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Economic Indicators and Electoral Volatility

Economic Effects on Electoral Volatility in Western Europe, 1950-2013

Abstract

Economic voting theory assumes that on an individual level voters react to economic indicators to hold incumbents responsible for the performance of the economy. On an aggregate level, this would imply that there is an association between economic indicators and levels of volatility since voters have to switch parties if they want to punish or reward political actors. Based on a time-series cross-section analysis of the Pedersen Index for West European countries in the period 1950-2013 we do indeed observe an association between economic indicators and levels of volatility. This effect furthermore grows stronger over time, and it is assumed that this is rendered possible by processes of partisan dealignment. The analysis suggests that European electorates are significantly more likely to shift parties in response to economic downturn now than they were a few decades ago.

1.   Introduction

It is generally assumed that economic indicators have an effect on electoral behaviour, as voters base their party preference partly on the past performance of the economy. Changing economic circumstances therefore should be related to electoral volatility: if a governing coalition does not deliver on its electoral promises, it can be expected that voters will withdraw their support for the governing parties and this implies they have to switch their electoral preference (Bischoff, 2013; Mainwaring and Zoco, 2007; Powell and Tucker, 2014; Roberts and Wibbels, 1999; Tavits, 2005). Previous studies on the effect of changing economic indicators on electoral volatility, however, have found only a limited effect (Mainwaring and Zoco, 2007). The financial crisis that started in 2008 has had a dramatic negative impact on economic performance in numerous liberal democracies. If voters switch parties because of economic considerations, we can expect that they will also do so in the current period of economic downturn. This is even more likely because previous studies have established the occurrence of a negativity bias among the electorate, indicating that voters react more strongly to an economic downturn than to more prosperous periods of economic growth, that are easily taken for granted (Bloom and Price, 1979). Punishing politicians that are being held accountable for an economic crisis therefore should be associated with higher levels of volatility than rewarding politicians for the successful way they have handled the state of the economy.

Another reason why especially the current economic crisis might be associated with electoral volatility is the fact that, in most liberal democracies, partisanship has been eroding over the past decades (Dalton, McAllister and Wattenberg, 2002). A strong sense of partisanship, or party identity, can moderate the effect of economic downturn on party choice, as partisans remain inclined to vote for their preferred party, even if it performs badly in managing the

economy. The fact that the reservoir of partisanship has shrunk, implies that an economic downturn now can have a much more powerful and direct effect on party choice than was the case a few decades ago (Kayser and Wlezien, 2011). As a result, a strong association between economic indicators and electoral volatility might be found especially in the current era of weakened party identifications.

At first sight, it is plausible that the current economic downturn is associated with high levels of electoral volatility: since 2008 major democracies in Europe have witnessed radical shifts in electoral results, often resulting in a defeat of the ruling coalition (Bellucci, Costa Lobo and Lewis-Beck, 2012). Extreme levels of volatility have furthermore been observed for elections in countries that suffered severely form the economic crisis (Kennedy, 2012; Vasilopoulou and Halikiopoulou, 2013). Thus far, however, it has not yet been investigated whether these recent highly exceptional electoral results should be considered as just an ephemeral phenomenon, or whether they indeed confirm the hypothesized relation between economic performance and electoral behaviour.

To ascertain whether these recent electoral results can be explained in a meaningful manner, we have to take note of a more structural trend toward higher levels of electoral volatility. It is often assumed that from the 1970s onward, electoral volatility in general is on the rise, with as a result less predictable electoral results and less stability over time (Crewe and Denver, 1985; Pedersen, 1979). Reviewing the literature on the stability of party systems and electorates, Bartolini and Mair (1990) found scholars to seemingly agree on the fact that stability was weakening, although others have also questioned this quasi-consensus (Mair, 1993). If we want to gain insights in the determinants of recent, highly volatile elections, it is important to consider them against the setting of a longer, structural trend toward higher levels of electoral

volatility. This leads to the main research question of this paper, i.e. to determine whether the current economic downturn has had a significant effect on levels of electoral volatility, even controlling for the fact that there is a long-term trend towards higher levels of volatility.

We proceed in this paper as follows. We first elaborate on the process of increasing volatility, and the role of the economy in determining voter behaviour. Subsequently, we provide more detail on how the data on volatility used in this paper were measured, before elaborating on statistical methods and results. We end with some concluding remarks and suggestions for further research.

2.   Literature

2.1.   Increasing volatility?

Ever since the 1970s, scholars have pointed out that electoral results and voting behaviour are becoming increasingly unstable. Pedersen (1979) is a seminal author in this regard, as he argued against the notion of frozen party systems, which was prevailing since the work of Lipset and Rokkan (1967). Pedersen's findings were soon followed by other empirical work that indicated increasing levels of electoral volatility in Western democracies (Crewe and Denver, 1985; Dalton *et al*, 2000; Drummond, 2006).

At first, the argument of an increase in volatility was not readily accepted in the literature. Mair (1993: 123) for example explicitly questioned the findings of increasing volatility and called the image of electoral change *'largely mythical'*. Mair's analyses clarify that when broadening the time frame, the changes noted by the end of the 1970s were not that exceptional at all. Rather, it is the stability of European party systems during the 1960s that turns out to be historically unique (Drummond, 2006).

The increase in electoral volatility noted by the end of the 1970s was strongly debated at first. Ever since, however, empirical evidence on increasing instability has further accumulated. Furthermore, the trend towards electoral volatility identified by the end of the 1970s seems to have continued throughout the nineties and well into the 21st century (Bischoff, 2013; Dalton *et al*, 2000; Drummond, 2006; Gallagher, Laver and Mair, 2011; Mair, 2005, 2008). Even Mair (2005, 2008) later on came to acknowledge the presence of an evolution towards electoral instability and a rise of the proportion of floating voters all over Europe. As such, the rise in electoral volatility is considered as an indicator for the alleged trend of dealignment in Western Europe. The aggregate-level findings of an increase of net volatility have therefore been related to well-documented trends as a decrease in turnout levels (Franklin, 2004), a decline in party membership (van Biezen, Mair and Poguntke, 2012; Hooghe & Kern, 2015), an increase in split-ticket voting and deciding ever later during the electoral campaign what party to vote for (Dalton *et al*, 2000).

While the increase in volatility noted in the 1970s has been placed into perspective by looking at trends over a long period of time, a common approach to make the case for high levels of volatility in the 1990s and the 21st century is to present average volatility scores per decade (Bischoff, 2013; Dalton *et al*, 2000) or to focus attention on extreme volatile elections in the recent era (Gallagher *et al*, 2011; Mair, 2005). Before moving towards explaining net volatility over time, we therefore first provide a descriptive overview of the evolution of volatility at an aggregate level.

2.2.   *The impact of the economy*

The theory of economic voting can be considered as one of the most influential theoretical foundations in the research on voting behaviour. In essence, the assumption is that voters hold politicians accountable for the performance of the national economy by rewarding and punishing them in the voting booth (Key, 1966; Lewis-Beck and Stegmaier, 2000). Empirical evidence for his relation between the state of the economy and voting for incumbents is abundantly available. With respect to the micro-level foundations, the literature on how individuals vote according to the economy extends beyond the Anglo-Saxon countries, where the theory originated. In multiparty democracies as well, there are clear indications of economic voting (Lewis-Beck and Stegmaier, 2000; Nadeau, Lewis-Beck and Bélanger, 2013). Duch and Stevenson's (2008: 337-338) investigation of the economic vote in a large number of countries, for example, clarifies that even though the magnitude of the economic vote varies from country to country, economic voting is present and *'pervasive'* in Western democracies. Investigating the economic vote for parties separately in 15 European countries, van der Brug, van der Eijk and Franklin (2007: 136) as well conclude that economic voting in this set of countries is *'widespread'*. At a macro-level, the evidence for a link between the economy and electoral results is somewhat more mixed. On the aggregate, hence, it seems that there is substantial contextual variation in the impact of the economy (Bengtsson, 2004; Chappell and Veiga, 2000; Powell and Whitten, 1993). Recent work, however, offers some compelling evidence of a strong macro-level link between the state of the economy and incumbent parties' electoral results (Dassonneville and Lewis-Beck, 2014).

While most of the literature on economic voting focuses on the electoral performance of incumbents (Lewis-Beck and Stegmaier, 2000; Lewis-Beck, 2006), on each of the parties separately (van der Brug, van der Eijk and Franklin, 2007) or on parties with a specific ideological orientation (Dassonneville and Lewis-Beck, 2013), it can be argued that the state

of the economy will have an effect on vote switching in general. Söderlund (2008), for example, has pointed out that economic considerations not just have an effect on an incumbency vote, but that they might also determine the likelihood to vote for other political parties. At an individual-level, the mechanism would be one by which voters stick to their previous vote choice when the economy is performing well. In a context of economic downturn, by contrast, voters are more likely to desert their previously preferred party. They could do so, first, because they want a policy change (Tavits, 2005). Second, the state of the economy can lead voters to vote for new and emerging parties that offer an alternative to the party previously voted for (Powell and Tucker, 2014; Roberts and Wibbels, 1999). Third, they can have previously voted for the incumbent and now want to 'punish' the incumbent for the state of the economy (Mainwaring and Zoco, 2006; Roberts and Wibbels, 1999). The presence of a reward-and-punishment mechanism therefore leads to the expectation of higher levels of volatility when voters hold incumbents accountable for worsening economic conditions. It is important to point out, however, that this process should not be symmetrical: the reaction to an economic downturn (punishing incumbents) has to be much stronger than the reaction to economic prosperity for the aggregate-level pattern to be present (Powell and Tucker, 2014). The economic voting literature offers quite some individual as well as aggregate level evidence of a grievance asymmetry (Dassonneville and Lewis-Beck, 2014; Nannestad and Paldam, 1997; Singer 2011), leading to the expectation that there should be more party-switching as the economy worsens. At an aggregate level, this of course implies that net volatility too can be related to economic indicators. As Roberts and Wibbels (1999: 577) have argued: "*Volatility is a cumulative function of individual vote shifts – presumably made in response to retrospective evaluations of economic performance – (…) electoral outcomes can be used to test the effect of national economic performance on aggregate shifts in the electorate*".

Focusing on an aggregate level this means we expect a relation between economic indicators and the level of electoral volatility. Empirical research has shown that both in established and in developing democracies levels of electoral volatility correlate with unemployment levels, inflation rates or GDP growth rates (Bischoff, 2013; Birch, 2003; Mainwaring and Zoco, 2002; Powell and Tucker, 2014; Roberts and Wibbels, 1999). Even though some scholars have qualified the effect of the economy by indicating that economic effects are relatively small (Epperly, 2011; Mainwaring and Zoco, 2002) our hypothesis is:

> *Hypothesis 1:* There is a negative association between economic growth and the level of electoral volatility.

As we already indicated, partisanship and partisan identity should be considered as a buffer, isolating party choices from the impact of changing economic circumstances. There is a strong consensus that political systems are witnessing a process of dealignment over the last decades, with weakening ties between citizens and political parties (Berglund, Holmberg, Schmitt and Thomassen, 2005; Crewe and Denver, 1985; Dalton, 1984; Dalton *et al*, 2000). This is apparent from empirical evidence showing that the number of people identifying with a party has decreased in Europe (Dalton *et al*, 2002; Kayser and Wlezien, 2011). As partisanship is a contested concept in a European context (Thomassen and Rosema, 2009), it is important to note that the impact of traditional cleavages on vote choices as well has been found to be waning (Evans and Tilley, 2011, 2012; Franklin, Mackie and Valen, 2009). Given the importance of both partisanship and cleavages in the vote choice process, the demise of both elements is expected to lead to a proliferation of the phenomenon of an unencumbered

voter. Within this segment of the electorate, the whole 'funnel of causality' leading to a vote choice is likely to be affected.

Following this line of thought, several studies assume a growing impact of short-term effects on vote choices, including economic effects (Dalton *et al*, 2000; Franklin, Mackie and Valen, 2009; Freire and Costa Lobo, 2005; Walczak, van der Brug, and de Vries, 2012). If voters are no longer encumbered with party loyalties, they are better able to hold political parties accountable for the state of the economy in their country. This evolution could imply that the judgment of voters on the past performance of incumbents becomes more important in the vote choice process, *"producing a deliberative public that more closely approximates the classic democratic ideal"* (Dalton *et al*, 2000: 60). Kayser and Wlezien (2011) provide convincing individual and aggregate-level evidence suggesting that economic voting effects are indeed stronger when partisanship is abated. Considering that the 'frozen party systems' of Western Europe (Lipset and Rokkan, 1967) have gradually eroded over time we expect the impact of the economy to have increased over time. The expectation is therefore that vote shifts from one election to another are more strongly driven by economic conditions than they were decades ago, when party identities still were a stronger determinant of vote choice during elections. Our second hypothesis therefore reads:

> *Hypothesis 2:* The relationship between economic indicators and electoral volatility has become stronger over time.

2.3. *Institutional factors*

Besides the economy, various other factors have been found to explain differences in levels of volatility between countries and over time, and it is obvious that these have to be included as

control variables in the analysis. As already pointed out by Bartolini and Mair (1990), characteristics of electoral systems have a strong impact on electoral stability. More proportional systems have been found to be more volatile, and it is likely that this is caused by the fact that proportional systems are more open to the entry of new parties, allowing for more options to switch (Bartolini and Mair, 1990). Others, however do not find a significant effect of proportionality on volatility when controlling for other variables (Bischoff, 2013; Powell and Tucker, 2014). Relatedly, district magnitude has been found to affect volatility, with higher degrees of instability as district magnitude increases (Powell and Tucker, 2014). Besides the proportionality of an electoral system, changing electoral systems in general has been argued to increase volatility (Bartolini and Mair, 1990), but here findings are not robust across the literature (Bischoff, 2013). Furthermore, presidential systems are hypothesized to foster volatility because the personalization of the vote that goes along with presidentialism offers insufficient support for the establishment of stable linkages between voters and parties (Mainwaring and Zoco, 2007). The empirical evidence, however, does not always to support this hypothesis (Powell and Tucker, 2014).

The party system too has been argued to have an impact on the degree of volatility. Several scholars have demonstrated that a more fractionalized party system is associated with higher levels of electoral volatility (Bartolini and Mair, 1990; Bischoff, 2013; Mainwaring and Zoco, 2007; Powell and Tucker, 2014). One explanation for this finding is that having more parties to choose from increases the number of options that is available to voters and hence volatility. Pedersen (1979) furthermore argued that with more parties in a party system, the ideological distance between parties decreases, rendering it easier for voters to switch to political parties with a related ideological profile.

Another contextual factor that has been found to affect volatility is the time since the previous election. The more time has passed between two consecutive elections, the higher are levels of volatility (Bischoff, 2013). Finally, turnout as well is expected to be related to volatility. When turnout is high, voters with only weak attachments to political parties as well participate in the election and their party preferences change more easily (Bartolini and Mair, 1990; Birch, 2003).

If we want to test our hypotheses about the effect of economic indicators on electoral volatility in a valid manner, it is important therefore that we take these control variables into account.

3.   Measuring electoral volatility

Pedersen (1979) developed an index allowing researchers to investigate and compare change and stability for different party systems. His index of net volatility has become very influential in the literature on party systems and electorates (Katz, Rattinger and Mair, 1997). As Powell and Tucker (2014: 124) point out, there is a *"near-uniform consensus"* on using Pedersen's formula for measuring volatility. As compared to individual-level analyses of electoral instability, the main advantage of the Pedersen index is its generalizability, which allows for valid comparisons between countries and over a long period of time (Bartolini and Mair, 1990).

The Pedersen index of net volatility is calculated by means of data on the vote shares of parties in two consecutive elections. The index first sums all absolute differences in the electoral results of parties. Given that wins for some parties automatically equal losses for

other parties, this total amount of change is then divided by two. As a consequence, the Pedersen index of net volatility ranges between 0 and 100 (see the equation below).

Pedersen index $= \frac{1}{2}*\left\{\sum_{i=1}^{n} |\Delta\, p_{i,t}|\right\}$

with $p_{i,t}$ being the vote share of party i at election t and n being the total number of parties

While Pedersen's formula to calculate net electoral volatility is straightforward, some problems do arise when using the index. A major source of difficulties originates from name changes, mergers and splits of political parties (Ocaña, 2007; Powell and Tucker, 2014). Sikk (2005) lists several possibilities to deal with political parties merging and splitting when calculating net volatility. As a preferred option he mentions calculating the difference between a party's vote share and the summed vote share of its predecessor parties before a merger, or the successor parties after a split. We follow this suggestion for the calculations of net volatility presented in this paper. The electoral data used to calculate net changes are derived from Mackie and Rose (1991) and they were updated with information from the political data yearbook of the *European Journal of Political Research* and with election reports in *Electoral Studies* and *West European Politics*. This information was complemented with data from on-line sources covering the most recent elections (www.parlgov.be and www.parties-and-elections.eu). Another issue that has to be addressed is how to deal with the 'other' category in many electoral data (Powell and Tucker, 2014). Given that information on election results for the established democracies in Western Europe is available at high levels of detail, we combined the parties that obtained less than 1% of the vote to a rest category of 'other'.

It has to be acknowledged that the Pedersen index has received quite some criticism. A first disadvantage of the index is that it does not take into account what parties voters switch to. Furthermore, the fact that the aggregate level is focused upon is seen as a major shortfall, because there is assumed to be more electoral switches in the electorate than what is clear from looking at electoral results (Katz *et al*, 1997). Additionally, Powell and Tucker (2014) have shown that the fact that the Pedersen index conflates volatility caused by the entry of new parties and volatility caused by voters switching between existing parties is especially troublesome when investigating party system change in post-communist countries. Nevertheless, the parsimony of the Pedersen index is much appreciated and it is therefore often used to provide insights in trends over time and differences between countries (Bartolini and Mair, 1990; Bischoff, 2013; Dalton *et al*, 2000; Gallagher *et al*, 2011). Therefore, our focus on established democracies in Western Europe, the political context for which the index was originally designed, still makes using the Pedersen index the appropriate choice for investigating trends in volatility over time and between countries.

Volatility as operationalized by Pedersen is an aggregate-level measure. Previous research, however, has indicated that the index correlates strongly with data for gross individual-level volatility, as we would expect (Bischoff, 2013). While it has to be remembered that both measurements obviously are not identical, we believe that investigating net volatility can provide valuable insights in changes in voting behaviour over time.

4.   Data and methods

4.1.   *Geographical and time-focus*

Given our focus on a process of changing economic effects over time, we limit our geographical scope to established democracies in Western Europe. By doing so, we do not

include the post-communist democracies into the time series. Throughout the time period covered, countries in Western- as well as Southern-Europe have gone through a process of democratization in which electoral behavior gradually stabilized. While this could be thought to hold for the post-communist democracies as well, previous research has indicated that volatility in these countries is at an extreme level (Epperly, 2011). Given that we are not interested in explaining differences between East and West with regard to volatility, the sample is restricted to the more homogeneous set of countries in Western Europe.

In this paper we investigate the trend in net volatility for West European democracies from 1950 onwards. Even though Bartolini and Mair (1990) make a strong argument for including the interwar period as well, we limit our time frame to the post-1950 period. We do so, first because rather than replicating what has already been shown by other scholars, we aim at assessing whether the trend towards increasing volatility still holds or is perhaps more pronounced during the last decades. Second, when analysing the causes of electoral volatility at an aggregate level, we are mainly interested in fundamental societal and political changes and not in the impact of disruptive events like World War I or World War II (Pedersen, 1979). We calculate net volatility from 1950 onwards, restricting the timeframe to a stable democratic setting. As such we do not compare elections across disruptive events, such as the Second World War or its immediate aftermath. A similar approach is followed for the newer democracies in Southern Europe, where the first index calculated is for the second election after democratization. As Powell and Tucker (2014) argue, for reasons of comparability, it is more straightforward to limit the analyses to parliamentary elections only, which is in line with what other scholars have done.

4.2.   *Measures of the independent variables*

Most importantly, we are interested in the effect of the economy on volatility. In the economic literature in general, different indicators are used to capture the effect of the economy. In this paper, we test for the impact of GDP growth rates, unemployment rates and inflation.[1] We follow Bischoff (2013) and calculate annual indicators of the election year and we weigh these by the election month.[2] Furthermore, as is customary in economic voting studies, we take into account a one-year lead time for the economic indicator. The longest time series of economic data available is for GDP growth rates. Given our focus on change over time and the relatively small number of cases, GDP clearly has advantages over the other indicators for analytical purposes. For the interaction effects we hence focus on that indicator only. Doing so, we also follow Kayser and Wlezien (2011: 376) who considered GDP to be *"the most general objective measure of economic welfare"*.

For the institutional variables, as a measure of the proportionality of the electoral system, we include the Least Squares Index of disproportionality of the election. This index is a measure of the degree of proportionality to which votes are translated into seats (Gallagher, 1991). Data come from Gallagher's database on electoral systems (Gallagher, 2013). Additionally, we control for the average district magnitude in a country, using data from Bormann and Golder's Democratic Electoral System dataset (Bormann and Golder, 2013).[3] Following Powell and Tucker (2014) we use the log of this measure in the analyses. Furthermore we include a dummy variable for electoral system changes by means of which we take into account whether a country changed to a proportional, majoritarian or mixed system. This variable is created using information from the Bormann and Golder (2013) dataset. Given that there is only one presidential system – Cyprus – in the set of countries analysed, we cannot reliably assess the impact of presidentialism on volatility.[4] As a measure for party system fractionalization, we include the effective number of parties, lagged by one election. Data on

the effective number of parties comes from Gallagher (2013). Figures on turnout in elections, finally, come from the IDEA database (www.idea.int).

We furthermore include a number of time variables as well. We add a time variable which we operationalize as time elapsed since 1950. We also include a measure of the time passed since the previous election in the analyses. Descriptive statistics of all independent variables included can be found in Appendix 1.

4.3.   Models

The dataset constructed for testing our hypotheses can be characterized as Time-Series-Cross-Section (TSCS) Data (Beck and Katz, 1995). We make use of panel data with elections nested in countries. As is clear from Table 1 the data are unbalanced with between 6 and 23 elections during the time period being covered in 21 different countries.

Table 1. Countries and elections included in the analysis

Country	Time frame	# Elections
Austria	1953-2013	19
Belgium	1954-2010	18
Cyprus	1985-2011	6
Denmark	1953-2011	23
West Germany	1953-1990	11
Finland	1954-2011	16
France	1956-2012	15
Germany	1994-2013	6
Greece	1977-2012	14
Iceland	1953-2013	19
Ireland	1954-2011	17
Italy	1953-2013	16
Luxembourg	1954-2013	13
Malta	1966-2013	11
Norway	1953-2013	16
Portugal	1976-2011	13
Spain	1979-2011	10
Sweden	1952-2010	19
Switzerland	1955-2011	15
The Netherlands	1952-2012	19
United Kingdom	1955-2010	15

Countries and elections included, Western Germany before and Germany after unification are considered different countries.

We are mainly interested in the impact of the economy on electoral volatility in countries and hence in within-country effects. We know however, that other country-specific and time-unvarying factors affect levels of volatility as well. As Mainwaring and Zoco (2007) argue, for example, the historical timing of when democracy was established in a particular country affects how stable electorates are. In order to control for these and other country-specific effects, we opt for a fixed effects modelling approach. This is considered as an appropriate method to account for an omitted variable bias (Allison, 2009).

Before analysing TSCS data by means of a fixed effects OLS regression, we have to test two crucial assumptions. First, that the errors are non-heteroskedastic and second that the errors are not serially correlated (Beck and Katz, 1995). A Woolridge test of autocorrelation on the panel dataset used for estimation indicates that autocorrelation is indeed to be taken into

account in the analyses. (p-value: 0.011) (Drukker, 2003). In order to correct for the violation of temporal correlation we present the results of a Prais-Winsten regression with country-fixed effects, with first order autocorrelation (AR1) specified. Adding country-fixed effects to the model has the additional advantage of controlling for omitted variables in the analyses. The time variable characterizing the time series is the number of elections since 1950 (Epperly, 2011). The autocorrelation component hence takes into account that subsequent elections are likely to be similar in terms of levels of volatility. Additionally, an LR-test for panel-heteroskedasticity (p-value: 0.000) indicates that we have to account for this issue as well (Wiggins and Poi, 2013), which is why we report panel corrected standard errors (Beck, 2001).[5] Self-evidently, other model specifications as well can be thought of to analyse TSCS-data. In order to validate the robustness of our findings we therefore ran the analyses for different modeling specifications (OLS, Huber-White estimator, generalized estimation equation and mixed effects model) and found the effects of interest to be robust with regard to sign, size and significance level (results available from the authors).

5.   Results

We first provide a descriptive overview of the evolution of volatility over time. Figure 1 graphically presents the Pedersen index for all countries in our dataset from 1950 up to the most recent election. Looking at the trends for different countries does not suggest a universal trend of increasing volatility across Western Europe. There is quite some between-country heterogeneity in the evolution over time. While for some countries there is a clear and sharp increase in volatility (e.g., Iceland), the Pedersen index remains rather stable or even decreases over time in other countries (e.g., Luxembourg). Overall, the data hence show that even though the literature tends to agree on a significant increase of volatility in European party systems, levels of volatility vary strongly and the over-time trend is more moderate and

differs from country to country as well. This overview of country-specific trends illustrates the need to take into account contextual-level factors when investigating the link between the economy and volatility. We should take into account that differences in terms of the openness of electoral systems as well as differences at the level of the party system are affecting electoral volatility.

Most importantly it is only for the most recent decade that an increase in volatility is clearly present. Levels of net volatility post-2000 are quite elevated in most of the countries included in this study. It is apparent that the highest levels of net volatility are in elections in the 21st century in nearly all countries in the sample, with the notable exception of some countries in Southern Europe that made a transition toward democracy from the 1970s on (Spain, Portugal and Cyprus). Interestingly, this closer look at volatility by country also makes clear that the 1960s and 1970s were a time of remarkable electoral stability in Western Europe, despite the fact that toward the end of the 1970s scholars increasingly started to write about allegedly rising levels of electoral volatility.

Figure 1. Pedersen index in legislative elections in Western Europe, 1950-2013
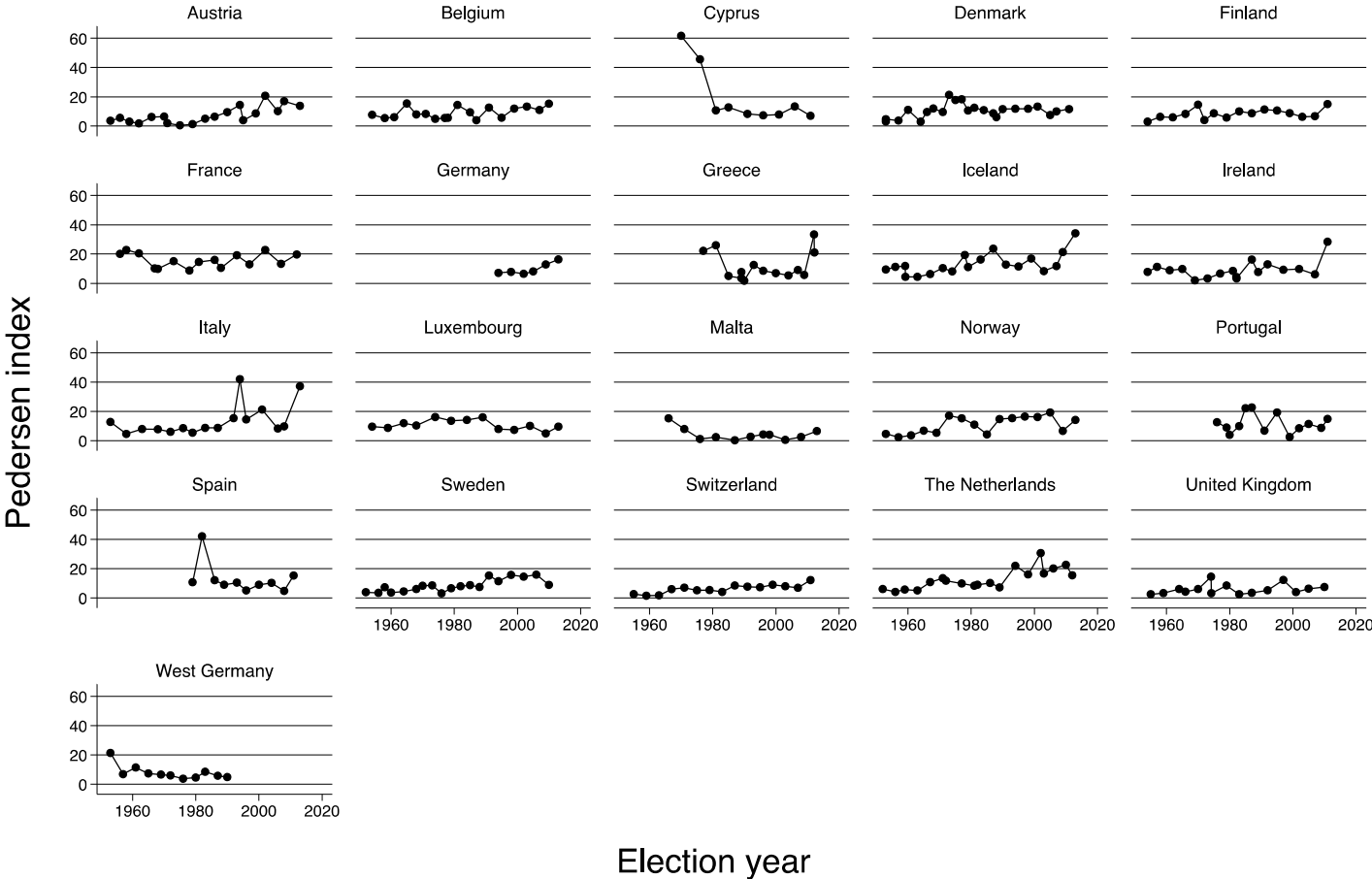
Pedersen index of net volatility by elections and by country (The Federal German Republic before and Germany after unification are considered different countries).

For assessing the extent to which we can indeed observe an over-time increase of net volatility in Western Europe we pool the data for the Pedersen index in a single dataset. In the multivariate analysis presented in Table 2, we add a measure for the time elapsed since 1950. Besides this time variable, we control for the institutional factors that the literature suggests to have an effect on the level of volatility. The model fit statistics are encouraging and the R^2-value indicates that by means of our independent variables and the country-dummies, we succeed in explaining 32% of the variance in net volatility in Western Europe.

Assessing the impact of these institutional variables first, we can observe that volatility is significantly higher in disproportional electoral systems. The literature suggests that there is more strategic voting (Blais and Gschwend, 2010), stronger reward-and-punishment mechanisms (Powell and Whitten, 1993) and weaker party attachments (Bowler, Lanoue and Savoie, 1994), in disproportional electoral systems. All these factors can be thought to induce party switching at an individual level. This aggregate-level analysis of volatility, therefore, provides suggestive evidence supporting these individual level mechanisms linking disproportional electoral systems to higher levels of volatility. It does go counter to the claim made by Bartolini and Mair (1990) that it is the more proportional electoral systems where volatility is higher. The increased opportunities for holding the majority accountable for its performance, apparently more than counterbalance this effect of proportionality. Next, and in line with what the literature suggests, a higher effective number of parties is associated with higher levels of net volatility. Controlling for these factors, we do not find a significant effect of district magnitude or electoral system change on volatility.[6] For turnout, finally, we do not find a significant impact on net volatility.

The main variable of interest in this analysis, however, is the time trend. As can be seen in the results in Table 2, there is a positive and significant effect of time on net volatility in Western Europe. With an estimated coefficient of 0.08, this implies that it takes 10 years of time for the Pedersen index of net volatility to increase one unit. Over the whole period covered by our analyses (63 years), the estimated increase is 5 units. Given that the mean level of net volatility in the sample is 10, a 5 points increase can be considered substantial.

Table 2. Explaining net electoral volatility in Western Europe

	B (s.e.)
Least squares index of disproportionality	0.657[***]
	(0.165)
Effective Number of Parties$_{e-1}$	1.032[**]
	(0.390)
Average district magnitude (ln)	-0.396
	(1.111)
Electoral system change	2.771
	(2.583)
Years since last election	0.596
	(0.319)
Years since 1950	0.076[**]
	(0.028)
Turnout	-0.002
	(0.072)
Constant	-0.799
	(6.729)
N elections	311
N countries	21
R^2	0.323
χ^2	97,309.88[***]
ρ	0.155

Prais Winsten AR1 regression with country fixed effects (not shown). Panel corrected standard errors are reported. Significance levels: * $p<0.05$; ** $p<0.01$; *** $p<0.001$. *e-1* refers to the previous election.

The country-specific trends in Figure 1 already indicated that the increase of volatility over time, which is often taken for granted in the literature, is by no means a uniform or general trend. The country-specific patterns illustrate quite some variation in the evolution of net volatility over time. The pooled analysis indicates that, overall, levels of net volatility in

Western Europe have indeed significantly increased since 1950. These observations lead to some qualification and provide indications of a moderate and non-uniform trend.

Looking at Figure 1 and comparing the index of net volatility for the most recent elections with the trend over time already suggests an impact of the current economic crisis on electoral stability. In many of the countries included, the Pedersen index is somewhat to substantially higher in elections after 2008 as compared to the previous period. Furthermore, the countries for which the difference is quite pronounced (such as Greece, Iceland, Ireland or Italy) are all countries that were hit most severely by the economic crisis. Adding economic indicators to the multivariate analysis will shed light on whether we can indeed attribute this apparent surge in volatility to economic conditions.

In Model 1 in Table 3, we add the lagged GDP growth rates to assess the impact of the economy on net volatility. The results indicate a significant negative effect of GDP growth on volatility, indicating that as the economy grows, volatility declines. As Mainwaring and Zoco (2007) indicate for a more diverse sample of countries as well, the size of the effect is rather modest, though. For each 1% increase of GDP in the year preceding the election, net volatility decreases 0.3 units. While the size of the estimated effect is moderate, the results provide evidence confirming our first hypothesis. The effects of disproportionality and the effective number of parties on volatility found in the previous analysis are robust even after including GDP growth rates to the equation. Furthermore, controlling for the impact of the economy on net volatility, we still observe a significant time trend although in this model the time effect is slightly weaker than in the previous analysis. As the number of parties in a system increases, the clarity of responsibility is expected to decrease (Powell and Whitten, 1993). We could therefore assume the link between the economy and levels of volatility to be weaker as the

number of parties is higher. This possibility was tested by the addition of an interaction term between the number of parties and GDP growth, but this was found not to be significant, so we can conclude that this effect is not mediated by the size of the party system (results available from the authors upon request).

In Model 2 and Model 3, we additionally add inflation and unemployment rates. For both indicators, the estimated effect is in expected directions, with more inflation and higher unemployment rates being linked to significantly higher levels of volatility. Note, however, that significance levels drop for these indicators, which is partly a consequence of the fact that the sample size is further reduced as these additional economic indicators are included.

Besides investigating the effect of economic indicators measured at a one year lead time, one could also argue that it is change in economic conditions under the incumbent government or the incumbent's performance compared to its predecessor that matters (Roberts and Wibbels, 1999). Preliminary analyses using such indicators for change in economic conditions, however, did not provide evidence for this claim (results available from the authors upon request). The fact that short-term indicators are significantly linked to electoral results, but long-term indicators not, is in line with previous research (Erikson and Wlezien, 2012; Hibbs, 1987). This finding has been interpreted to be caused by the fact that voters either are 'myopic' and tend to forget about the state of the economy at earlier points in time or that voters are rational and perceive the most recent economic conditions to be signalling how the incumbent would perform if he would stay in office (Erikson and Wlezien, 2012). Furthermore, investigating non-linear effects of economic conditions on net volatility by means of the inclusion of squared terms as well did not offer strong evidence of such a pattern.

Table 3. Explaining net electoral volatility in Western Europe

	Model 1	Model 2	Model 3
	B	B	B
	(s.e.)	(s.e.)	(s.e.)
GDP growth rate$_{t-1}$	-0.277*	-0.453**	-0.967***
	(0.127)	(0.160)	(0.216)
Inflation$_{t-1}$ (ln)		0.815+	2.364*
		(0.418)	(1.023)
Unemployment$_{t-1}$			0.296+
			(0.157)
Least squares index of disproportionality	0.666***	0.854***	1.160***
	(0.164)	(0.173)	(0.248)
Effective number of parties$_{e-1}$	1.038**	0.576	0.139
	(0.390)	(0.392)	(0.617)
Average district magnitude (ln)	-0.329	-1.699	-1.121
	(1.111)	(1.038)	(1.463)
Electoral system change	2.767	3.057	7.456*
	(2.545)	(2.440)	(3.255)
Years since last election	0.629*	0.773*	0.552
	(0.310)	(0.339)	(0.499)
Years since 1950	0.057*	0.058	0.059
	(0.029)	(0.039)	(0.091)
Turnout	-0.002	-0.047	-0.167
	(0.071)	(0.090)	(0.156)
Constant	0.617	7.715	18.570
	(6.687)	(8.414)	(15.880)
N elections	311	257	116
N countries	21	19	17
R^2	0.332	0.380	0.639
χ^2	15,338.19	1,017.79	4,390.90
ρ	0.157	0.110	-0.170

Prais Winsten AR1 regression with country fixed effects (not shown). Panel corrected standard errors are reported. Significance levels: + $p<0.1$; * $p<0.05$; ** $p<0.01$; *** $p<0.001$. *t-1* refers to the previous year, *e-1* refers to the previous election.

Clearly, the economy affects volatility, although the effect is modest. Given negative values for GDP growth rates across Europe over the last few years, it should not come as a surprise that levels of volatility were high in recent elections in a number of countries. The question remains, however, whether the economy is becoming a more powerful predictor of volatility over time and whether negative economic conditions are associated with more profound shifts in vote shares than was the case a few decades ago.

Building on the available evidence of decreasing partisanship and a shift towards short-term voting motives over time, we have hypothesized that the relation between the economy and vote shifts has become stronger over time. Given that GDP data are available for a more extended time period than the other economic indicators, we focus on GDP rates only in the remainder of this article. In order to test the hypothesis of change over time we interact GDP growth rates with the time variable. This time variable is operationalized as the time elapsed since 1950.

The results in Table 4 provide evidence confirming our second hypothesis, as the interaction effect is negative and significant. As time goes by, economic growth obviously becomes more effective in depressing volatility. The results of our analysis indicate that as time and therefore dealignment proceeds, the economy starts to affect electoral volatility more intensively. As can be read from the Table, the estimated main effect of GDP growth on volatility is .38, while it's interaction with time is -0.02. The implication of these estimates is that the net effect of GDP growth on volatility is positive in the earlier time period, is zero after 19 years in the time series (0.38+(-0.02*19)) and becomes negative from then onwards. Post-1970 only, therefore, is the net effect of GDP growth on volatility negative.

Taking into account a process of increasing effects of the economy, most other effects turn out to be robust. Both disproportionality and the number of parties are still significantly related to levels of net volatility. The number of years since the previous election is still significant at a 0.1-level in this model. As a point of nuance to the analyses, we should add that even though the effects of the economy and of the interaction with time are in expected directions, the added explained variance of these indicators is rather low. Our preferred

modeling option (Prais-Winsten with country-fixed effects) does not allow us to assess model

AIC statistics, but this is possible when performing OLS Huber White robust estimations.

Doing so, the R^2 statistics increases marginally as GDP growth and its interaction with time

are added while the AIC-statistic decreases somewhat (results available from the authors).

Table 4. Over-time change of economic effect on volatility

	B (s.e.)
GDP growth rate$_{t-1}$	0.378
	(0.256)
Least squares index of disproportionality	0.597[***]
	(0.163)
Effective Number of Parties$_{e-1}$	0.846[*]
	(0.377)
Average district magnitude (ln)	-0.593
	(1.086)
Electoral system change	2.742
	(2.473)
Years since last election	0.619[*]
	(0.305)
Years since 1950	0.122[***]
	(0.035)
Turnout	0.004
	(0.070)
GDP growth rate$_{t-1}$*Years since 1950	-0.019[**]
	(0.006)
Constant	-1.533
	(6.671)
N elections	311
N countries	21
R^2	0.350
χ^2	773.53[***]
ρ	0.157

Prais Winsten AR1 regression with country fixed effects (not shown). Panel corrected standard errors are reported. Significance levels: * p<0.05; ** p<0.01; *** p<0.001. *t-1* refers to the previous year, *e-1* refers to the previous election.

The assumption we make is that dealignment is the intervening mechanism causing a

strengthening impact of the economy on volatility. As dealignment has been found to be

strong and present across Western Europe (Mair, 2005), the interaction effect should be

present in all countries covered. A mixed effects model in which the interaction effect was allowed to vary between countries, indicated that the variation of this effect at the country level is close to zero. Just as dealignment, therefore, the interaction effect is found across Western Europe, which is compatible with the claim that dealignment is an intervening mechanism. Additionally, given that estimations on a small-N sample might be sensitive to the impact of particular countries or outliers, we verified the robustness of our results by estimating the main model while at each time excluding another country out of the sample. Sign and size of the interaction effect were robust to doing so and this interaction effect was significant in each of these estimations. Furthermore, excluding the least and most volatile elections from the sample does not affect the robustness of this effect either.

The effect of economic growth on levels of volatility thus grows stronger over time, and we can also illustrate this in a graphically appealing manner. In Figure 2, we plot the estimated effects of GDP on volatility for different time periods.[7] The upper left quarter of the graph illustrates the estimated effect of the economy on the Pedersen index in 1950. In that era, at first sight we observe a positive relation, but the safe conclusion is that the state of the economy did not have a significant effect on volatility, as can be observed from the wide confidence intervals. As is evident from the plot in the upper right quarter, the estimated effect of GDP growth rates on volatility in 1970 is close to zero. By 1990, we observe how the estimated effect of GDP growth rates on the Pedersen index is in the expected direction (negative) and significant. Two decades later, in 2010, we observe a strong and sharp decrease of net volatility as economic growth increases. The graph illustrates how over time a mechanism of accountability has developed, as voters tend to react more strongly now to an economic downturn than they did half a century ago. While immediately after World War II political parties were not held accountable for an economic downturn, this seems to be the

case by 2010. Although the results of the current analysis do not allow us to draw any final conclusions in this regard, it is very tempting to relate this trend to the simultaneous decline of party alignment, a process that leaves voters more open to other voting motives, like satisfaction on economic performance.

Figure 2. Simulated interaction economic effect and time
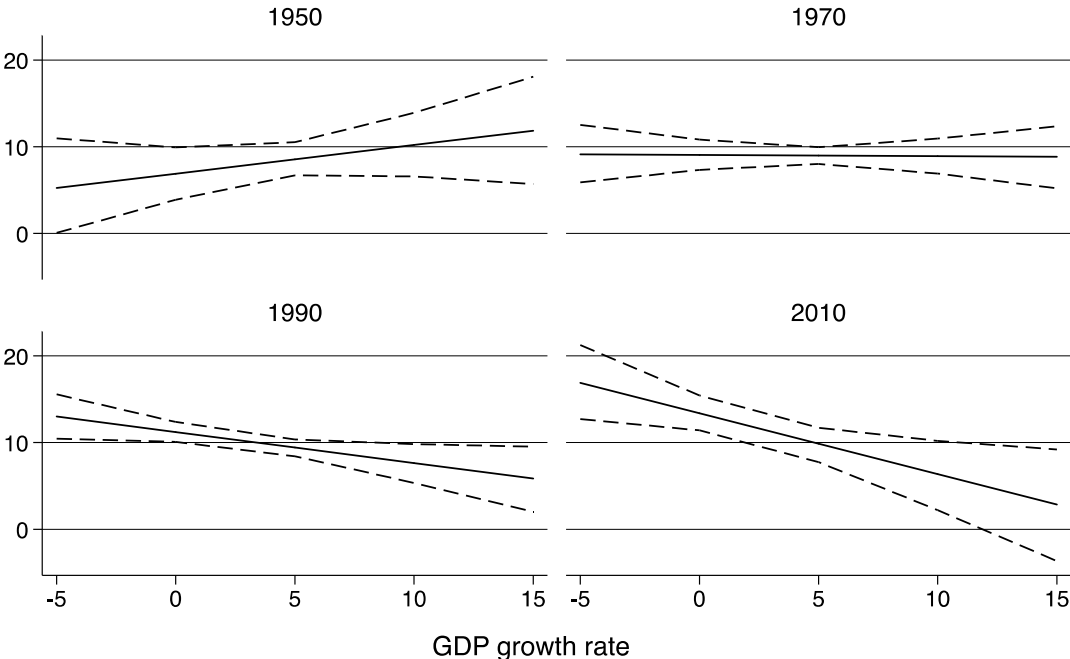
Simulated effect and 95%-confidence intervals of GDP on net volatility over time. Simulated quantities of interest obtained through Clarify in Stata after running an OLS Huber White estimation. All other variables set at their mean values.

Investigating the evolution over time of the relation between the economy and net volatility clarifies that the association between negative economic growth and high levels of volatility is a recent phenomenon. This comparison over time allows us to explain why some of the older research only found a very modest effect of the economy on volatility, and it is unlikely that these older insights are still valid in the current era.

6. Discussion

We started this paper with the observation that extreme levels of net volatility in a number of recent elections across Europe seem to coincide with a period of severe economic downturn. This anecdotal evidence leads us to investigate what impact the economy has on electoral shifts at an aggregate level. Looking at Western Europe, we do observe an increase of net volatility over time. While up until 2008 the rise in electoral volatility has been modest, in the most recent elections, a number of countries have experienced a sharp increase in volatility levels.

Therefore, we first investigated the relation between the economy and volatility in general. Doing so by means of a focus on GDP growth rates, we found a significant effect of the economy on net volatility, confirming our hypothesis. This finding is not surprising as it confirms what other scholars explaining volatility have already demonstrated. In line with previous research, the overall effect of the economy on volatility is robust and significant, but its size is rather moderate. Nevertheless, it is clear that the recent surge in volatility across Western Europe can be partly explained by a deteriorating state of the economy.

Investigating the presence of an association between the economy and volatility, we additionally argued that this association should have grown stronger over time as other determinants of electoral behaviour have grown weaker. Partisan dealignment is expected to have liberated voters from stable party alignments, increasing the potential for the economy to affect electoral behaviour. The results of our analyses provide suggestive evidence for this mechanism, as the unencumbered voter is more likely to be affected by economic considerations. We have assumed that the process of dealignment is causing the change we observe and our results are compatible with this expectation. We have to note however, that without a direct test for this mechanism, we can only speculate about whether this is actually

what is driving change. Future research therefore, should find ways to more directly test whether it is indeed the increase of apartisans in the electorate that has strengthened accountability.

We do observe an over-time increase of economic effects, with significant mechanisms of accountability only present in the most recent decades. Electorates are becoming unstable and although the increase of volatility since the 1950s is rather modest, we do observe a remarkable surge of net volatility in the most recent elections. Even though a certain degree of stability is deemed essential for a healthy democracy (Bischoff, 2013; Söderlund, 2008), the demise of long-term loyalties between citizens and parties might have opened the door for mechanisms of accountability to affect voting behaviour and hence electoral results. Such an evolution would be in line with the trends as described in the more optimistic work of Dalton *et al* (2000) on the democratic character of current-day electoral behaviour. Our results indicate that, over time, economic effects on electoral volatility are becoming stronger. Self-evidently, we do not have any information about the *direction* of the shift in electoral preference. It is still very well possible that the rise in volatility is caused by voters switching, e.g., from one opposition party to another. In that case, higher levels of volatility would not be associated with a trend toward stronger accountability. But the least we can say is that our results are compatible with the occurrence of a more powerful accountability mechanism. If voters want to reward or punish the current government, they will have to change party preferences, and this normally means higher levels of volatility. If we would have found that levels of volatility are stable, or do not react to economic pressure, it would have been hard to imagine how economic accountability mechanisms could be at work. The fact that we find volatility to rise leaves open the possibility that this rise leads to, among other possible explanations, a strengthening of the process of accountability. As Key (1966) would have

argued, a first condition for the occurrence of a truly responsible electorate is that traditional voting motives that are not based on content or performance, should grow weaker over time.

While we find indications of an increased reaction of electorates to the state of the economy, more research is needed to understand the nature and consequences of this change. The suggestion of strengthened mechanisms of accountability is an optimistic suggestion. On the other hand, the link between worsening economic conditions and political instability might just as well be reflecting that economic crisis results in political disaffection (Schäfer and Streeck, 2013). Obviously, the fact that we do not offer a conclusion in this debate is a direct result of the fact that we are investigating net change, and not the direction of change at either the aggregate or on an individual level. Some questions therefore remain open. More specifically, do electorates reward and punish parties that are held to be responsible for the state of the economy? Or do social and economic grievances lead to a protest vote when the economy is caught in a downward spiral? If our assumption is correct, we should be able to find that incumbency effects will have grown weaker over time, especially in a period of economic downturn. The current results, therefore have to be supplemented with analyses on changes in individual level voting motives over time. Our results lead us to the hypothesis that considerations of partisanship should have declined over time, while on the other hand among these unencumbered voters economic voting motives should have become stronger over time. Testing that hypothesis more directly at the individual level, however, falls outside the scope of the current article.

Endnotes

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[1] Data for GDP come from the Total Economy Database, providing comparative economic data for a wide set of countries from 1950 onwards. Yearly data on unemployment and inflation come from the OECD database. For inflation, we include the logged inflation rate into the models.

[2] Following the formula proposed by Bélanger and Gélineau (2010: 98), which we slightly modify to ensure a one-year time lag for the economic indicators: $\rho=[\rho_{(t-2)} * (12-\sigma_{(t)})/12] + [\rho_{(t-1)} * (\sigma_{(t)}/12)]$, where ρ is the annual economic indicator, σ is the election month and t is the election year. Data for GDP come from the Total Economy Database, providing comparative economic data for a wide set of countries from 1950 onwards.

[3] The Bormann and Golder (2013) data run until 2011, several on-line election sources were consulted to complete the data on district magnitude for elections after 2011.

[4] It is important to point out that the results presented are robust to controlling for the impact of systems in the dataset that are either presidential (Cyprus) or semi-presidential (France and Portugal).

[5] This exact specification is also used by Kayser and Wlezien (2011) in their aggregate level analysis of the impact of partisanship on economic voting.

[6] While all the indicators related to the electoral and party system are clearly closely related, zero-order correlations between these indicators (Least squares index of disproportionality, $ENEP_{e-1}$, average district magnitude (ln) and electoral system change) are not too high. The Pearson correlation between district magnitude and the least squares index is -0.527, but other correlations are 0.2 or lower.

[7] Effects presented are quantities of interested from 1,000 simulated observations, obtained through the Clarify-command in Stata (King, Tomz and Wattenberg, 2000). Simulations based on OLS Huber White estimation.

Appendix 1. Descriptive statistics of independent variables

	N	Mean	Std. Dev.	Min.	Max.
GDP growth rate	311	3.14	2.65	-6.03	18.40
Least squares index of disproportionality	311	4.37	4.11	0.34	25.25
Effective Number of Parties$_{e-1}$	311	4.23	1.48	2.00	10.28
Average district magnitude (ln)	311	1.94	1.17	0.00	5.01
Electoral system change	311	0.03	0.17	0.00	1.00
Years since last election	311	3.60	1.14	0.00	6.00
Years since 1950	311	34.10	17.45	2.00	63.00
Turnout	311	80.96	11.13	42.25	97.16