcal{M}_1$  only consumer confidence variables;  $\mathcal{M}_2$  only macroeconomic variables;  $\mathcal{M}_3$  both consumer confidence and macroeconomic variables;  $\mathcal{M}_4$  consumer confidence, macroeconomic and government spending variables;  $\mathcal{M}_5$  consumer confidence, macroeconomic and indirect taxes variables.
2. “Obs” denotes the number of observations; “LR/F-test” denotes either the likelihood ratio (for the logit model), the regression  $F$ -test or a standard Wald-type test for testing the joint significance of all explanatory variables (for the pooled/RE model and the GMM model respectively); “R<sup>2</sup>” denotes either the McFadden pseudo R-squared (for the logit model), the standard R-squared (for the pooled/RE model) or the squared correlation coefficient between the actual and fitted values (for the GMM model).

**Table 7: Reversal in Consumer Confidence**

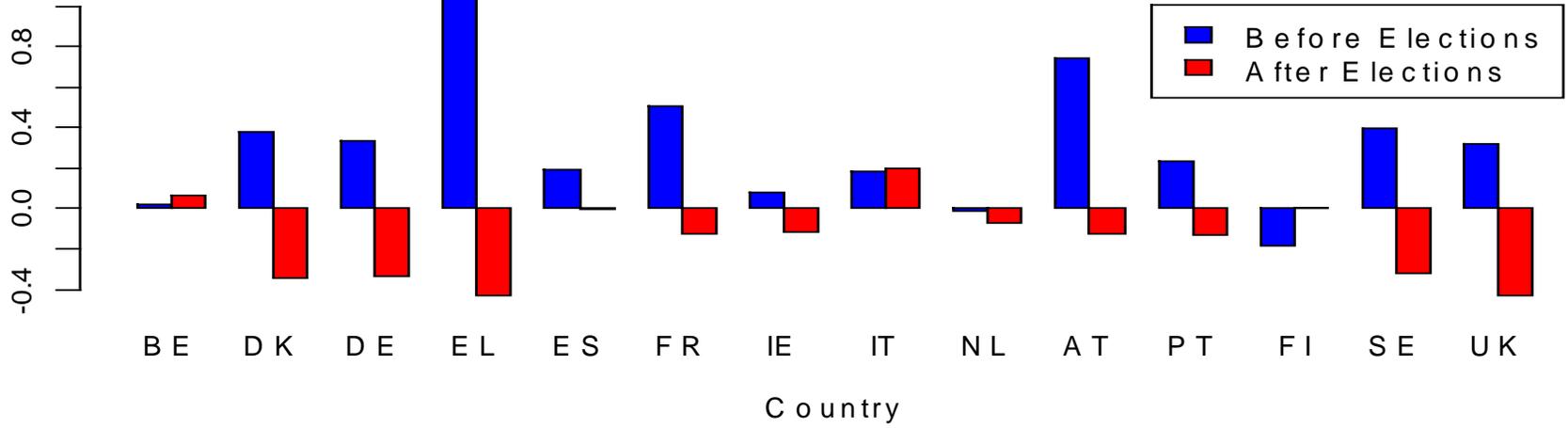
Dep. Var. /Model	Explanatory Variables						Summary		
	<i>Const.</i>	<i>C0 – C7</i>	<i>WSH</i>	<i>WO</i>	<i>WO</i> × <i>C0 – C7</i>	<i>D30</i>	Obs.	<i>F</i> -test	<i>R</i> <sup>2</sup>
<i>Ca7 – C0</i> / Pool-GLS	-2.50*** (0.00)	-0.31** (0.02)					69	0.00	11%
<i>Ca7 – C0</i> / RE-GLS	-2.67*** (0.00)	-0.28** (0.04)					69	0.03	6.8%
<i>Ca7 – C0</i> / Pool-GLS	11.74*** (0.00)	-0.14* (0.07)	-0.43*** (0.00)				69	0.00	21%
<i>Ca7 – C0</i> / RE-GLS	8.90*** (0.00)	-0.14 (0.16)	-0.34*** (0.00)				69	0.00	22%
<i>Ca7 – C0</i> / Pool-GLS	10.84*** (0.00)	-0.35** (0.01)	-0.37*** (0.00)	-4.61*** (0.00)	0.51*** (0.00)	3.40*** (0.00)	69	0.00	47%
<i>Ca7 – C0</i> / RE-GLS	9.02*** (0.00)	-0.27** (0.05)	-0.32*** (0.00)	-3.35** (0.01)	0.33 (0.13)	2.44* (0.08)	69	0.00	27%

Notes:

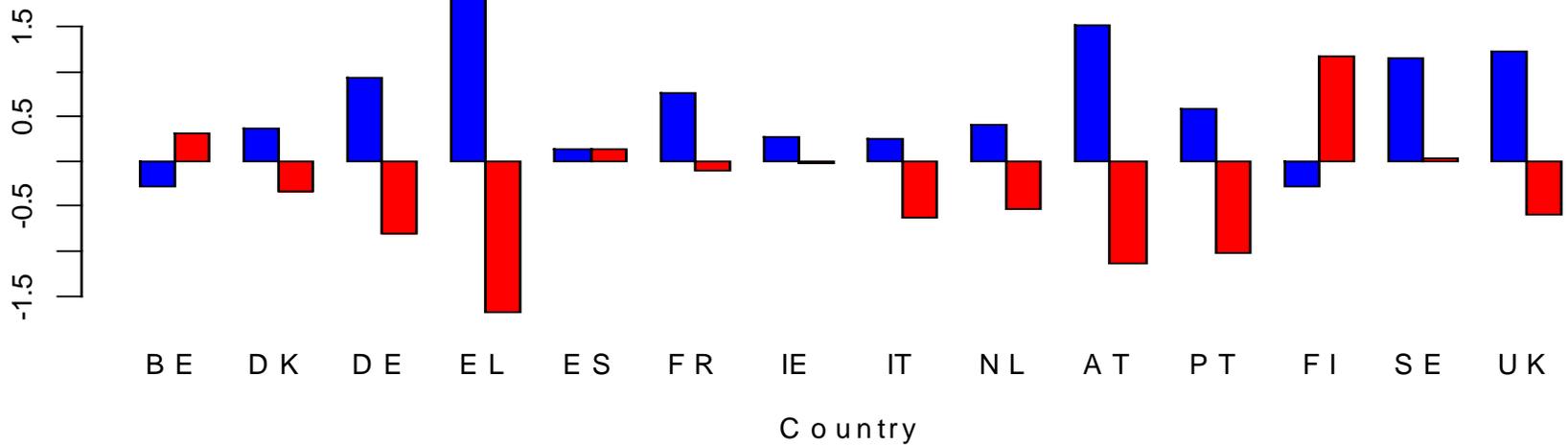
1. For variables definitions, please see Table 5.
2. The estimation is performed twice per model, via pooled and via random effects, both in Generalized Least Squares (GLS).
3. The significance is based on robust standard errors. p-values are inside the parentheses. The asterisks denote significance levels at: 1% \*\*\*, 5% \*\* and 10% \*.
4. “Obs.” denotes the number of observations; “*F*-test” denotes the regression *F*-test; “*R*<sup>2</sup>” denotes the standard R-squared.

# Figure 1

## Average Consumer Confidence - 3 Month Change

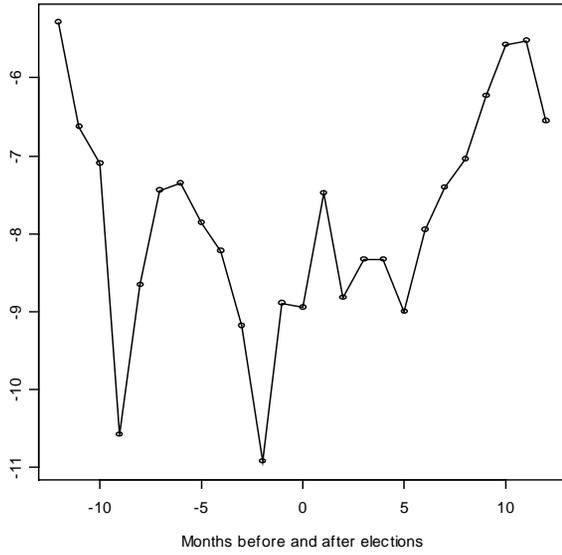


## Average Consumer Confidence - 12 month change

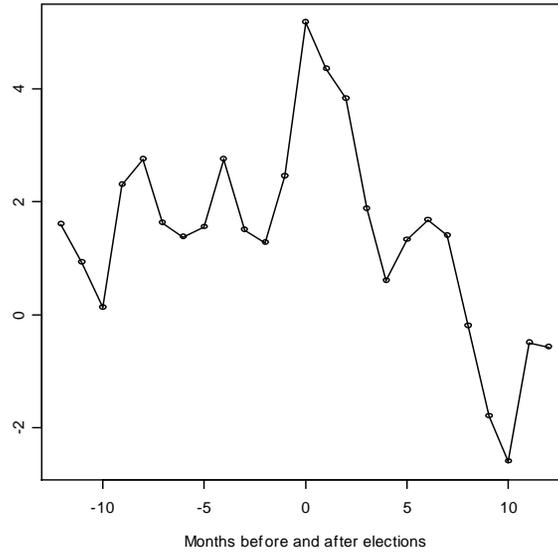


# Figure 2

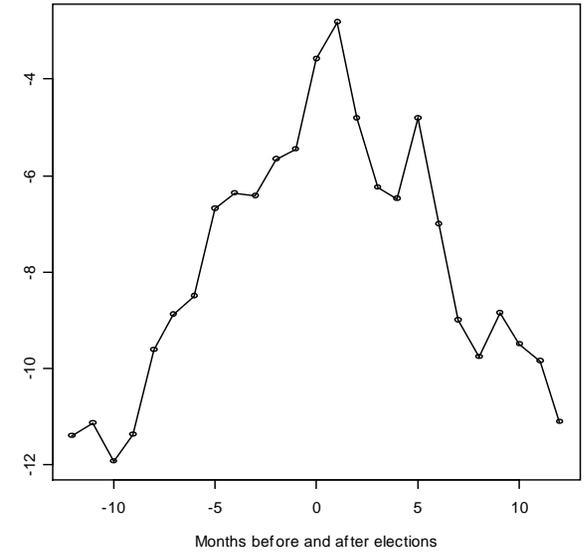
## Belgium



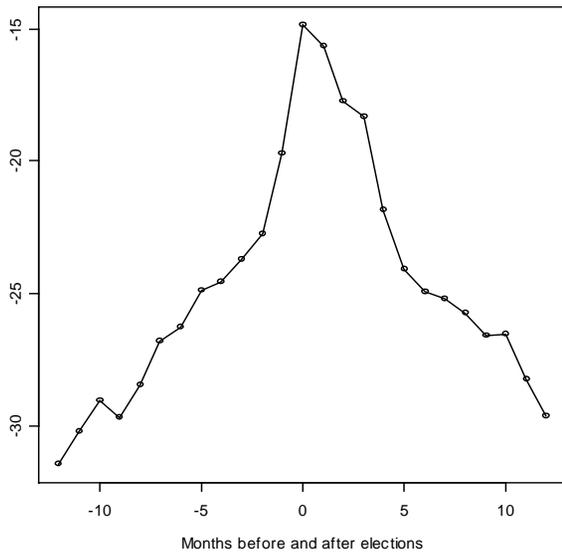
## Denmark



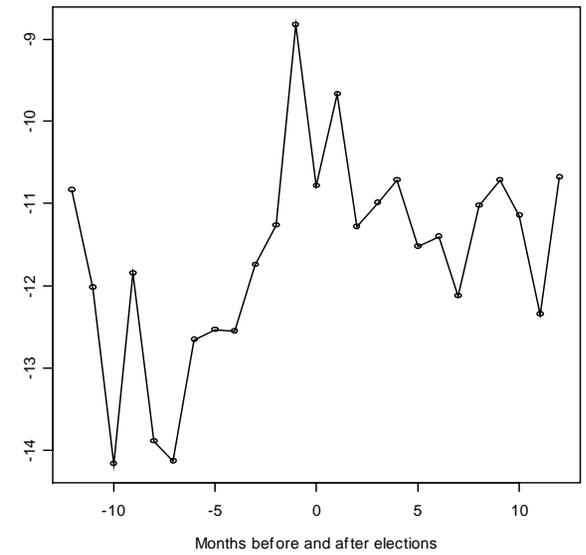
## Germany



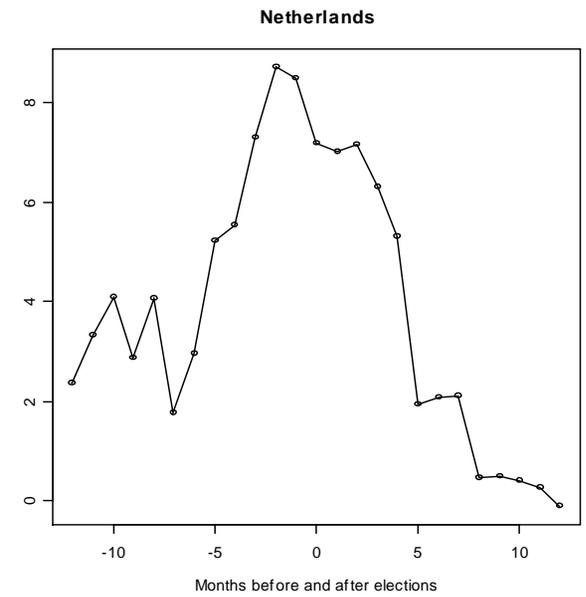
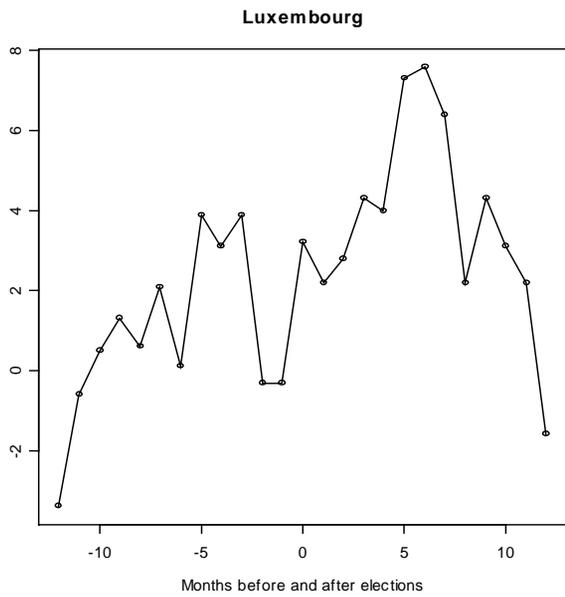
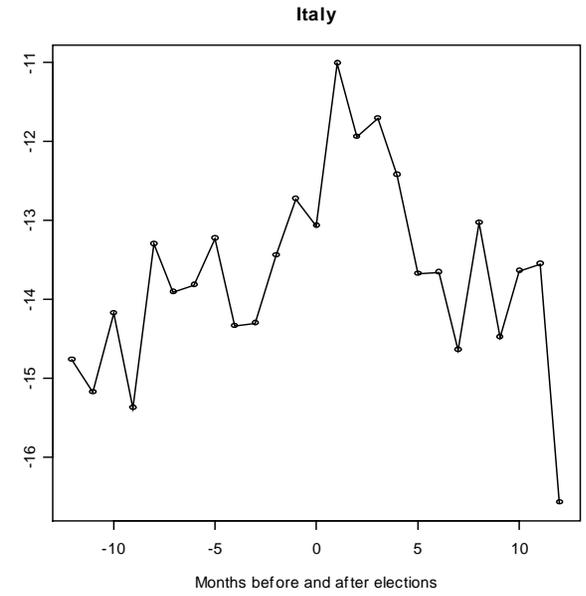
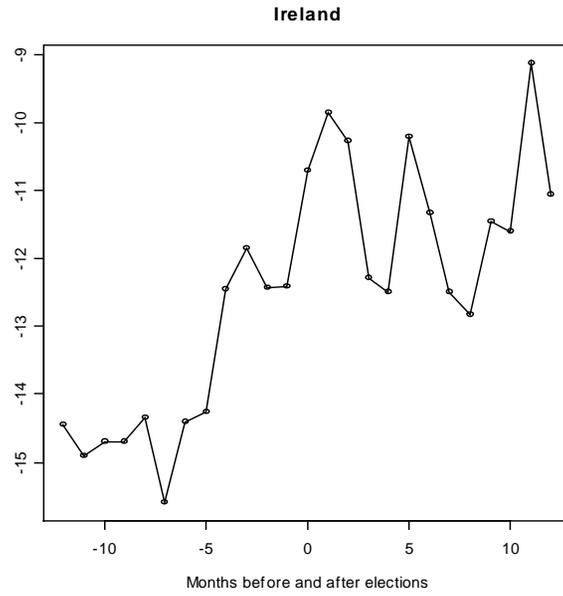
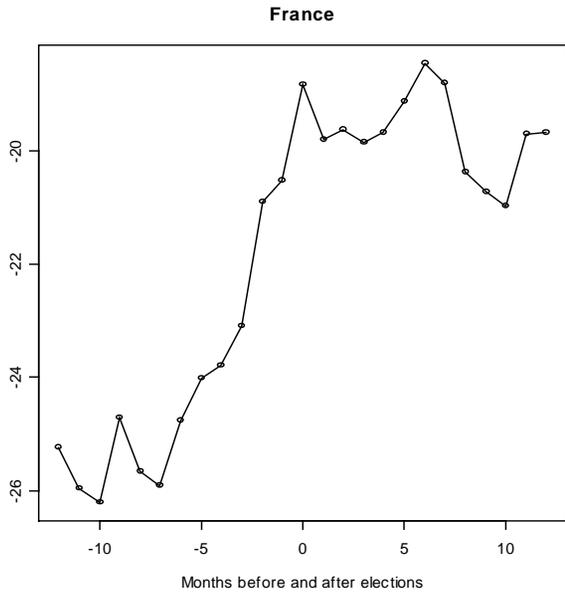
## Greece



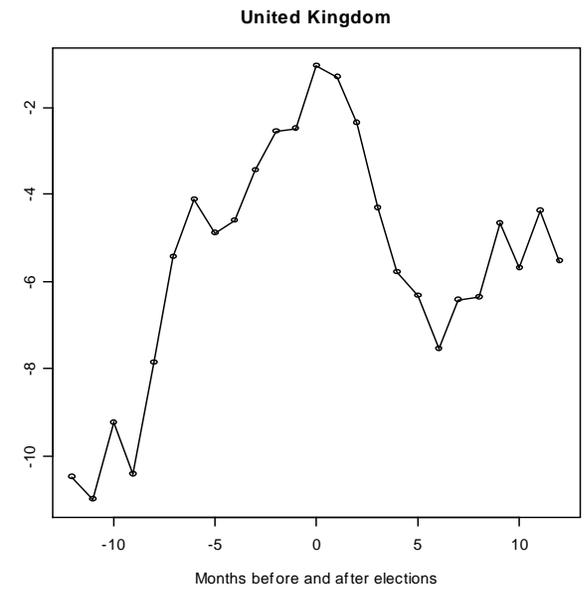
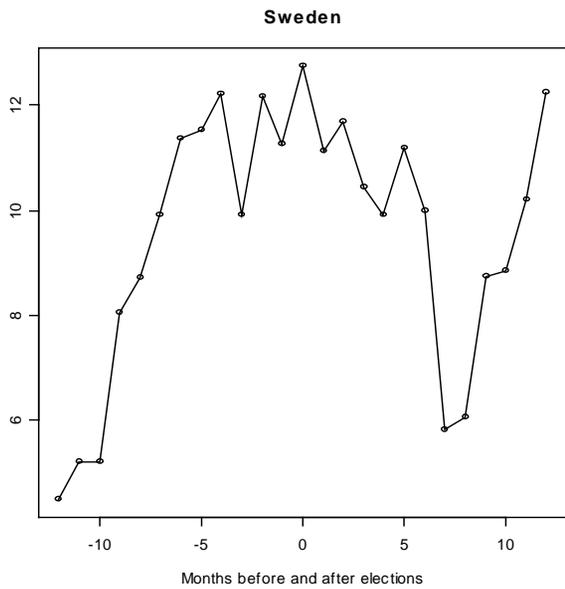
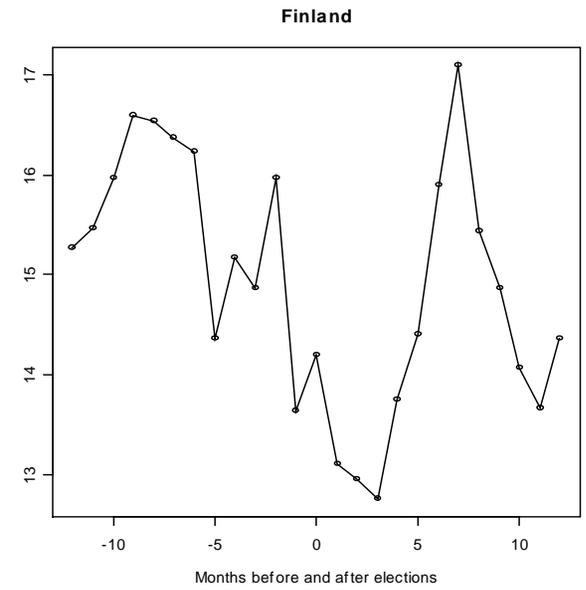
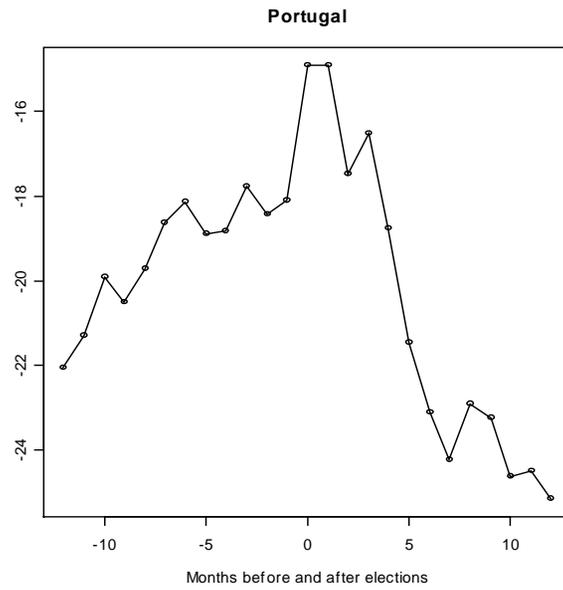
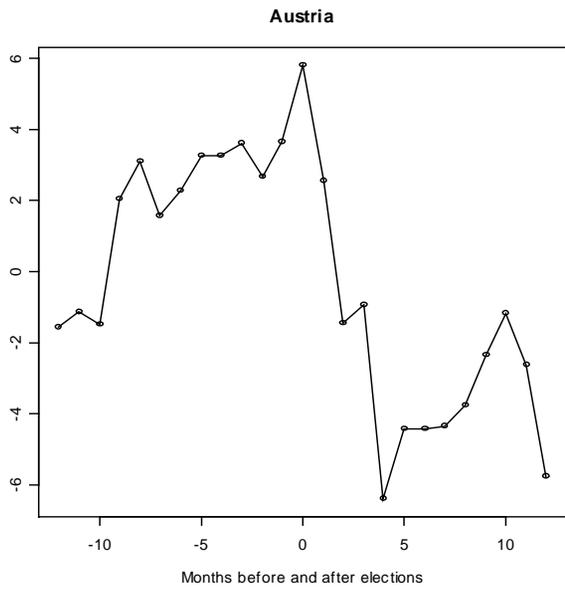
## Spain



# Figure 2

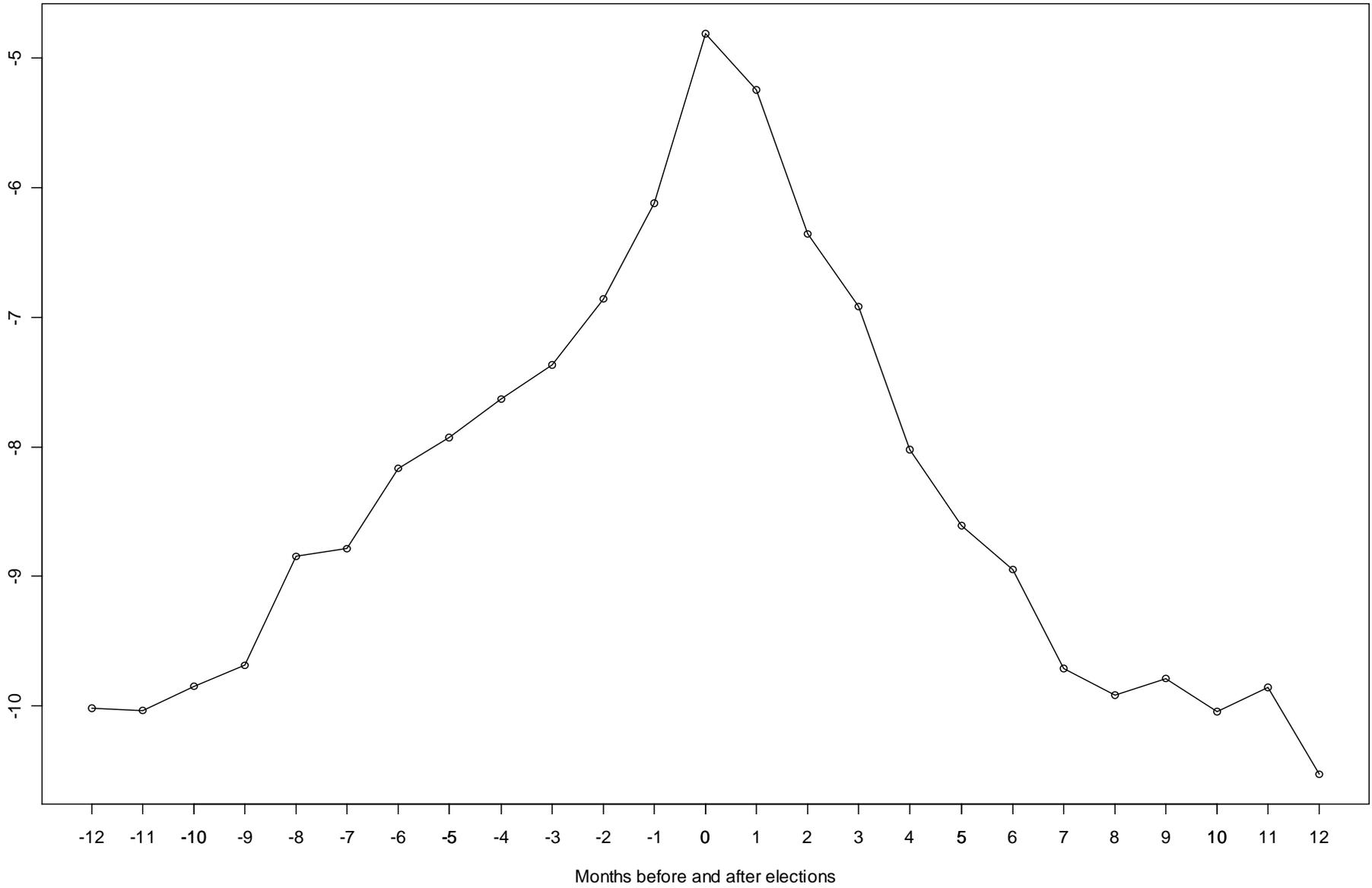


# Figure 2



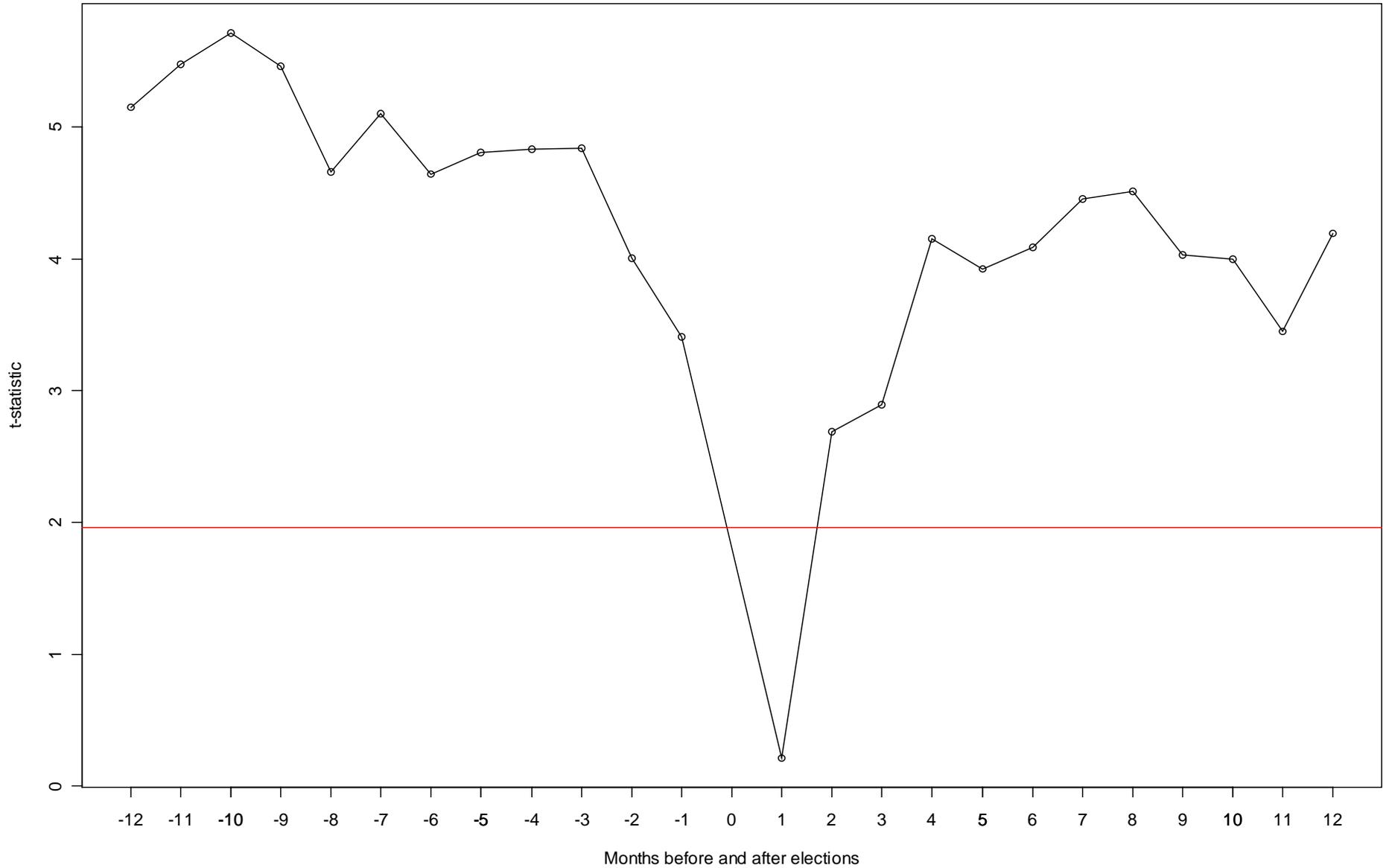
# Figure 3

Evolution of Average Consumer Confidence (s.d.= 1.656 )



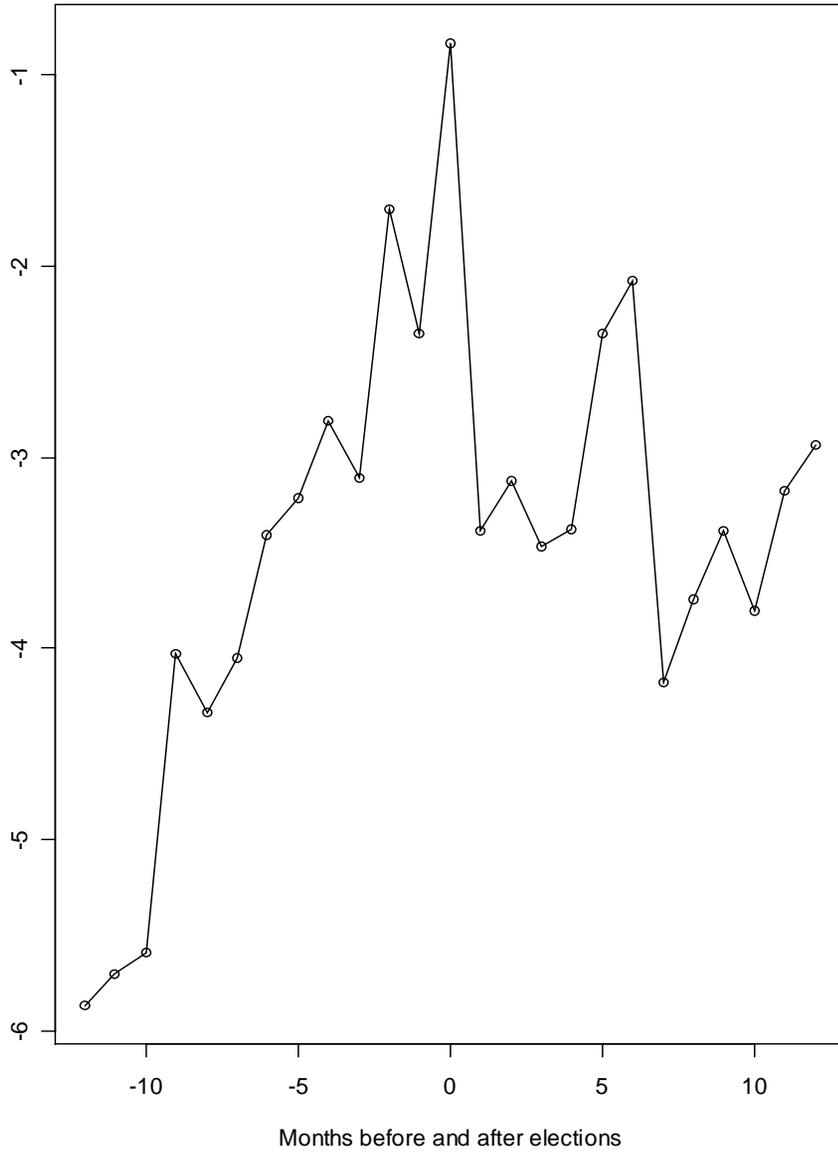
# Figure 4

Paired t-tests for differences between election month and months before and after the elections

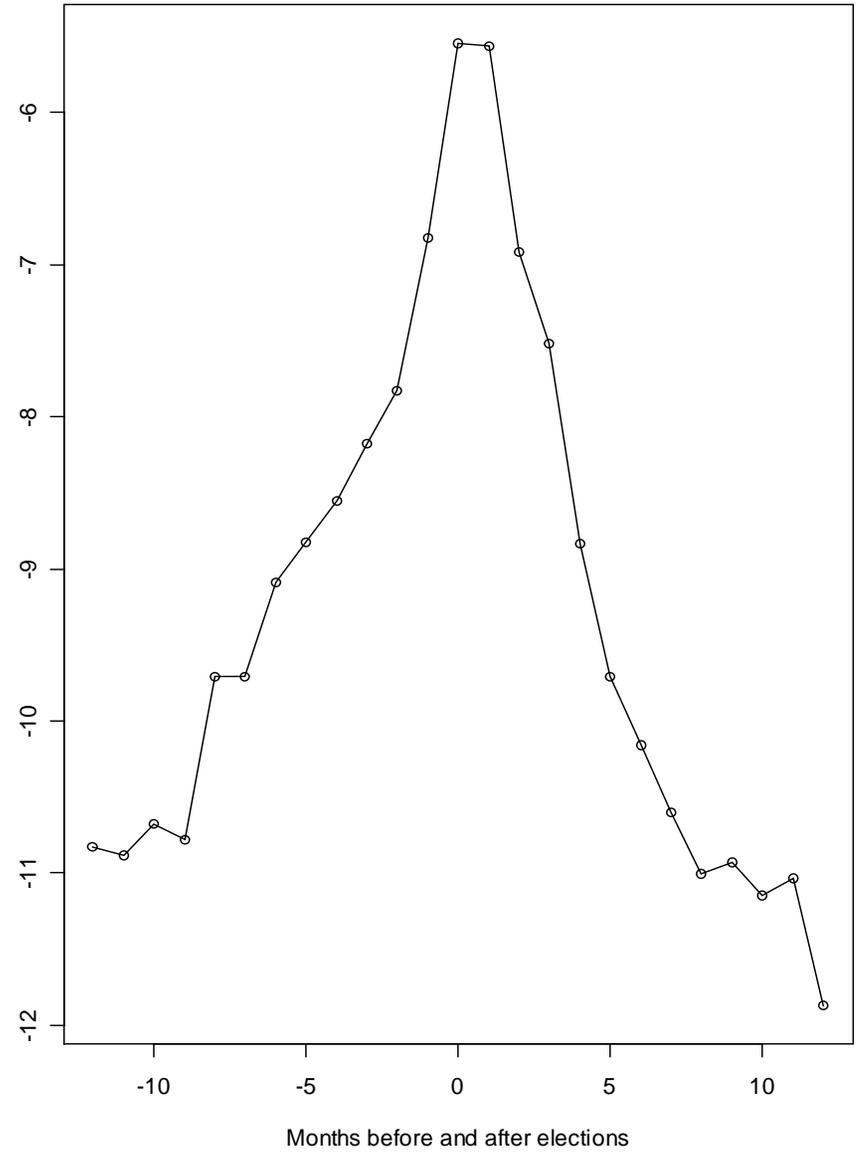


# Figure 5

## Average Consumer Confidence, France, Luxemburg, Finland, Sweden (s.d.= 5.31 )

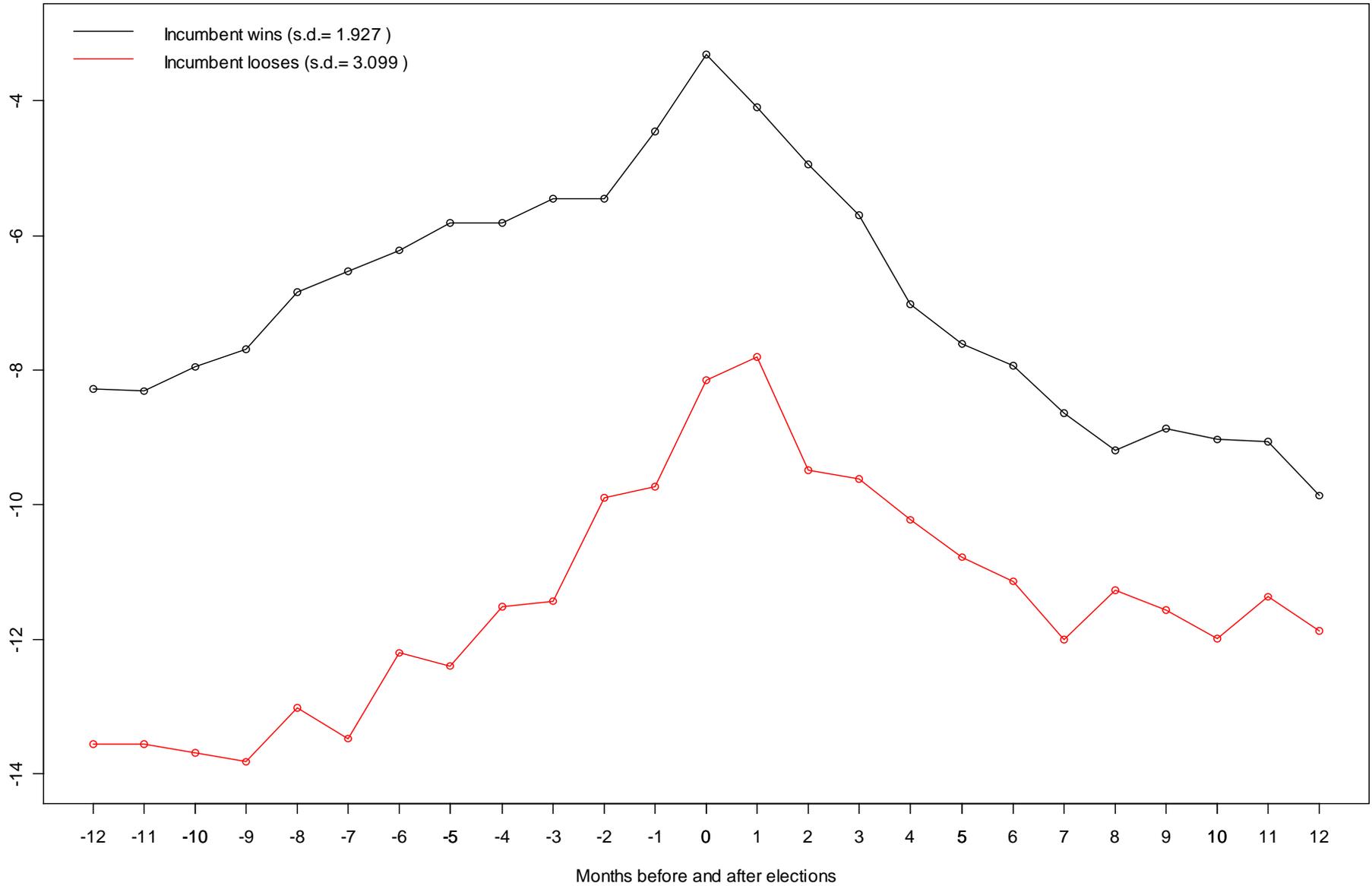


## Average Consumer Confidence, rest of EU-15 (s.d.= 1.69 )



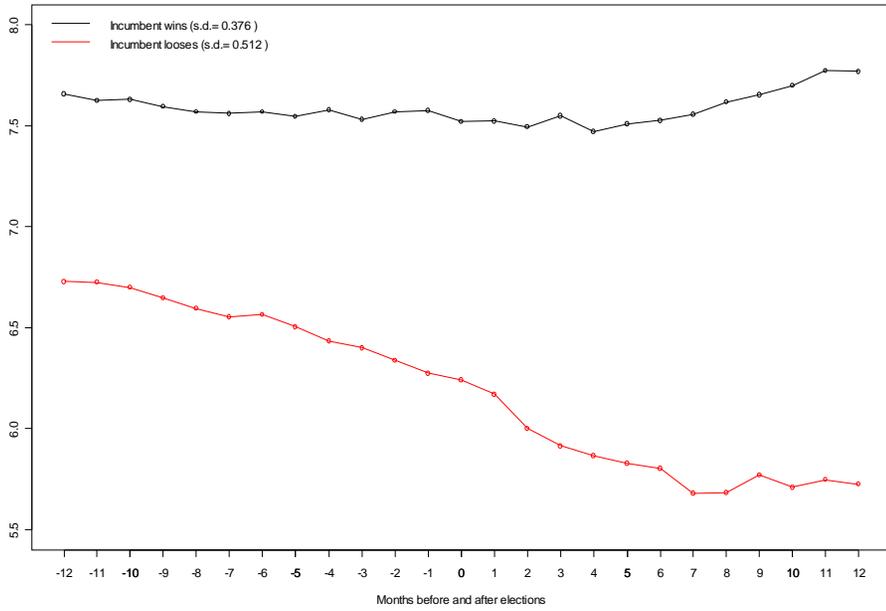
# Figure 6

## Evolution of Average Consumer Confidence Split by Election Outcome

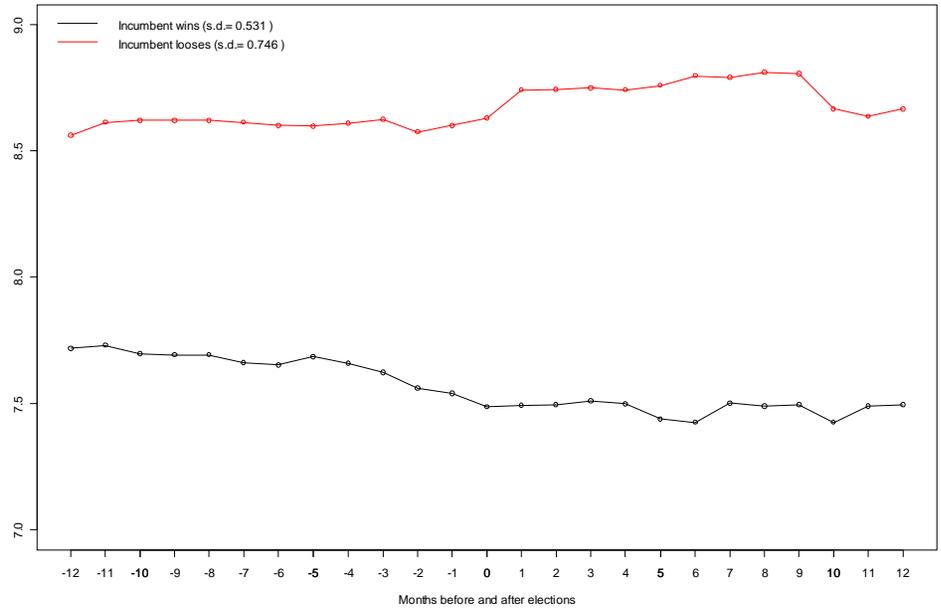


# Figure 7

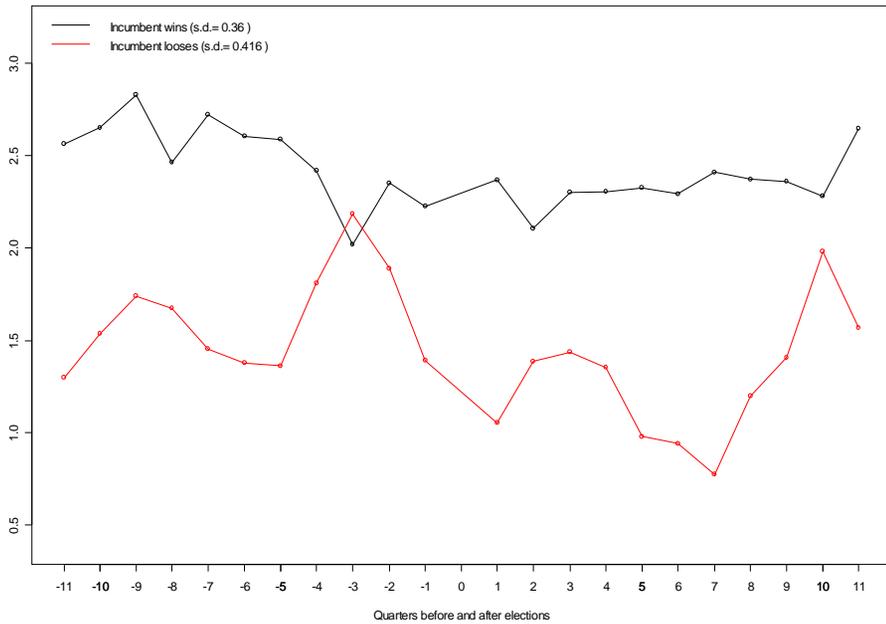
Evolution of Long Term Rates Split by Election Outcome



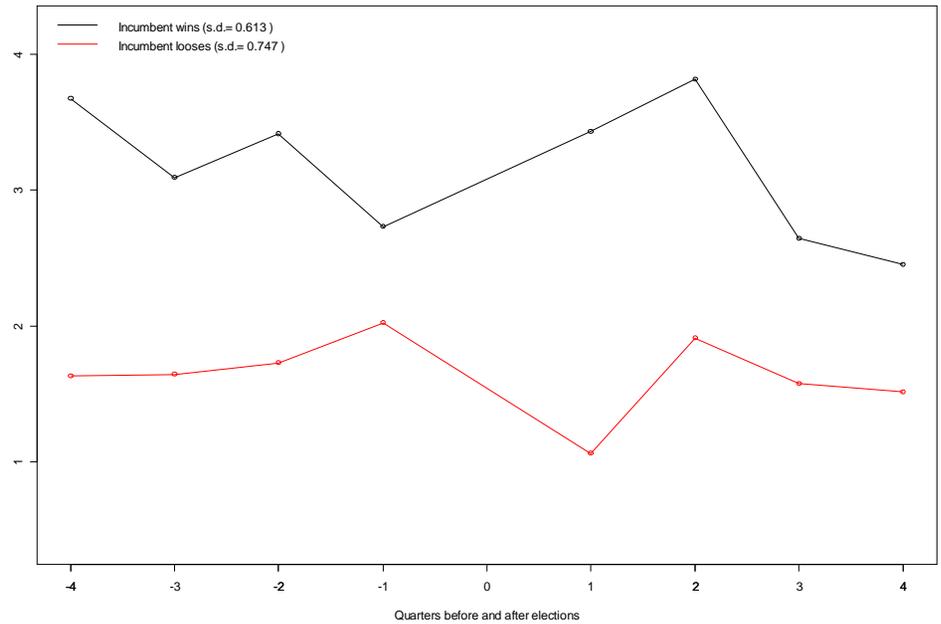
Evolution of Unemployment Split by Election Outcome



Evolution of Quarterly Inflation (p.a.) by Election Outcome



Evolution of Quarterly Real GDP Growth (p.a.) by Election Outcome



Evolution of Government Spending as % of GDP by Election Outcome

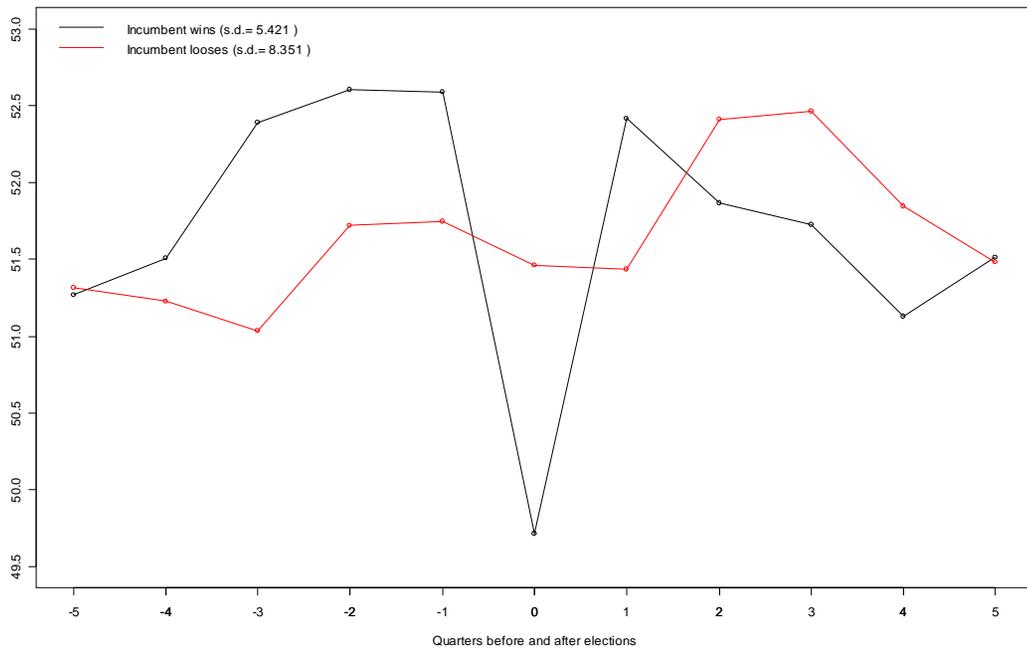
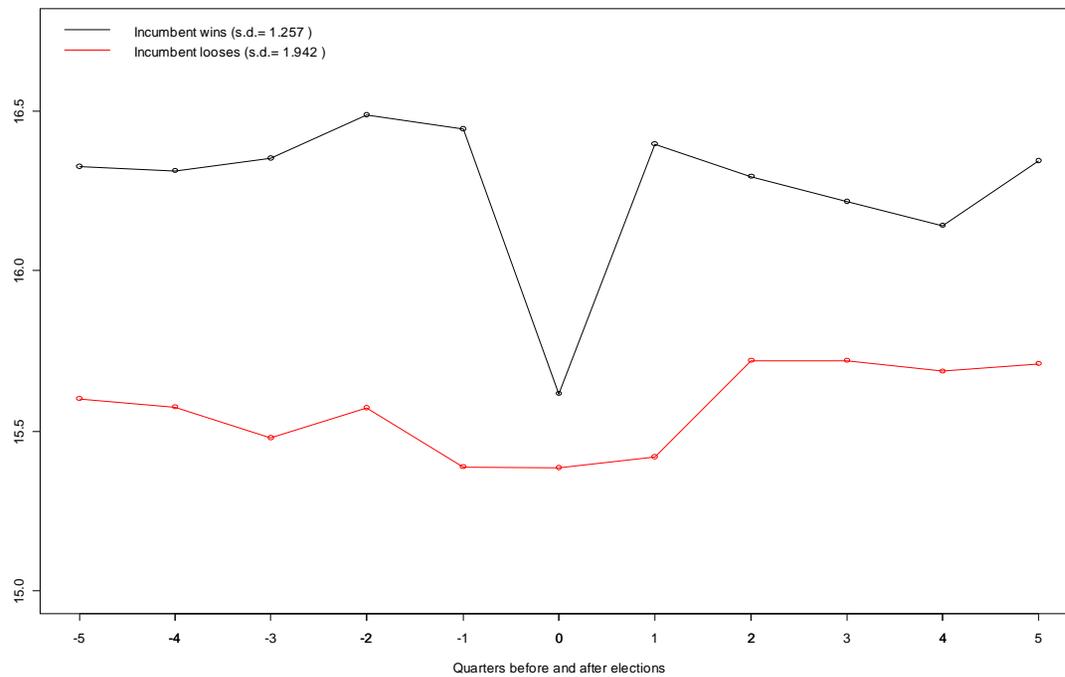


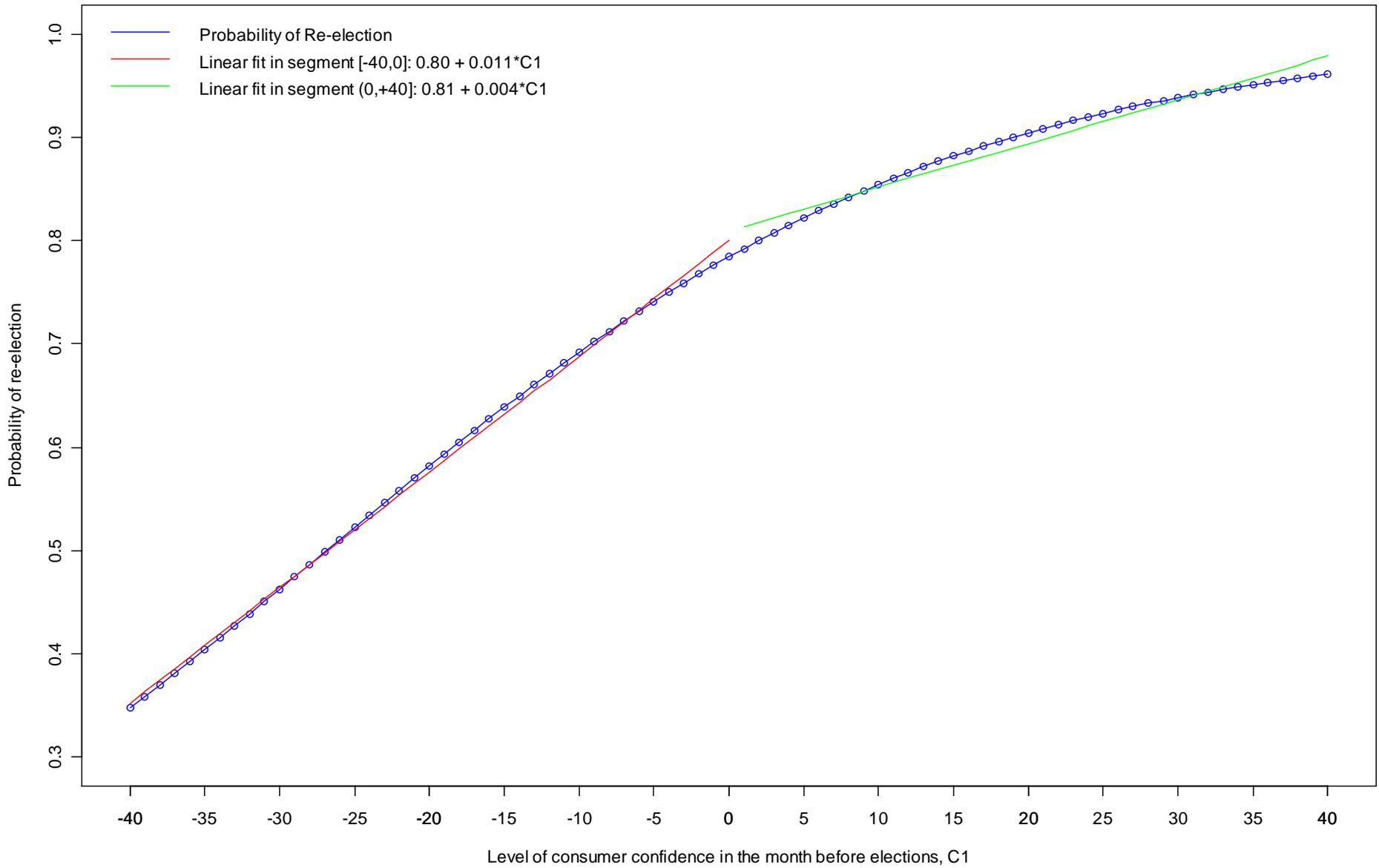
Figure 7

Evolution of Indirect Tax Revenues as % of GDP by Election Outcome



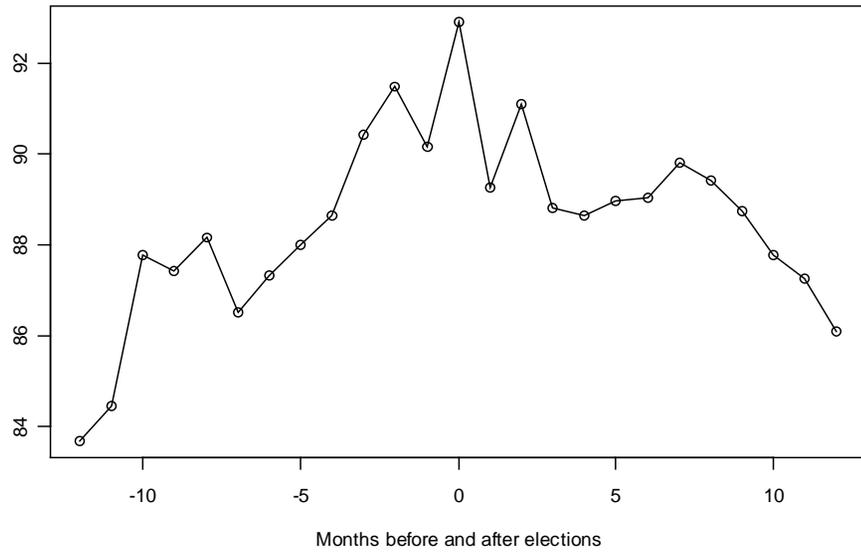
# Figure 8

## Cumulative Probability of Re-election, Model M3

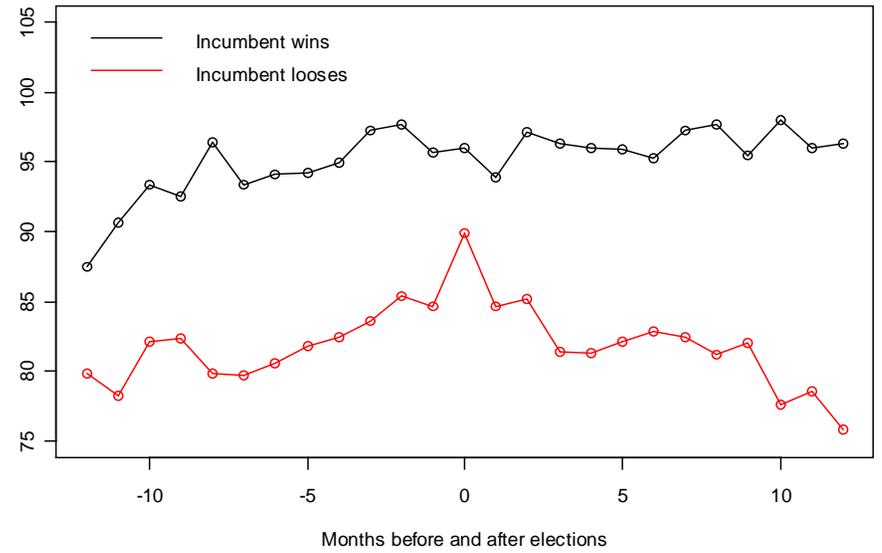


# Figure 9

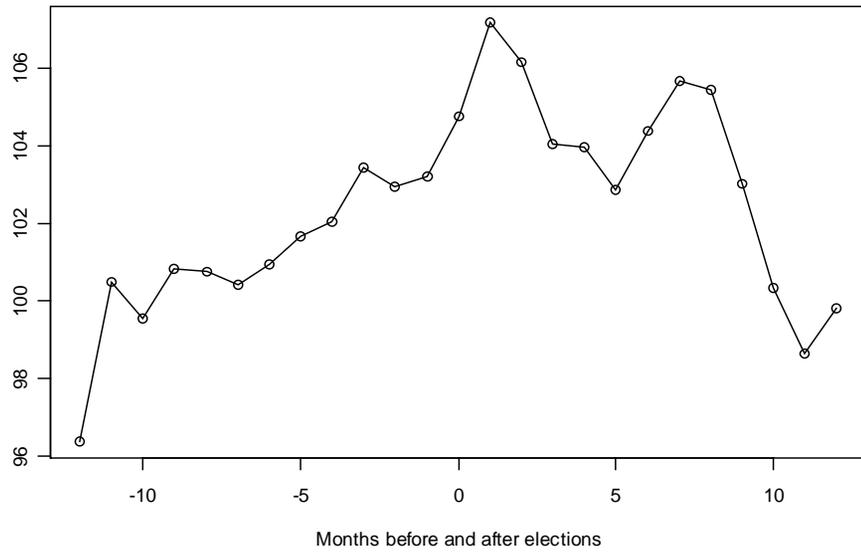
### Evolution of Average Consumer Confidence, Univ. of Michigan, since 1978



### Univ. of Michigan - Split by Election Outcome



### Evolution of Average Consumer Confidence, Conference Board, since 1967



### Conference Board - Split by Election Outcome

