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ARTICLE

Incumbent Tenure Crowds Out Economic Voting

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Abstract

Does the importance of the economy change during a government's time in office? Governments arguably become more responsible for current economic conditions as their tenure progresses. This might lead voters to hold experienced governments more accountable for economic conditions. However, voters also accumulate information about governments' competence over time. If voters are Bayesian learners, then this growing stock of information should crowd out the importance of current economic conditions. This article explores these divergent predictions about the relationship between tenure and the economic vote using three datasets. First, using country-level data from a diverse set of elections, the study finds that support for more experienced governments is less dependent on economic growth. Secondly, using individual-level data from sixty election surveys covering ten countries, the article shows that voters' perceptions of the economy have a greater impact on government support when the government is inexperienced. Finally, the article examines a municipal reform in Denmark that assigned some voters to new local incumbents and finds that these voters responded more strongly to the local economy. In conclusion, all three studies point in the same direction: economic voting decreases with time in office.

Keywords: economic voting; Bayesian learning; tenure; voting behavior; political psychology; comparative political behavior

The British parliamentary elections of 1997 and 2001 featured two very different incumbents. One was the Conservative Party, in power for eighteen years and headed by John Major, who had been a cabinet member for ten years and prime minister for the last seven. The other was the Labour Party, in power for four years and headed by relative newcomer Tony Blair. As British voters searched for clues in 1997 and 2001 about the quality of the incumbent, some probably considered the economic situation. Did the fact that these incumbents were so different affect what inferences they made about the economy? Did the fact that the incumbent party up for re-election in 1997 had been in power for almost two decades make voters consider the economy differently than in 2001, when the incumbent party had only been in power for four years?

Compelling answers to these questions cannot be found in the existing literature on economic voting, which has generally paid little attention to how differences in incumbent tenure moderate the economic vote.[1] While previous research has identified extensive variation in the extent to which voters use the economy to pass electoral judgment (Duch and Stevenson 2008;

[1]See Healy and Malhotra (2013) and Lewis-Beck and Stegmaier (2013) for recent reviews of the economic voting literature. Numerous studies have examined the role of time in office as a part of the cost-of-ruling literature by exploring the extent to which tenure directly affects election results (i.e., as an independent variable). See Nannestad and Paldam (1994); Paldam and Skott (1995); Stevenson (2002); Abramowitz (1988); Stegmaier and Williams (2016). Similarly, other studies have focused on *voters*' limited time horizon, and the degree to which incumbent politicians can strategically exploit this by creating political business cycles or by timing elections. See Hellwig and Marinova 2015 and Nordhaus 1975; Smith 2003; Kayser 2005; Samuels and Hellwig 2010. However, few studies have dealt with whether and how time in office changes the importance of economic conditions for shaping election results (i.e., as a moderator).

Lewis-Beck 1990; Paldam 1991; Van der Brug, Van der Eijk and Franklin 2007), this variation has primarily been explained with reference to the clarity of the political responsibility that the electoral context offers and to individual-level characteristics, such as partisanship or political knowledge (see, for example, Powell and Whitten 1993; Hellwig and Samuels 2007; Duch and Stevenson 2008; Malhotra and Kuo 2008; Kayser and Wlezien 2011; Vries and Giger 2014). To the extent that previous work has examined the potential moderating force of incumbent tenure, it has primarily, although not exclusively, looked at the short-term relationship between economic voting and tenure, studying how the economic vote develops during an incumbent's first term (see also Carey and Lebo 2006; Lebo and Box-Steffensmeier 2008; Singer and Carlin 2013).

This article examines the long-term relationship between incumbent tenure and economic voting by developing a new theoretical model of how voters apply economic signals when judging incumbents with different levels of tenure, and by providing the most extensive empirical examination of this relationship to date.

Building on theories of Bayesian learning, the article argues that economic voting decreases with time in office. Bayesian learning is predicated on the idea that people rely less on new evidence when they have more prior evidence (Breen 1999; Gerber and Green 1999). Therefore if voters accumulate evidence about governments' competence over time, and if voters are Bayesian learners, they should rely less on current economic conditions when judging experienced governments. Returning to the British case, Bayesian learning would predict that voters relied more on the state of the economy when evaluating the relatively new Labour administration than when assessing the relatively old Conservative administration, because voters had more prior evidence about the Conservative government's quality – including their long-term economic performance and potential scandals – leaving the new evidence – the current state of the economy – less persuasive.

Empirically, the article examines the long-term relationship between economic voting and time in office using three different data sources. In particular, the article uses country-level data on the relationship between economic growth and support for executive parties in 409 elections across forty-one different countries; individual-level data on the relationship between retrospective perceptions of the economy and voting for the incumbent in sixty representative national surveys from Western European countries; and subnational data on local levels of unemployment and support for mayoral parties in Denmark. The results are consistent with the notion of Bayesian learning: the economy is *more* strongly related to incumbent support when voters have *less* experience with the incumbent. That is, incumbent tenure crowds out economic voting.

These results challenge at least two predominant models of economic voting. First, my findings challenge models that conceptualize economic voting as a game of 'musical chairs' in which voters blindly hold the incumbent responsible for recent economic performance (Achen and Bartels 2017; MacKuen, Erikson and Stimson 1992). Rather, this study suggests that voters primarily rely on recent economic conditions if they have little other information about the incumbent to go on (that is, when the incumbent has not been in office for long).[2]

Second, my results challenge selection models of the economic vote which suggest that voters always rely more on economic conditions when these are more precise signals of incumbent competence (Alesina and Rosenthal 1995; Duch and Stevenson 2008) – including the main theoretical model used to explain differences in the economic vote: the clarity of responsibility model. Since economic policy does not have instantaneous effects, economic conditions presumably come to reflect an incumbent's competence more strongly over time, and voters should therefore become

[2]Importantly, my results are (not in)consistent with voter myopia. That is, even if voters' perceptions of the economy are based primarily on election year economic conditions, because of selective reporting of economic facts or an end heuristic, voters may still weigh their myopic economic perceptions less as incumbent tenure increases. See Hellwig and Marinova (2015); Healy and Lenz (2014).

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more responsive to economic conditions as incumbents' time in office increases.[3] I find the opposite. This is not to say that my results are fundamentally inconsistent with all kinds of selection models, but they do challenge models, such as the clarity of responsibility model, that narrowly focus on error in the competence signal. Instead my results suggest that the level of economic voting does not simply depend on whether current economic performance serves as a strong signal of the incumbent's actions, but also on the number of alternative signals voters have at their disposal.

In the next section, I detail the Bayesian learning explanation and expand on the theoretical tension between Bayesian learning and selection models of the economic vote. I also discuss the previous empirical work on tenure and economic voting in more detail. Then I go through the three studies of the long-term relationship between time in office and economic voting. I conclude by weighing some alternative explanations against the Bayesian learning explanation.

Bayesian Learning, Time in Office and The Economic Vote

Theories of Bayesian learning assert that the inferences people make are based on prior beliefs that are continually updated when new evidence is encountered (Gerber and Green 1999). In the context of economic voting, this means that when voters evaluate an incumbent, their assessment is based on their prior beliefs about the incumbent's quality, which they then update when observing the economic situation – the new evidence (Granato et al. 2015). A key prediction from theories of Bayesian learning is that the extent to which people rely on new evidence when updating their beliefs depends on how strong their prior beliefs are. If prior beliefs are weak, people rely more on the new evidence than if prior beliefs are strong. Beliefs are stronger when those who carry them are more certain that they are true, and therefore any rational prior belief is a function of the amount of relevant information – that is, the amount of evidence – that has gone into shaping that belief.

What implications does this have for the relationship between economic voting and time in office? Relevant information naturally accumulates with time in office; that is, voters will always have more information about their incumbent's competence at $t = x + 1$ than at $t = x$, because all of the information accumulated by $t = x$ is also available at $t = x + 1$. Accordingly, as an incumbent's time in office increases, voters' stock of relevant information increases, and this strengthens voters' beliefs about the incumbent. As a result, the beliefs become less malleable, attenuating the potential impact that new evidence, such as recent economic conditions, may have on these beliefs. Appendix Section S1 formalizes the argument.

This type of diminishing returns to new information might seem counterintuitive, but it also tracks well with how we extract information about the world in other settings. For example, it is a well-known fact from basic inferential statistics that increases in certainty about a population parameter become smaller with a larger sample size. In other words, we obtain a lot more certainty from an extra observation at $n = 10$ but only a little more certainty from an extra observation at $n = 1{,}000$. Similarly, recent economic conditions tell voters a lot about new incumbents, about whom they have made few other observations, but they only tell voters a little about experienced incumbents, for whom they have a large number of observations.

What type of relevant information do voters accumulate as an incumbent's time in office increases? Obviously, an incumbent's economic record grows larger with each passing year. Other relevant information may also crowd out the importance of economic information. This includes the absence or presence of scandals and corruption as well as the substantive policies enacted by the incumbent. It is important to note that the *type* of alternative information voters acquire is not important for whether Bayesian learning crowds out economic voting. The mere presence of some type of relevant information about the incumbent's quality, continually

[3]This has also been the theoretical presumption in previous studies of tenure and economic voting, which have conceptualized tenure as a component of clarity of responsibility. See Nadeau, Niemi and Yoshinaka (2002).

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distributed during an incumbent's time in office, should decrease voters' reliance on recent economic conditions, as their prior beliefs about the incumbent are strengthened.

Related to this, it is important to note that Bayesian learning will not necessarily reduce voters' overall reliance on economic conditions. This concept merely suggests that voters rely less on *recent* economic conditions as the incumbent's time in office increases, due to their mounting economic (and non-economic) record. Even so, Bayesian learning implies that economic voting decreases with time in office, because economic voting has – in the vast majority of the hundreds, if not thousands, of applications of this theory – been operationalized as the effect of economic conditions around election time on support for the incumbent.[4]

Alternative Explanations

There are other reasons why economic voting might decrease with time in office. Voters might hone in on a first impression and be unwilling to update this impression in light of contradictory evidence (that is, a type of confirmation bias). Incumbents might grow more skilled at manipulating how voters perceive the economy as their time in office increases, dislodging the relationship between economic performance and incumbent support. Alternatively, there could be an 'end-of-period problem': voters and incumbents know that a governing politician will not be around for much longer, which may attenuate the relationship between economic policy outcomes and incumbent support (Besley and Case 1995). In the following, I privilege the Bayesian learning explanation and return to a broader discussion of these alternative explanations near the end of the article.

What about Clarity of Responsibility?

Previous work has explained how time in office moderates the economic vote in terms of the clarity of responsibility hypothesis. First developed by Powell and Whitten (1993), this hypothesis suggests that economic voting depends on whether governments are, or seem to be, responsible for economic outcomes (see also Hellwig 2001; Duch and Stevenson 2008; Fisher and Hobolt 2010; Lobo and Lewis-Beck 2012). Since more experienced incumbents will have had more time to enact policies that affect economic conditions, they might be perceived as more responsible for economic conditions (Nadeau, Niemi and Yoshinaka 2002). If this is the case, the clarity of responsibility hypothesis predicts that voters should become more responsive to economic conditions as time in office increases. Why do voters respond in this way? While the microfoundations of the clarity of responsibility hypothesis are unclear (Parker-Stephen 2013), Duch and Stevenson (2008) use a selection model to show that it is rational for voters to respond more strongly to economic conditions when these conditions reflect incumbent competence more closely (also see Achen and Bartels 2017).

Combining the Bayesian learning argument with this argument from the literature on clarity of responsibility, it becomes clear that countervailing forces affect the level of economic voting as time in office increases. On the one hand, as an incumbent's time in office increases their responsibility for economic outcomes grows as well, which gives voters an extra incentive to rely on recent economic conditions. On the other hand, voters' prior beliefs about the incumbent become stronger with time in office, which gives voters a *dis*incentive to rely on recent economic conditions.

Which force, increased responsibility or strengthened priors, dominates? In Appendix Section S1 I present a formal model in which voters learn about the incumbent while the incumbent's responsibility for economic conditions increases. This model makes no uniform theoretical prediction about whether economic voting increases or decreases with time in office. Instead, it

[4]While measures of economic conditions differ (subjective vs. objective, levels vs. changes etc.), they almost always focus on current conditions.

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shows that voters' reactions will depend on their beliefs about the degree to which clarity of responsibility increases with time in office and on the overall relationship between incumbent competence and economic conditions. This theoretical ambiguity motivates the empirical investigation.

Existing Evidence

Only a small number of studies have examined how economic voting changes with time in office. For instance, Nadeau, Niemi and Yoshinaka (2002) include time in office in a larger index of 'dynamic clarity of responsibility' and then explore whether this index correlates with the economic vote in eight European countries. They find that their index has a positive relationship with economic voting, but they do not examine time in office separately from the other factors. Studies by Carey and Lebo (2006) and Lebo and Box-Steffensmeier (2008) examine how the nature of economic voting changes across the election cycle. Focusing on the US and UK, respectively, they tend to find more prospective economic voting at the beginning of an election cycle and more retrospective economic voting at the end of a cycle.

In the most thorough examination of the relationship between time in office and the economic vote, Singer and Carlin (2013) link time in office with different types of economic voting in a wide cross-section of Latin American countries. They find that 'voters' reliance on prospective expectations indeed diminishes over the election cycle as the honeymoon ends and they retrospectively evaluate the incumbent's mounting record' (Singer and Carlin 2013, 731). Although their study is well executed and convincing, it is limited by two factors. First, it measures economic voting by looking at economic *perceptions*, rather than objective economic conditions. Secondly, and more importantly, they focus on the short-term relationship between time in office and the economic vote. This is partly because they analyze a relatively politically volatile region, and partly because they primarily study presidential systems. As a result, most of the incumbents they examine have only been in office a short time: roughly 90 per cent have held office for less than five years, and the median time in office is 2.5 years. The authors are aware of this limitation, and thus their theoretical predictions and key findings tend to be concerned with the first few years of the incumbent's time in office (Singer and Carlin 2013, fig. 1, 738).

Taken together, these studies have made important headway in exploring the relationship between time in office and the economic vote, but at least two important empirical questions remain unanswered. First, what is the long-term relationship between tenure and the economic vote? In many countries, the same incumbent party has been in power for many years – sometimes more than a decade. While prior studies assess how economic voting evolves during the first election cycle, we know little about what happens after that. Is there, for instance, a difference between an incumbent who has been in office for four years and one who has been in office for ten? Secondly, is there a relationship between the extent to which objective economic conditions affect support for the incumbent and time in office? Previous studies have exclusively focused on how the effect of prospective and retrospective economic perceptions change as time in office increases; however, we do not know whether the effect of objective economic conditions changes with time in office.

Country-Level Evidence

I begin my investigation of the relationship between tenure and the economic vote by examining a country-level dataset of national elections. Numerous other studies have used this type of data to analyze variation in the economic vote (see Powell and Whitten 1993; Whitten and Palmer 1999; Hellwig and Samuels 2007; Kayser and Peress 2012). The chief advantage of this approach is that it sidesteps problems of endogeneity related to using voters' *perception* of the economy by applying objective economic indicators instead (Kramer 1983, Van der Brug, Van der Eijk and Franklin 2007, 26). The chief disadvantage is that the economic indicators that are used are country-level

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aggregates. These aggregates are noisy estimates of the economy as experienced by the individual voter (Duch and Stevenson 2008, 26), and they are restricted to n = 1 per election, limiting the statistical power of the analysis. To overcome these problems, I use a relatively large sample of elections and, later in the article, I replicate my findings using an individual-level approach.

Data and Model

I use a dataset of 409 elections held in forty-one countries (see Appendix Section S2 for a list of the countries and elections). To obtain such a wide cross section of elections, I use and amend datasets developed by Kayser and Peress (2012) and Hellwig and Samuels (2007). The key dependent variable is the percentage-point change in electoral support for the *executive party* in legislative and executive elections (Δy).[5] The executive party is the party that had primary control of the executive branch at the time of the election (that is, the party of the prime minister or president). Using the executive party rather than the parties in government is common in the literature (see, for instance, Duch and Stevenson 2008). Further, several studies have shown that the executive party is much more prone to electoral judgement than other governing parties (Van der Brug, Van der Eijk and Franklin 2007; Fisher and Hobolt 2010; Debus, Stegmaier and Tosun 2014; although see Hjermitslev 2018).

The key independent variables are economic growth (*gr*) and tenure (*ten*). Economic growth is a proxy for a country's economic conditions; it is measured as election year GDP per capita growth (pct.). This indicator is used because it is available for a large cross section of elections and because it has been widely used in previous studies. For elections occurring in the first six months of the year, I use economic growth in the year prior to the election year; for elections occurring in the last six months of the year I use economic growth in the election year. Data on economic growth was taken from the World Bank's database (World Bank, 2019). Time in office is measured as the number of years since the current executive party came into power. I focus on the tenure of parties, since the main dependent variable is support for the executive party. Data on tenure is taken from the database of political institutions (Beck et al. 2001), and has been extended by the author to create better coverage for the electoral variables. The average level of tenure for the incumbent parties is six years, and the median is five years. See Appendix Section S3 for descriptive statistics on all of the variables.

Turning to modelling, I set changes in electoral support as a linear function of tenure, economic growth and an interaction between the two. I also include support for the incumbent party when it first came to office, and a dummy variable that indicates whether the election is executive or legislative (*exec)* to take into account the fact that economic voting works differently in executive and legislative elections (Hellwig and Samuels 2008; Samuels 2004). The baseline model I estimate can be described as follows:

$$\Delta y_{it} = \beta_0 + \beta_1 gr_{it} + \beta_2 ten_{it} + \gamma gr_{it} \times ten_{it} + \beta_3 exec_{it} + \beta_4 lagy_{it} + \epsilon_{it} \quad (1)$$

The coefficient of interest is γ, which signifies the change in the effect of economic growth as tenure increases. A Negative (positive) γ coefficient indicates that economic voting decreases (increases) with time in office.

Results

Table 1 presents key estimates from the model described in Equation 1 in Column 1 using a maximum-likelihood estimator to obtain country-clustered standard errors. The growth and

[5]Change is measured relative to when the executive party came into office. In presidential systems in which voters directly elect the president, I use support for the president in presidential elections as well as support for the president's party in the legislature. Since my data is primarily from parliamentary systems, I end up with fifty-seven executive elections and 352 legislative elections. The legislative election results are from the lower house if the legislature is bicameral.

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Table 1. Linear regression of changes in executive party vote share

	1	2	3	4
Economic growth	0.68*	0.85*	0.75*	0.89*
	(0.21)	(0.26)	(0.25)	(0.27)
Tenure	0.01	0.06	−0.09	−0.18
	(0.11)	(0.10)	(0.12)	(0.17)
Economic growth × Tenure	−0.05^{+}	−0.06*	−0.06*	−0.06*
	(0.03)	(0.03)	(0.03)	(0.03)
Lagged support	−0.23*	−0.24*	−0.38*	−0.38*
	(0.05)	(0.05)	(0.06)	(0.11)
Executive election	−0.88	0.18 2.04	−1.97^{+}	
	(1.58)	(1.39)	(1.65)	(1.09)
Year FE		√	√	
Country FE			√	√
Leader FE				√
Observations	409	409	409	409

Note: standard errors clustered by country in parentheses. $^{+}$ $p < 0.10$, * $p < 0.05$

tenure coefficients should be interpreted as the effect of the variable when the other variable is held at zero. The baseline effect of economic growth is thus estimated to be 0.68, and can be understood as the (theoretical) effect of economic growth on the change in electoral support if an incumbent runs for re-election without any tenure.

The variable of interest is the interaction between economic growth and tenure. The interaction is statistically significant ($p < 0.1$) and negative, suggesting that the positive effect of economic growth at the beginning of an executive party's tenure diminishes over time. Specifically, the estimate suggests that each year, the effect of economic growth on electoral support drops by 0.05 from the starting point of 0.68. Accordingly, this model suggests that after thirteen years in office, the effect of economic growth is essentially zero.

To investigate this finding's sensitivity to different model specifications, I extend the baseline model in three ways. Column 2 shows estimates from a model that includes year fixed effects. These take global trends in growth, tenure and incumbent support into account. This leaves the interaction practically unchanged. Column 3 shows estimates from a model that includes country fixed effects. These control for potentially confounding differences in tenure and economic growth across different countries. The interaction remains negative and statistically significant ($p < 0.05$).

Column 4 of Table 1 includes leader fixed effects – that is, a dummy for each of the 159 incumbents in the dataset.[6] Including leader fixed effects means that any factors that are constant within the same incumbent are omitted when estimating the interaction. As such, the model estimates the interaction by comparing the degree to which the same executive party is punished or rewarded for the economic situation across elections (rather than by comparing different executive parties with different tenure lengths). The leader fixed effects make the year fixed effects less relevant, as I am now comparing levels of economic voting across a relatively short span of time (that is, from the beginning to the end of an incumbent's tenure). Further, if year fixed effects are included along with leader fixed effects, the degrees of freedom drop dramatically; they are therefore omitted from the model with leader fixed effects. The interaction estimate is virtually unchanged by the inclusion of leader fixed effects and is statistically significant ($p < 0.05$). Figure 1 plots the interaction using this specification.

[6]The leader fixed effects count an executive party that returns to power after being defeated as a new incumbent. For instance, the United Kingdom has five different incumbents in the dataset across eleven elections, even though only two parties were in power during this period.

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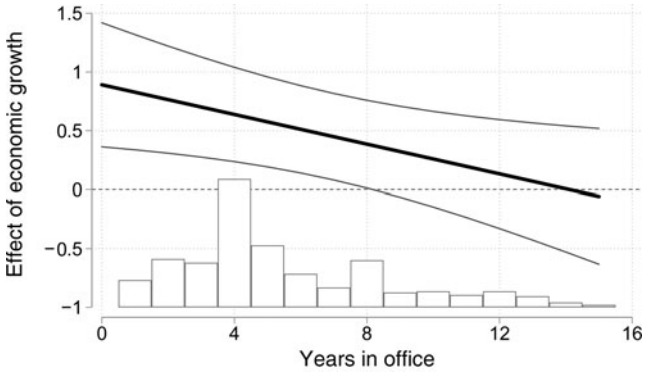

Figure 1. Marginal effects of economic growth on change in electoral support for the executive party across levels of tenure
Note: I only plot tenure from the 5th to the 95th percentiles. Derived from the model presented in Column 4 of Table 1. The bar plot shows the density of the variable years in office. Includes 95 per cent confidence intervals.

Robustness Checks and Auxiliary Analyses

The Appendix describes four additional robustness checks. First, I evaluate whether the results are sensitive to using the average growth rate across the previous two years rather than simply the election year. This does not substantially affect the results (see Appendix Section S4). Secondly, I investigate whether adding additional controls for parliamentary and government composition affects the results. This means omitting a large number of elections for which this information is not available and increasing the standard errors that are attached to the estimates. However, the interaction estimates are not affected by adding the controls (see Appendix Section S5).

Thirdly, I look at whether a single country is driving the results. I find that the interaction estimate in Columns 1 and 2 is not sensitive to excluding a single country. For the models in Columns 3 and 4, excluding Luxembourg draws the interaction closer to zero. However, the interaction remains negative even when I exclude this country (see Appendix Section S6). Fourthly, in Appendix Section S7 I examine the interaction between economic growth and tenure in light of the different diagnostics suggested by Hainmueller, Mummolo and Xu (2016). Overall, I find monotonicity in the average marginal effects and approximate linearity. However, I also find that the interaction variable is kurtotic, which calls into question the reliability of the interaction estimate.

In conclusion, my analysis of the country-level data suggests that economic growth becomes a less important determinant of an executive party's vote share as the party's time in office increases. Even so, the estimated interaction effect was not consistently strongly statistically significant. In part, this can be explained in terms of the low statistical power of country-level analyses – as mentioned above, the chief disadvantage of using country-level data is that it is quite noisy. To address this potential problem, I conduct a conceptual replication using individual-level data in the next section.

Before moving on to the replication, however, a few alternative explanations needs to be discussed. First, the negative correlation between tenure and economic voting might be due to strategic election timing (Kayser 2005; Samuels and Hellwig 2010). That is, the findings reported above might simply reflect the fact that certain types of leaders call early elections, and are therefore more likely to have shorter tenures when they run for re-election. In the Appendix, I examine this alternative explanation by trying to control away election timing in two different ways: (1) by including a control indicating how often incumbents call elections and (2) by restricting the sample of elections to countries with fixed terms, where strategic election timing is not possible. Using both of these methods, I show that in the most demanding specification, which includes leader fixed effects, the interaction remains negative, it is of the same approximate size, and it is statistically significant (see Appendix Section S8).

A second possible alternative explanation for the negative interaction I find is that voters initially hold only the executive party electorally accountable, but as time goes by begin to hold

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government coalition partners accountable as well. To test whether this is the case, I estimate the models from Table 1 separately for coalition governments and single-party governments in Appendix Section S9. I identify no systematic differences across the two groups, which suggests that the negative interaction term cannot be explained by voters holding coalition partners more accountable as their time in office increases.

Finally, I look at whether these results can be ascribed to the fact that I study incumbent parties (for example, the UK Labour Party) rather than executive officers (for example, Tony Blair). To do this, I add a control to the model that indicates whether the incumbent party and the executive officer have different lengths of tenure and an interaction between this variable and economic growth. The results, reported in Appendix Section S10, show that this does not shift the interaction estimates substantially, although the level of statistical significance drops from 5 per cent to 10 per cent.

Individual-Level Evidence

Having established a relationship between economic voting and the tenure of the executive party at the country level, I now explore the same relationship at the individual level. In essence, I try to replicate my results by investigating whether voters rely less on their perceptions of the national economy when deciding whether to vote for a more experienced incumbent. To do this, I closely follow a recent study by Nadeau, Lewis-Beck and Bélanger (2013). They investigate the relationship between national economic perceptions and voting behavior in ten Western European countries over the past twenty years. This gives us a well-established empirical model of the economic vote, allowing us to simply extend this model to include an interaction between tenure and economic perceptions.

Data and Model

I use the European Election Studies survey of all EU countries, which has been conducted every fifth year since 1979. Since they are fielded in the year of European Parliamentary elections, their timing is somewhat independent of national election cycles. I use the six Europe-wide studies that have been conducted since 1989 (in 1989, 1994, 1999, 2004, 2009 and 2014), because these are the only surveys that include questions about national economic perceptions as well as vote intention in national elections. Moreover, I focus on the ten countries that participated in all six survey rounds: Denmark, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain and the United Kingdom (see Appendix Section S2 for details about the sample used). This gives us 60 cross-sectional national surveys, which can be pooled to test whether the effect of economic perceptions on voter intentions depends on the tenure of the executive party.

Turning to indicators, the key dependent variable is whether respondents report that they would vote for the executive party if a national legislative election were held tomorrow (*Re-elect)*. The key independent variables are national economic perceptions and tenure. National economic perceptions (*NEP*) are measured using a question that asks respondents whether the economic situation in their country had become better or worse in the past twelve months. Responses were recorded on a five-point scale (except for the 1999 election study, which used a four-point scale). Tenure (*Ten*) is measured as the number of years the executive party had been in power at the time of the survey. Once again, this variable is taken from the Database of Political Institutions (Beck et al. 2001) and extended to provide complete coverage for the sixty surveys. The average time in office is five years and the median is four years.

I use the same control variables that Nadeau, Lewis-Beck and Bélanger (2013) apply in their economic voting model: respondents' ideology, self-perceived class, church attendance and a

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dummy indicating whether the respondent voted for the executive party in the last election.[7] All variables are rescaled to range from zero to one and recoded so that higher values indicate an increased propensity to vote for the executive party.[8] See Appendix Section S3 for the exact question wording and descriptive statistics.

I model the probability that voters will report an intention to vote for the executive party as a logistic function of national economic perceptions, tenure, an interaction between the two and the individual-level controls. The model I estimate can be described as follows:

$$Pr(reelect_{ijt}) = logit(\alpha_0 + \alpha_1 NEP_{ijt} + \alpha_2 ten_{it} + \gamma ten_{it} \times NEP_{ijt} + \boldsymbol{X}_{ijt}\boldsymbol{\beta} + \epsilon_{ijt}), \quad (2)$$

where i indicates country, t year and j the respondent. $\mathbf{X}$ is a row vector of the control variables ideology, class, religion and past vote, and $\boldsymbol{\beta}$ is a column vector of coefficients attached to these controls. The coefficient of interest is once again γ, which signifies the change in the effect of national economic perceptions as tenure increases. Based on the results of the country-level data, which showed that the effect of current economic conditions decreases with time in office, I expect γ to be negative.

Results

In the first column of Table 2, I estimate the parameters of the model presented in Equation 2 using a multi-level logistic regression. I cluster the standard errors at the country level and estimate random effects at the survey level.[9]

Ideology, class, religiosity and lagged executive party vote all have the expected signs and, apart from religiosity, are statistically significant. The baseline economy and tenure effects should (once again) be interpreted as the effect of the variable when the other variable is held at zero. The baseline effect of national economic perceptions is estimated to be 1.85, and can thus be understood as the (theoretical) effect of thinking the economy is doing a lot better rather than a lot worse on the logit probability of voting for an executive party without any tenure.

The key estimate of interest is the one attached to the interaction between national economic perceptions and tenure, which signifies how the effect of national economic perceptions changes as tenure increases. The interaction coefficient is statistically significant and negative, suggesting that the effect of national economic perceptions on support for the executive party diminishes as the executive party's time in office increases – an interaction effect that is qualitatively similar to the one found in the country-level analysis.

I also investigate whether these individual-level findings are sensitive to different model specifications. Column 2 includes leader fixed effects (see the country-level data). Estimating this more demanding model does not substantially change the results; the interaction remains negative and statistically significant. Column 3 introduces survey fixed effects and a dummy for each of the sixty surveys; the interaction remains negative and statistically significant.

Finally, I derive the average marginal effects of national economic perceptions across different levels of tenure based on the model with survey fixed effects. Figure 2 shows how the average marginal effects of national economic perceptions decrease as tenure increases. For an executive party with one year of tenure, the effect of perceiving the economy as doing much better rather than much worse increases the probability of voting for the executive party by about 13.2

[7]I exclude a control used by Nadeau, Lewis-Beck and Bélanger (2013) that measures the time since the last election, because this variable is very closely related to tenure.

[8]In particular, religion, class and ideology were coded differently across the different surveys to take differences in the ideological position of the executive into account.

[9]Since my model contains a cross-level interaction between tenure and national economic perceptions, I include a random intercept and a random slope for the lower-level national economic perceptions variable, as recommended by Heisig and Schaeffer (2019).

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Table 2. Multi-level logit model of voting for the executive party

	1	2	3
National Economic Perceptions	1.85∗	1.84∗	1.86∗
	(0.25)	(0.24)	(0.22)
Tenure	0.05^{+}	−0.03	
	(0.03)	(0.03)	
National Economic	−0.05∗	−0.05∗	−0.06∗
Perceptions × Tenure	(0.02)	(0.02)	(0.02)
Lagged executive party vote	4.39∗	4.39∗	4.38∗
	(0.15)	(0.15)	(0.15)
Ideology	2.32∗	2.31∗	2.33∗
	(0.24)	(0.24)	(0.25)
Religiosity	0.13	0.14	0.13
	(0.15)	(0.16)	(0.15)
Class	0.34∗	0.34∗	0.33∗
	(0.15)	(0.16)	(0.16)
Survey RE	√	√	
Leader FE		√	√
Survey FE			√
Observations	39,213	39,213	39,213

Note: standard errors clustered by country in parentheses. Tenure omitted in Model 3 due to collinearity with Survey FE. $^{+}$ $p < 0.10$, * $p < 0.05$

percentage points. For an executive party with fifteen years of tenure this leads to a 7.6-percentage-point increase. A comparison of the average marginal effect at one year of tenure and fifteen years of tenure reveals that this decline is statistically significant ($p < 0.01$).

Robustness Checks and Auxiliary Analyses

In the online appendix, I conduct a number of additional robustness tests of the interaction. I show that the results are robust to a two-step estimation procedure (see Appendix Section S11), and that they are not sensitive to outliers (see Appendix Section S6). I also examine the robustness of the interaction in light of Hainmueller, Mummolo and Xu (2016) (see Appendix Section S7).

I use a standard retrospective question above. Here voters are asked about their country's economic performance in the past year. However, some studies of American politics have suggested that when an executive party has been in office for a while, retrospective concerns give way to prospective concerns (Nadeau and Lewis-Beck 2001). That is, voters' beliefs about how the economy is *going to* develop become more important than their beliefs about how the economy *has* developed.[10] Based on this, one might suspect that the reason we see a drop in the effect of retrospective economic perceptions is that the *type* of perceptions that matter at the beginning of the term are different from those that matter at the end of term. To test whether this is the case, I examine the relationship between vote intention, prospective national economic perceptions and time in office in Appendix Section S12. I find a similar pattern for the prospective economic perceptions as I do for the retrospective perceptions studied above. As such, there are no signs that some other type of economic perceptions becomes more important as the effect of retrospective national perceptions subsides.

While the individual-level results seem to line up nicely with the findings from the country-level study, there is one important inconsistency. While both studies show that the economic vote declines with time in office, the decline seems to be less dramatic in the individual-level data. In the country-level data, the estimated effect of the economy is essentially zero after fifteen years

[10]Although see Carey and Lebo (2006) as well as Singer and Carlin (2013) for the opposite argument.

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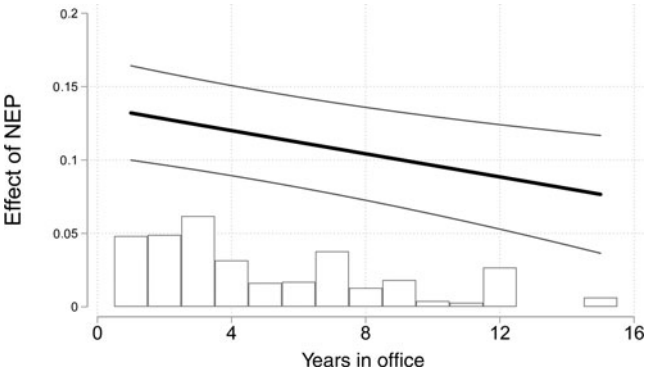

Figure 2. Average marginal effects of national economic perceptions on the probability of voting for the executive party across levels of tenure
Note: I only plot tenure from the 5th to the 95th percentiles. Derived from the model presented in Column 3 of Table 2. The bar plot shows the density of the years in office variable. Includes 95 per cent confidence intervals.

(see Figure 1). In the individual-level data, there is still a substantial amount of economic voting left after fifteen years (see Figure 2). One explanation for this inconsistency is that the individual-level data overestimates the amount of economic voting across all levels of tenure.

Many studies suggest that we generally overestimate economic voting when using voters' perceptions of the economy rather than objective economic conditions (Evans and Andersen 2006; Evans and Pickup 2010; although see Lewis-Beck, Nadeau and Elias 2008). These studies argue that partisan voters adjust their perceptions of the economy based on their underlying party preferences, leading to inflated estimates of the economic vote (Bartels 2002; Tilley and Hobolt 2011). In other words, economic perceptions might be 'partisanship, thinly disguised' (Kramer, 1983; as quoted in Lebo and Cassino 2007). This might explain the discrepancy between the individual- and country-level results.

In Appendix Section S13, I try to correct for this type of partisan-induced endogeneity in two ways. First, I examine what happens when I exclude potential pro-government partisans. Secondly, I use objective economic conditions as instruments of national economic perceptions. In both cases, I find that correcting for endogeneity tends to align the individual-level results with the country-level data. This suggests that the immediate divergence between the country- and individual-level results can be explained by the methods used to measure the economic vote in the two different analyses – not by any real difference in how voters behave.

Taken together, the individual-level results thus reaffirm the country-level findings. As the incumbent party's time in office increases, the economy becomes less predictive of their electoral fortune.

Subnational Evidence

Why is there a negative long-term relationship between economic voting and time in office for a large cross-section of countries and elections? Above I argued that the reason can be found in theories of Bayesian learning. Since voters' stock of relevant information about the incumbent naturally increases with time in office, voters' beliefs about the incumbent become more certain, and voters therefore become less responsive to new information. As a result, the economic situation comes to play less of a role in shaping voters' beliefs about the incumbent. In this third and final study, I investigate the relationship between tenure and economic voting in a more controlled setting, which allows me to focus on this theoretical mechanism.

This study assesses a set of municipal elections in Denmark that took place after a 2005 jurisdictional reform in which a large number of municipalities merged.[11] This reform allows us to isolate variation in voters' experience with the incumbent – the key factor I believe is driving

[11]For details on the reform, see Blom-Hansen, Houlberg and Serritzlew (2014).

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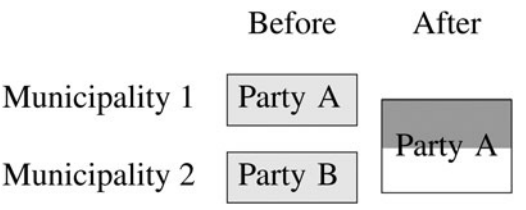

Figure 3. A stylized example of the consequences of the jurisdictional reform process
Note: the shading denotes the amount of experience the electorate has with the incumbent mayoral party.

down economic voting as time in office increases – while holding attributes of the political system, the election and the incumbent constant.

To see how we can use the reform in this way, consider the following stylized example. Municipality 1 and Municipality 2 merge as a result of the jurisdictional reform. Before the merger, Party A was the mayoral party in Municipality 1 and Party B was the mayoral party in Municipality 2. In 2005 these municipalities merge and have to elect a mayor from one party. Let us say that they elect Party A. In the following election (in 2009), the voters in the newly merged municipality have to decide whether to re-elect the incumbent Party A. The voters who lived in Municipality 1 before the reform have accumulated information about Party A's ability to govern effectively both before and after the reform. The voters who lived in Municipality 2 before the reform have only accumulated information about Party A after the reform. Figure 3 visualizes this example.

If more experience with an incumbent drives down economic voting, then I expect economic voting to be less prevalent among voters who lived in Municipality 1 and more prevalent among those who lived in Municipality 2. Conversely, if experience with the incumbent party does not matter, I should expect no difference in economic voting behavior. Importantly, if I do find a difference, I know that it cannot be attributable to the incumbent's type, which is the same for both groups of voters, or the type of political system (which is also the same). In this way I leverage the jurisdictional reform process to conduct a cleaner test of whether experience with an incumbent – the key factor Bayesian learning suggests is driving down economic voting – actually drives down economic voting.

Data and Model

To study the consequences of the jurisdictional reform, I examine election returns from the 2009 Danish municipal elections. In particular, I construct a dataset based on returns from 1,465 different precincts (that is, polling places). Each precinct lies within one of 239 original municipalities (pre-reform) and sixty-six merged municipalities (post-reform). I collected this data from the Danish Election database.[12] I do not use data from precincts located in municipalities that did not merge as a result of the reform, because these do not exhibit the type of within-municipality variation I am interested in (see Figure 3).

In Danish municipalities, mayors are not directly elected; they are appointed by a majority of the members of the city council. Often, this means that a coalition of two or three ideologically similar parties decide to appoint a mayor from the largest party. Accordingly, the key dependent variable is change in electoral support between 2009 and 2005 for the incumbent mayoral party in city council elections Δy.

The key independent variables are changes in the municipal unemployment rate from 2007 to 2009 $\Delta unem$ and a dummy indicating whether the voters in the precinct had a different incumbent before and after the reform (*Newinc*).[13] Note that because all of the municipalities studied

[12]For details, see http://valgdata.ps.au.dk/en/.

[13]Because of the large redistricting reform, there is no comparable data on the level of unemployment in 2005 or 2006 at the municipal level, which is why I look at changes from 2007 to 2009.

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here merged with other municipalities in 2005, the variable *Newinc* varies within the merged municipalities. Appendix Section S3 includes descriptive statistics on all variables.

Turning to modelling, I set precinct-level changes in support for the mayoral party as a linear function of whether voters had a different incumbent than before the reform (*Newinc*), changes in municipal unemployment levels (*Unem*), and an interaction between the two. I also include post-reform municipality fixed effects θ, as well as a control for the level of support for the mayor in the last election (*lagy*). I include municipality fixed effects to make sure that I am only comparing electorates which have the same incumbent (that is, precincts within the same post-reform, merged, municipality). This leaves us with the following baseline model:

$$\Delta y_{ij} = \beta_0 + \beta_1 newinc_{ij} + \gamma newinc_{ij} \times unem_j + \beta_2 lagy_{ij} + \theta_j + \epsilon_{ij}, \quad (3)$$

where i indicates precinct and j indicates the post-reform municipality. The key estimate of interest is once again γ, which denotes the difference in the effect of changes in the unemployment rate between voters who have a new incumbent and voters who have the same incumbent as before the reform. I expect γ to be negative, implying that increases in the unemployment rate have a larger negative effect on support for the mayoral party in precincts where the incumbent mayoral party is new.[14]

Results

In the first column of Table 3, I estimate the model presented in Equation 3, using a maximum-likelihood estimator to obtain municipality-clustered standard errors. Note that the baseline effect of increases in the municipal unemployment rate is not estimated because the baseline is perfectly collinear with the post-reform municipality fixed effects.

The key estimate of interest is the one attached to the interaction between increases in the unemployment rate and whether the incumbent is new to the electorate. Consistent with my expectations, the interaction estimate is negative and statistically significant. This suggests that increases in the unemployment rate have a larger effect on support for the incumbent mayoral party in precincts where voters have had less experience with the incumbent mayor.

Figure 4 illustrates this interaction effect by plotting the difference in support for the mayoral party between precincts where the voters have a lot of experience with the mayor (both pre- and post-reform) and precincts where the voters have little experience with the mayor (only post-reform) across increases in the unemployment rate.[15] The figure shows that in municipalities where the unemployment rate did not increase, the mayoral party was just as popular in precincts where voters had little experience with the incumbent as in those where the voters had a lot of experience with the incumbent. However, in municipalities that experienced a substantial increase in the unemployment rate, the mayoral party was far less popular among those who did not know it well. Put differently, those *without* a lot of prior experience with the mayoral party were *more* affected by recent increases in local levels of unemployment than those *with* a lot of prior experience.

As I did for the country- and individual-level results, I examine whether these subnational results are sensitive to alternative specifications. In particular, I am interested in determining whether characteristics of the precincts might explain the differences in economic voting between those who have experience with the incumbent mayor and those who do not. To control for the

[14]It is common practice to include all constitutive terms in interaction models; see Brambor, Clark and Golder (2006). I exclude the municipal unemployment rate from this model because it is collinear with the municipality fixed effects. The constitutive term is thus already included when using municipality fixed effects, but in a different functional form (i.e., a dummy for each value of municipal unemployment).

[15]The 2009 elections were held just as the effects of the financial crisis were starting to kick in. Accordingly, the unemployment rate increased for all municipalities in this period.

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Table 3. Linear regression of change in support for the incumbent mayoral party

	1	2	3
New incumbent	1.92	1.91	1.44
	(2.69)	(2.70)	(2.65)
Increase in unemployment rate × New incumbent	−2.13*	−2.14*	−2.08*
	(1.07)	(1.08)	(1.02)
Support for mayoral party 05	−0.63*	−0.63*	−0.63*
	(0.08)	(0.07)	(0.07)
Right-wing mayor			−10.63*
			(0.95)
Proportion of votes for right wing parties			19.45*
			(7.69)
Turnout		5.83	−1.96
		(7.10)	(5.89)
Log of eligible voters		−0.31	0.12
		(0.36)	(0.30)
Municipality FE	√	√	√
Observations	1,465	1,465	1,465

Note: standard errors clustered by country in parentheses. $^{+}$ $p < 0.10$, * $p < 0.05$

demographic characteristics of the precincts, I add controls for turnout and the size of the electorate in the second column of Table 3. To control for the ideological make-up of the precincts, I add controls for whether the mayoral party is right wing and for the proportion of voters that voted for a right-wing party in the third column. Including these controls does not affect the interaction estimate. It remains statistically significant, negative and of the same approximate size.

In the online appendix I also investigate the robustness of the results. In particular, I examine whether the interaction estimate is sensitive to outliers in Section S6, and whether the interaction is robust to the checks suggested by Hainmueller, Mummolo and Xu (2016) in Section S7. In Section S14 I find that the unemployment rate in 2005, turnout (as a proxy for political engagement) and support for right-wing voters are balanced across the key 'treatment' variable (that is, whether voters had the same incumbent before and after the reform). I find only one small imbalance: precincts assigned to a new incumbent seem to have fewer eligible voters. I do not believe this imbalance poses a serious threat to causal inference.

In summary, voters who had more time to get to know an incumbent (for example, those who had the same mayoral party both before and after the reform) were less likely to shift their support to or away from the incumbent based on how the economy was doing around election time.

Some Alternative Explanations

The three studies described above all suggest that as time in office increases, the effect of recent economic conditions on support for the incumbent decreases. I have argued thus far that the principal reason for this decline is Bayesian learning. As time in office increases, so does the stock of relevant information voters have used to assess the incumbent's quality, leaving voters' assessments less influenced by good and bad economic news. However, one could also think of other reasons why incumbent tenure crowds out economic voting. In this section, I briefly discuss the merits of some different alternative explanations derived from the existing literature on economic voting.

Voters' perceptions of the economy are filtered through political elites such as the media (Soroka 2006) and parties (Bisgaard and Slothuus 2018). Following this general idea, one might imagine that as an incumbent becomes more experienced and better known, they can more easily shape how voters perceive the economy. If experienced incumbents are able to dislodge voters' perceptions of the economy from the actual economic situation in this way, the result would be a negative relationship between time in office and the economic vote.

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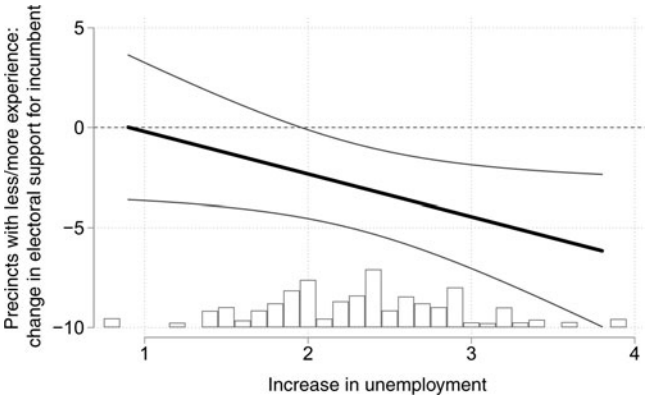

Figure 4. Difference in electoral support for the mayoral party between precincts in which voters had the same incumbent before and after the reform and precincts without increases in the municipal unemployment rate

Note: derived from the model presented in Column 1 of Table 3. The bar plot shows the density of increases in the unemployment rate. Includes 95 per cent confidence intervals.

However, this persuasion explanation does not fit well with parts of the evidence presented above. In particular, this explanation offers no account of why voters, who are not persuaded by experienced incumbents to perceive the economy as doing well, should neglect to punish the incumbent. Yet I find that differences in incumbent support between those who think the economy is doing well and those who think it is doing poorly decrease with time in office (see Figure 2).

Numerous studies have shown that once voters have developed a set of beliefs about a political entity, they are likely to ignore evidence that casts doubt on this belief; this is conventionally referred to as confirmation bias or motivated reasoning (for example, Lodge and Taber 2013; Evans and Andersen 2006). If one assumes that when an incumbent is first elected voters have very few preconceptions about their abilities, then voters' beliefs are likely to be especially malleable in this period. For instance, these initial beliefs might be shaped by the state of the economy. Once an early impression is formed, however, confirmation bias might lead voters to ignore subsequent economic performance. This alternative explanation is more difficult to dismiss, partly due to its similarity to the learning explanation in terms of observable implications (Gerber and Green 1999). To disentangle the two, a more controlled setting is required than the one offered by the observational studies reported in this article.[16] However, one piece of evidence from the individual-level study challenges the idea that confirmation bias is driving down the economic vote. In particular, I found that the degree of reduction in economic voting was about the same for pro-government partisans and non-partisans (see Appendix Section S13). If the reduction in economic voting was the result of confirmation bias, I would, all else equal, expect a greater reduction in economic voting among those who felt an allegiance to the incumbent party.

Previous studies also suggest that there is an 'end-of-period' problem in economic voting: incumbents who know their time is up (for example, due to term limits or unfavorable polls) give up on shepherding the economy (for example, Besley and Case 1995). If this is true, I should expect economic voting to be relatively stable and then dip at more extreme values of time in office. To test this alternative explanation, I split my moderating variables from the individual- and country-level studies into three equally sized bins (that is, a lower, middle and top tercile) and interact these bins with the economic variables. I find that the decline in effect size is fairly linear (see Appendix Section S7 for detailed results). Economic voting does not only decrease at the highest levels of tenure. Instead, the importance of economic conditions gradually declines.

Overall, I think each of these alternative explanations falls short of Bayesian learning in terms of explaining the results presented in this article. Yet the primary goal of the article is to examine whether incumbent tenure amplifies or attenuates economic voting and to propose a plausible

[16]For an example of how this might be done, see Hill (2017).

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explanation for this pattern. Accordingly, I recognize that the conclusions drawn in this section remain tenuous, and that I cannot be certain as to why incumbent tenure decreases with time in office.

Conclusion

This article has provided a thorough empirical investigation of the long-term relationship between economic voting and time in office. I have shown that electoral support for executive parties becomes more independent of the economic situation the longer they have been in office. I arrived at this finding using two markedly different datasets: one at the country level using objective measures of economic conditions, and one at the individual level using subjective measures.

To explain why economic voting decreases as incumbents' time in office increases, I advanced a theoretical argument predicated on Bayesian learning. It follows from Bayesian learning that if voters have more relevant information about an incumbent's competence, then their evaluation of the incumbent is less likely to be swayed by a single piece of new evidence, such as the economic situation around election time. Conversely, if voters have less prior information, they will be more heavily influenced by the economic situation around election time. Since voters naturally accumulate relevant information about the incumbent as his or her time in office increases, Bayesian learning implies that economic voting should decrease with time in office.

In order to examine the empirical implications of this theoretical argument in greater detail, I conducted an additional study of subnational elections. Specifically, I studied the level of local economic voting following a large redistricting reform in Denmark. This reform created within-municipality differences in the amount of experience the electorate had with the *same* incumbent mayoral party. In line with my theoretical argument, I found that voters who had less experience with a local incumbent were more likely to punish this incumbent for increases in local levels of unemployment.

Turning to limitations, this article has mainly studied advanced European parliamentary democracies, delimiting the scope of inference. This focus on relatively stable political systems might partly explain why my findings diverge from previous research, which has tended to study less stable presidential systems (Singer and Carlin 2013). In particular, political instability will lead to shorter stints in office, and this might change the overall relationship between time in office and economic voting. Another important limitation relates to *why* economic voting decreases with time in office. As mentioned in the discussion of alternative explanations, the evidence supporting the Bayesian learning explanation is far from definitive; other factors, most prominently confirmation bias on the part of the voters, might also have a role to play. Future research might be able to pin down the causal mechanisms underlying the relationship between time in office and economic voting by exploring the relationship in more controlled experimental settings (for example, Besley and Case 1995).

As discussed above, incumbents are likely to be more responsible for the state of economic conditions as their time in office increases. Following the large and empirically successful literature on clarity of responsibility, one would expect incumbents to be held more accountable for their economic performance as their time in office increased. However, the results suggest that other factors, like Bayesian learning, more than offset any potential increases in clarity of responsibility. In this way, my findings challenge selection models that privilege the signal-to-noise ratio in the economy as the key variable determining the size of the economic vote (Duch and Stevenson 2008). Sometimes voters rely more on weaker signals of government performance. Future models of the economic vote should take this into account, perhaps by directly incorporating Bayesian learning.

The findings in this article also challenge the idea that economic voting is a form of 'blind retrospection', in which voters lash out at the incumbent simply because they are in distress.

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Instead, this study suggests that voters primarily reward and punish the incumbent for recent economic conditions if they have little other relevant information available. Of course, this does not imply that voters are especially reasonable in how they hold the incumbent responsible for economic conditions, but it does imply that voters are selective in how they pass electoral judgment on the economy.

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Supplementary material. Data replication sets are available in Harvard Dataverse at: https://doi.org/10.7910/DVN/EB1T26 and online appendices at: https://doi.org/10.1017/S0007123419000280.

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Supplementary Materials for: Incumbent Tenure Crowds Out Economic Voting

Contents

S1: A Formalisation of the Bayesian Learning Model

In this model we examine a set of voters who have to decide whether to re-elect an incumbent. We assume that the voters are more likely to re-elect the incumbent if they believe the incumbent is more competent. Therefore, voters' goal is to construct a set of rational beliefs about the incumbent's competence given the available evidence.

Imagine an incumbent I which was elected at $t = 0$, and who is now up for re-election at $t = 1$. We denote the incumbent's competence as C_I. Based on the voters' prior experiences with other incumbents, they start off with a normally distributed prior belief about C_I, which we standardise to have a mean of 0 with and a variance of 1.

Since voters are interested in the incumbent's competence, C_I, they try to infer how competent the politician is based on the economic situation, y, which is affected by C_I. The economy is also affected by a non-competence related shock ϵ, which is independently and identically drawn in each period from a normal distribution with mean zero and variance σ_ϵ^2. The economic situation at $t = 1$ can be defined as:

$$y_1 = C_I + \epsilon_1 \tag{1}$$

In this equation, voters only observe y_1, but they do know the distribution the non-competence related shock is drawn from. As such, voters face a signal extraction problem, which can be solved by using the Bayes rule to update their prior beliefs about C_I using y_1. This leaves voters with the following posterior beliefs about C_I:

$$C_I|y_1 \sim N(\frac{1}{\sigma_\epsilon^2 + 1}y_1; \frac{\sigma_\epsilon^2}{\sigma_\epsilon^2 + 1}) \tag{2}$$

Equation 2 tells us that voters' beliefs about the incumbent's expected competence are improving in y_1. That is, a better economic situation leads the voter to infer that the incumbent is more competent. Specifically, the effect of a one unit increase in y_1 on expected competence is $\frac{1}{\sigma_\epsilon^2+1}$.

From this, we can also see that the effect of the economic situation on beliefs about competence becomes smaller as σ_ϵ^2 becomes larger. That is, as the variation in non-competence related shocks to the economy increases, it becomes more likely that any variation in the economic situation is due to non-competence related shocks, and accordingly the economy becomes a more noisy signal of the incumbent's competence. In effect, σ_ϵ^2 can be thought of as being a (reverse) indicator of clarity of responsibility. If σ_ϵ^2 is large, the incumbent is probably not responsible for changes in economic conditions, if σ_ϵ^2 is small the incumbent is probably responsible for changes in ecnomic conditions.[1]

Imagine the incumbent is re-elected in $t = 1$. In period $t = 2$, the voters have to decide once again whether to vote for the incumbent. However, now the voters' prior beliefs about the incumbent incorporate the information obtained about C_I at $t = 1$. That is, voters' prior beliefs now have a mean of $\frac{1}{1+\sigma_\epsilon^2}y_1$ and a variance of $\frac{\sigma_\epsilon^2}{\sigma_\epsilon^2+1}$. (Note that the variance of the new prior is smaller than the original prior, since $1 > \frac{\sigma_\epsilon^2}{\sigma_\epsilon^2+1}$).

Voters update their prior beliefs using Bayes rule, based on the economic situation in $t = 2$, y_2, which is equal to:

$$y_2 = C_I + \epsilon_2 \tag{3}$$

[1]This conclusion closely mirrors the one found by Duch and Stevenson (2008). Using a slightly more complicated set-up, they show that as control of economic conditions becomes more independent of elected officials (i.e. the variance of non-competence related shocks increase), voters' beliefs about the incumbent's competence become more independent of economic conditions.

This leaves the voter with the following posterior beliefs about the incumbent's competence.

$$C_I|y_2, y_1 \sim N(\frac{1}{\sigma_\epsilon^2 + 2}y_1 + \frac{1}{\sigma_\epsilon^2 + 2}y_2; \frac{\sigma_\epsilon^2}{\sigma_\epsilon^2 + 2}) \tag{4}$$

A better economic situation in period 2, y_2, is used to infer that incumbent competence is higher and σ_ϵ^2 attenuates the degree to which voters can use the economic situation to make inferences about C_I. However, there is one key difference from period 1. The effect of the economic situation on voters' beliefs about the incumbent's competence has become smaller.

In period 1 the effect of a one unit increase in y_1 was $\frac{1}{1+\sigma_\epsilon^2}$. In period 2 the effect of a one unit increase in y_2 is $\frac{1}{2+\sigma_\epsilon^2}$. This is a key result from the model, which underlines the assertion made in the theoretical discussion of the main article: as voters' information about the incumbent accumulate, their priors harden and recent economic situation comes to play a smaller role in shaping voters' beliefs about the incumbent.

Increasing Clarity of Responsibility Versus Bayesian Learning

In the model presented above, we assumed that the economic situation in period 1 and the economic situation in period 2 was a result of the same mix of competence and non-competence related shocks. Some previous literature on the relationship between economic voting and time in office makes a different assumption (e.g., Nadeau and Lewis-Beck 2001). In particular, these researchers assume that the incumbent becomes more responsible for the economic conditions as their time in office increases. In the terminology of our model, they think incumbent competence becomes more important relative to non-competence related shocks at $t = 2$. What happens if we incorporate this alternative assumption into our model?

We introduce the assumption by letting non-competence related shocks, σ_ϵ^2, decrease with time in office. In particular, we assume that the variance decreases from σ_ϵ^2 at $t = 1$ to $\tilde{\sigma}_\epsilon^2$ at $t = 2$, where $\tilde{\sigma}_\epsilon^2 < \sigma_\epsilon^2$. We denote the rate at which the variance decreases as α, where $\alpha = \tilde{\sigma}_\epsilon^2/\sigma_\epsilon^2$. If α is close to 1, there is only a small decrease in the variation of the error term, signifying that incumbents become only slightly more responsible for the economic situation in the second period. If α is close to 0 there is a marked decrease in the variation of the error term, signifying that incumbents become a lot more responsible for the economic situation.

How does introducing this assumption affect voters' beliefs about incumbent competence? In the first period, nothing changes, as the variance of the non-competence related shocks remain the same. However, in the second period, voters take into account that the variance in ϵ has decreased to $\tilde{\sigma}_\epsilon^2$, and consequently rely more on the competence signal relayed by the economic situation y_2. In particular, after updating their priors using Bayes rule, voters' posterior beliefs about incumbent competence can be described as follows:

$$C_I|y_2, y_1 \sim N(\frac{1}{\frac{1}{\alpha} + \sigma_\epsilon^2 + 1}y_1 + \frac{1}{1 + (\sigma_\epsilon^2 + 1)\alpha}y_2; \frac{\tilde{\sigma}_\epsilon^2\sigma_\epsilon^2}{\tilde{\sigma}_\epsilon^2\sigma_\epsilon^2 + \tilde{\sigma}_\epsilon^2 + \sigma_\epsilon^2}) \tag{5}$$

Note that in Equation 5, the extent to which voters rely on y_2 depends negatively on α (the rate at which the variance in the non-competence related shocks decreases from $t = 1$ to $t = 2$). This makes intuitive sense, because a large decrease in variance corresponds to a large increase in the clarity of political responsibility. As such, if clarity of responsibility increases a lot with time in office, then α is low and voters rely more on y_2.

We can compare the extent of economic voting across time in office by comparing the effect of a one unit increase in y_2 on $E(C_I)$ at $t = 2$ (see Equation 5) with the effect of a one unit

increase in y_1 on $E(C_I)$ at $t = 1$ (see Equation 2). If the effect in the earlier period is larger, then economic voting decreases over time. This inequality can be written as

$$\frac{\delta E(C_I)}{\delta y_2} < \frac{\delta E(C_I)}{\delta y_1} \iff \frac{1}{1 + (\sigma_\epsilon^2 + 1)\alpha} < \frac{1}{1 + \sigma_\epsilon^2}, \tag{6}$$

which can be simplified to

$$\sigma_\epsilon^2 (\frac{1}{\alpha} - 1) < 1. \tag{7}$$

If the inequality in Equation 7 is satisfied, economic voting decreases with time in office. When will this inequality be satisfied? All else equal, it is more likely to be satisfied if the increase in clarity of responsibility over time is low (if α close to 1), and if the overall role placed by non-competence related shocks is low (σ_ϵ^2 is small). Note that if α is 1, signifying no increase in clarity of responsibility over time, the condition in equation 7 will always be satisfied, and incumbent tenure will always crowd out economic voting.

In conclusion, it is not possible to form unambiguous theoretical expectations for how incumbent tenure and economic voting are related based on this augmented model. Instead, the answer has to be that 'it depends'. In particular, it depends on the exact beliefs voters hold about α and σ_ϵ^2.

S2: Overview of the Countries, Elections and Election Surveys Included in the Analysis

An overview of the data used in the country-level and individual-level analyses are presented in Tables S.1 and S.2.

Table S.1: Elections Included in the Country-level Analysis

	Minimum	Maximum	Number of Elections
Argentina	1985	2001	12
Australia	1961	2007	19
Austria	1971	2008	12
Belgium	1961	2007	15
Bolivia	1989	2002	8
Brazil	1990	2002	7
Bulgaria	1991	2001	6
Canada	1962	2008	16
Chile	1993	2001	5
Colombia	1982	2002	12
Costa Rica	1982	2002	12
Denmark	1964	2007	18
Dominican Republic	1990	2002	6
Ecuador	1984	1998	11
El Salvador	1985	2000	9
Finland	1962	2007	17
France	1968	2007	14
Germany	1972	2009	11
Greece	1981	2009	9
Honduras	1989	2001	8
Iceland	1963	2007	13
India	1980	1998	6
Ireland	1973	2007	10
Israel	1969	2006	12
Italy	1972	2008	10
Luxembourg	1979	2009	7
Madagascar	1996	2001	2
Netherlands	1963	2006	14
New Zealand	1978	2008	11
Norway	1969	2009	11
Papua New Guinea	1987	2002	4
Peru	1990	2001	6
Poland	1993	2001	3
Portugal	1980	2009	10
Spain	1979	2008	9
Sweden	1976	2006	10
Switzerland	1983	1999	5
Trinidad and Tobago	1991	2000	3
Turkey	1987	2002	5
United Kingdom	1964	2010	12
United States	1978	2002	19
Total	1961	2010	409

Table S.2: Observations Included in the Individual-level Analysis

	1989	1994	1999	2004	2009	2014	Total
Denmark	832	1642	759	999	867	1058	6157
France	749	1321	363	1034	513	1049	5029
Germany	875	1333	777	381	691	1610	5667
Greece	525	1236	320	373	689	1080	4223
Ireland	752	1351	370	892	762	1074	5201
Italy	673	960	2446	1151	561	1063	6854
Netherlands	871	1610	804	1260	802	1087	6434
Portugal	521	1154	259	605	623	1020	4182
Spain	618	1216	581	887	680	1097	5079
United Kingdom	856	1603	711	1104	690	1378	6342
Total	7272	13426	7390	8686	6878	11516	55168

S3: Variable Descriptions and Descriptive Statistics

Descriptive statistics for the country-level data are presented in Table S.3.

Table S.3: Descriptive Statistics, Country-level Data

	Mean	SD	Min	Max	n
Electoral support for incumbent party	33.63	12.26	0.00	59.20	433
Lagged Support	37.99	12.61	0.00	67.30	433
Change in support for incumbent party	-4.36	8.03	-42.80	20.70	433
Economic growth	2.91	3.14	-11.70	13.85	433
Economic growth - 2 years	3.08	2.65	-8.78	14.90	428
Tenure	6.02	4.25	1.00	30.00	409
Executive election	0.14	0.35	0.00	1.00	433
Effective number of parties	3.87	1.63	1.18	10.49	415
Coalition partners	1.53	1.28	0.00	3.00	433
Government has majority in legislature	0.71	0.46	0.00	1.00	348
Number of elections	12.60	4.01	5.00	19.00	431
Years pr. term	2.34	1.03	0.00	4.67	433
Fixed term	0.15	0.36	0.00	1.00	433
Mismatch tenure (person v. party)	0.35	0.48	0.00	1.00	433

The question wording for the different questions used in the individual-level analysis are as follows.

- Executive party vote: “If there were a general election tomorrow, which party would you vote for?” Executive parties are coded 1, others are coded 0.
- Executive party vote (last election): “Which party did you vote for at the General Election of [Year]?” Executive parties are coded 1, others are coded 0.
- Ideology: “In political matters people talk about ‘the left’ and ‘the right.’ What is your position? Please indicate your views using any number on a 10-point scale. On this scale, where 1 means ‘left’ and 10 means ‘right’, which number best describes your position?”
- Class: “If you were asked to choose one of these five names for your social class, which would you say you belong to — the working class, the lower middle class, the middle class, the upper middle class, or the upper class?”
- Religiosity: “How often do you attend religious services: several times a week, once a week, a few times a year, once a year or less, or never?”
- National economic perceptions (NEP): In 1989, 1994, 2004, 2009 and 2014: “What do you think about the economy? Compared to 12 months ago, do you think that the general economic situation in this country is: a lot better, a little better, stayed the same, a little worse, or a lot worse?” In 1999: “How about the state of [country’s] economy? Very satisfied, somewhat satisfied, somewhat dissatisfied, very dissatisfied?”

Descriptive statistics for the individual-level data are presented in Table S.4.
Descriptive statistics for the subnational data are presented in Table S.5.

Table S.4: Descriptive Statistics, Individual-level Data

	Mean	SD	Min	Max	n
Executive party vote	0.29	0.46	0.00	1.00	55168
Executive party vote (last time)	0.34	0.47	0.00	1.00	49250
National economic perceptions	0.43	0.28	0.00	1.00	55168
Prospective NEP	0.50	0.25	0.00	1.00	39142
Time in office (years)	5.46	4.24	1.00	17.00	55168
Class	0.45	0.30	0.00	1.00	52597
Religiosity	0.51	0.31	0.00	1.00	48672
Ideology	0.50	0.26	0.00	1.00	51018
Economic growth	1.85	2.96	-5.64	10.76	48826
Inflation	2.24	2.82	-4.48	13.70	47951
Unemployment rate	10.16	5.25	3.40	26.30	48826
Coalition government	0.63	0.48	0.00	1.00	55168

Table S.5: Descriptive Statistics, Subnational Data

	Mean	SD	Min	Max	n
Change in Support for Mayoral Party	-2.85	15.67	-45.20	78.15	1823
New incumbent	0.44	0.50	0.00	1.00	1823
Unemployment 07	2.31	0.86	1.00	8.70	1823
Unemployment 09	4.51	0.81	2.30	8.30	1823
Increase in unemployment rate	2.20	0.67	-0.40	4.10	1823
Turnout	0.69	0.06	0.37	0.89	1823
Right wing mayor	0.43	0.50	0.00	1.00	1823
Log of eligible voters	7.24	1.10	1.84	10.36	1823
Municipality amalgamated	0.80	0.40	0.00	1.00	1823
Proportion of votes for right wing parties	0.48	0.14	0.10	0.88	1823

S4: Alternative Measure of Growth

In Table S.6, we re-estimate the models from Table 1 using an alternative measure of economic growth: economic growth across the past two years, rather than just the past year. The interaction effect becomes slightly larger, remains negative and statistically significant.

Table S.6: Alternative Measure of Economic Growth

	(1)	(2)	(3)	(4)
Economic growth - 2 years	0.95*	1.16*	1.25*	1.31*
	(0.27)	(0.34)	(0.35)	(0.32)
Tenure	0.06	0.11	-0.03	-0.12
	(0.11)	(0.10)	(0.13)	(0.17)
Economic growth - 2 years × Tenure	-0.07*	-0.09*	-0.09*	-0.08*
	(0.03)	(0.03)	(0.03)	(0.03)
Lagged Support	-0.23*	-0.24*	-0.40*	-0.39*
	(0.05)	(0.05)	(0.06)	(0.11)
Executive election	-1.06	-0.11	1.99	0.22
	(1.61)	(1.41)	(1.61)	(0.79)
Year FE		✓	✓	
Country FE			✓	✓
Leader FE				✓
Observations	406	406	406	406

Standard errors clustered by country in parentheses.

S5: Using Controls in the Country-Level Data

In this section we add some controls to the models estimated on the country-level dataset of elections. This means dropping around 80 observations that do not have data coverage for the control variables. In order to make the estimates with and without controls more comparable, we start by estimating the same models as in Table 1 on the smaller sample of elections for which we have controls. This is done in columns one through four of Table S.7. The results are fairly similar to those found using the full sample. The main difference is that the interaction effects become slightly smaller, and the standard errors become slightly larger, leaving the interaction terms insignificant.

Next, we introduce the controls. The controls we use are number of government coalition partners, including a dummy for one, two and three or more partners; majority government, including a dummy for whether the government has more than 50 percent of the seats in parliament; and effective number of parties in parliament, a linear index measuring the size-adjusted number of parties in parliament. All these variables have been taken from the database of political institutions (Beck et al. 2001). They have been chosen with the following considerations in mind: we know that government composition affects economic voting (e.g., Fisher and Hobolt 2010), depressing the clarity of responsibility for economic policy, and it seems plausible that the effective number of parties can do the same—the more parties, the more political actors are to blame for economic conditions. It also seems likely that government and parliamentary composition can influence the tenure of the executive party, making it a good candidate for a confounder. Finally, unlike most other institutional factors, government and parliamentary composition are not already controlled for using the year, country and leader fixed effects. The controls are introduced in columns five through eight of Table S.7. This leaves the interaction effects practically unchanged.

In sum, while the interaction estimates remain substantially unchanged, the statistical significance of the interaction coefficients drop when introducing the controls. However, this because we analyze a smaller sample of elections. As such, there is no evidence to suggest that the controls introduced in any way confound the negative relationship between economic voting and time in office.

Table S.7: Including Control Variables in the Country-level Data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Executive election	-1.14	0.10	1.77	-2.23^{+}	-1.35	0.06	1.43	-1.76
	(1.63)	(1.48)	(1.73)	(1.26)	(1.53)	(1.41)	(1.71)	(1.51)
Economic growth	0.69*	0.78*	0.71*	1.07*	0.69*	0.80*	0.73*	1.10*
	(0.25)	(0.29)	(0.27)	(0.29)	(0.23)	(0.27)	(0.25)	(0.27)
Tenure	-0.01	0.06	-0.18	-0.21	0.02	0.09	-0.19	-0.20
	(0.12)	(0.11)	(0.16)	(0.20)	(0.11)	(0.10)	(0.15)	(0.21)
Economic growth $\times$ Tenure	-0.04	-0.04	-0.04	-0.06	-0.04	-0.04	-0.05	-0.06
	(0.03)	(0.03)	(0.04)	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)
Lagged Support	-0.22*	-0.23*	-0.39*	-0.39*	-0.30*	-0.31*	-0.41*	-0.32*
	(0.06)	(0.06)	(0.07)	(0.12)	(0.07)	(0.08)	(0.09)	(0.12)
Government has majority in legislature					-1.05	-1.28	-1.26	-3.12*
					(0.97)	(1.13)	(1.29)	(1.47)
One coalition partner					0.99	0.73	0.32	0.20
					(1.24)	(1.34)	(1.63)	(2.68)
Two coalition partners					-1.74	-1.82	-0.46	-0.09
					(2.00)	(1.81)	(1.58)	(2.28)
More than two coalition partners					0.08	-0.58	-0.37	2.27
					(1.27)	(1.37)	(1.61)	(2.12)
Effective number of parties					-0.85	-0.88	-0.66	0.07
					(0.52)	(0.54)	(0.74)	(0.68)
Time FE		✓	✓			✓	✓	
Country FE			✓	✓			✓	✓
Leader FE				✓				✓
Observations	330	330	330	330	330	330	330	330

Standard errors clustered by country in parentheses.

S6: Sensitivity to Outliers

Are the interaction effects presented above based on broad patterns in voting behavior or idiosyncrasies related to just one country? This is always an important question when dealing with time-series cross-sectional data. In order to investigate whether this was the case in the present analyses, we re-estimated the key models in the country-level, individual-level and subnational datasets, looking for evidence of instability in the effect-sizes which stem from the exclusion of one important set of cases.

For the country-level data, we re-estimate the models from Table 1 excluding one country at a time. The resulting 41×4 regression coefficients attached to the interaction between economic conditions and incumbent tenure are plotted for each model in the top left panel of Figure S.1. As can be seen from this figure, the interaction coefficients in models 1 and 2 seem rather stable; however, in models 3 and 4 one of the estimated coefficients deviates substantially from the rest. An inspection of the underlying data, reveals that the omitted country in this case is Luxembourg. There are two reasons why this is not that disconcerting. First, the interaction coefficient remains negative. Second, Luxembourg is not one of the countries included in the individual-level dataset, and therefore the negative relationship between economic voting and tenure cannot be attributed to Luxembourg alone.

For the individual-level data, we re-estimate the models from Table 2 excluding one survey at a time. The resulting 60×3 logistic regression coefficients attached to the interaction between economic perceptions and incumbent tenure are plotted for in the top right panel of Figure S.1. As can be seen from this figure, the interaction coefficients are relatively stable across all models.

For the subnational data, we re-estimate the models from Table 3 excluding one municipality at a time. The resulting 66×3 regression coefficients attached to the interaction between local unemployment and new incumbent are plotted for each model in the bottom panel of Figure S.1. As can be seen from this figure, the interaction coefficients are relatively stable across all models.

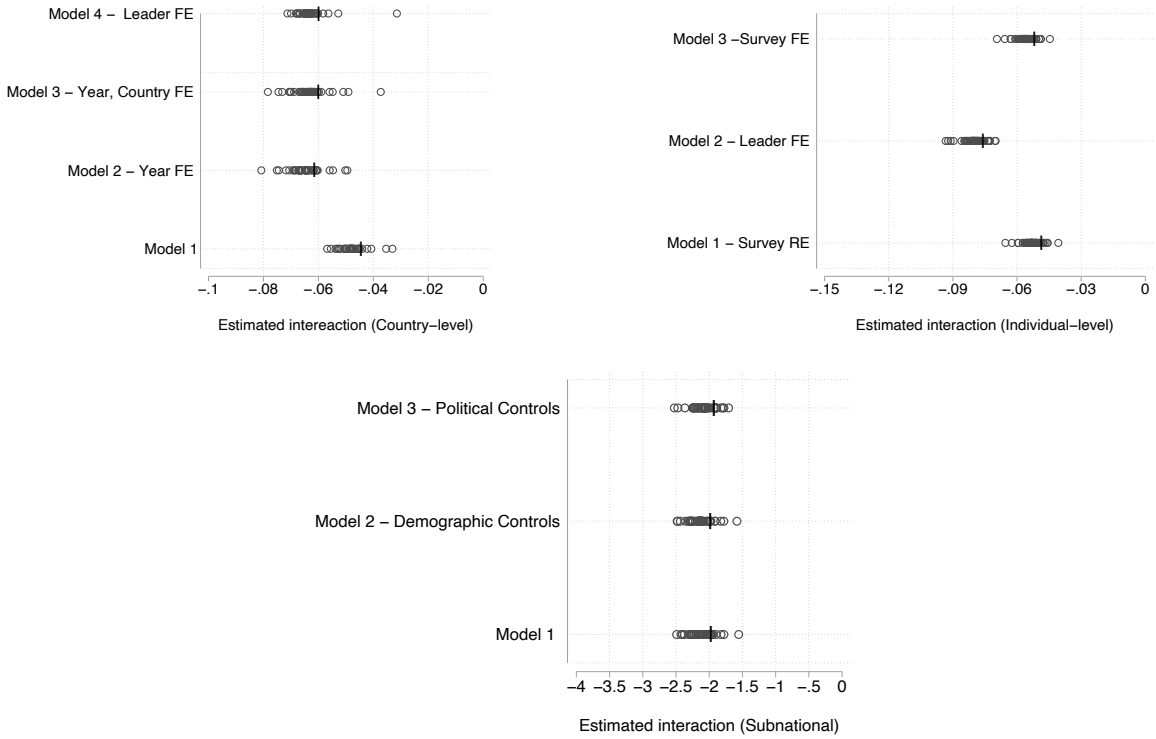

Figure S.1: Lines represent the interaction coefficients from linear and logit models in Tables 1, 2 and 3. Each dot in the top left panel represents an interaction coefficient from one of the four country-level models estimated with one of the 41 countries omitted. Each dot in the top right panel represents an interaction coefficient from one of the three individual-level logit models estimated with one of the 60 surveys omitted. Each dot in the bottom panel represents an interaction coefficient from the three subnational models estimated with one of the 66 municipalities omitted.

S7: Further Checks of the Interaction Terms

In a recent paper Hainmueller, Mummolo and Xu (2016) suggest three diagnostics to run when encountering a multiplicative interaction term. Below, we look at each of these in turn for the interactions estimated in the country-level, individual-level and subnational data.

The first diagnostic is examining whether the L-kurtosis of the interaction variable is below 0.16. If the L-kurtosis is above 0.16, then much of the variation in the interaction variable is based on just a few observations. The L-kurtosis for the time in office variable in the country-level dataset is 0.2. This means that the interaction effect in the country-level data potentially relies on just a few observations, making the interaction term less reliable. The L-kurtosis for the time in office variable in the individual-level dataset is 0.075. In the subnational data, the L-kurtosis for the unemployment variable is 0.14. This is below the cut-off, and accordingly, we probably do not need to be concerned with the reliability of the interaction variable in the individual-level or the subnational data.

The second diagnostic looks for monotonicity in the average marginal effects. That is, we should expect average marginal effects to move monotonically with the interaction variable. To test this we trichotomised our interaction variables for all three datasets based on the variables' terciles. For the linear interaction models we then estimate the average marginal effect at the median of each tercile using a binning estimator (see Equation 4 in Hainmueller, Mummolo and Xu 2016). For the non-linear model which analyze the individual-level data we cannot use the binning estimator. Instead, we estimate a model using the trichotomised interaction variable as a set of dummy-interactions instead of the linear interaction, deriving the average marginal effects for the bottom, middle and top tercile. For the country-level, individual-level, and subnational data, we find that the average marginal effects monotonically decrease across the three terciles.

The final diagnostic is examining the linearity of the interaction. To do this, we plot the average marginal effects from the trichotomised interaction terms, along with the average marginal effects derived from simple linear interaction terms in Figure S.2. The trichotomised interaction terms are plotted at the median within each tercile. While the average marginal effects from the trichotomised interaction terms do not match the average marginal effect from the linear interaction terms perfectly, they do not deviate substantially either.

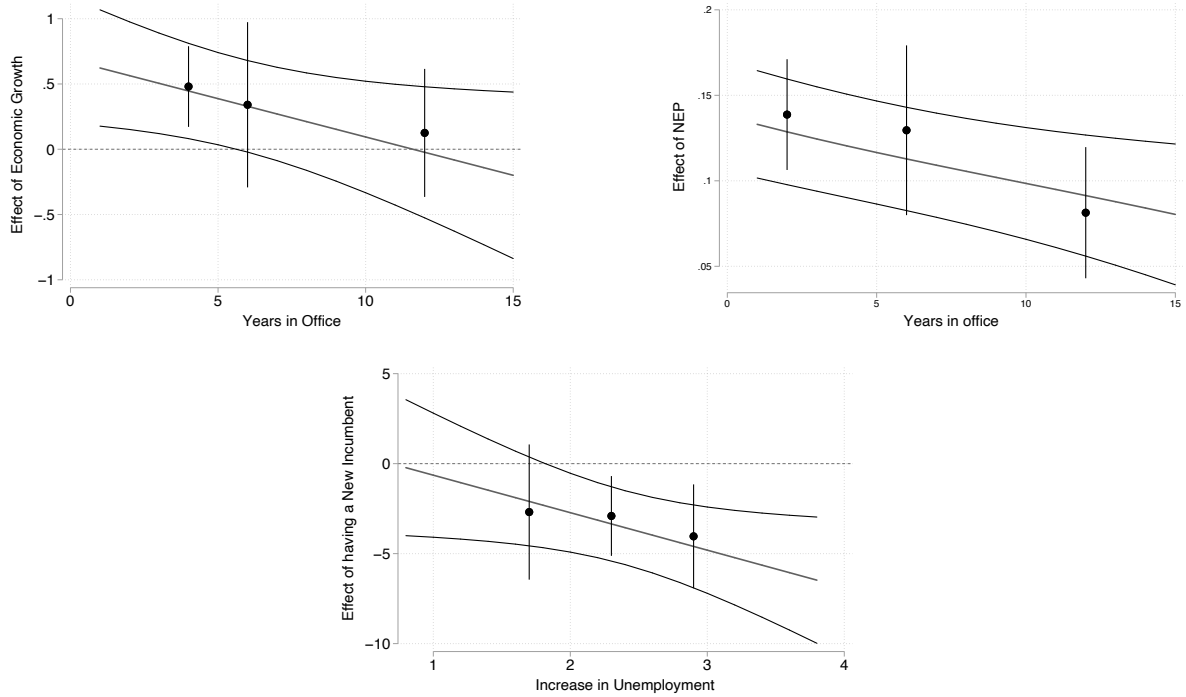

Figure S.2: The lines represent the average marginal effects of economic growth, national economic perceptions and having a new incumbent across the interaction variables tenure and local unemployment. Derived from column one of Table 1, column three of Table 2 and column one of Table 3. Dots represent the average marginal effects from binning estimators, which include a trichotomised interaction. All the average marginal effects are plotted with 95 pct. confidence intervals.

S8: Strategic Election Timing

To probe the plausibility of the strategic election timing explanation, we augment our country-level analysis in two different ways.

First, we introduce a control variable which measures how often an incumbent calls for an election (i.e. years served divided by elections called). By introducing this variable we hold constant the incumbents' inclination to call early elections. We add this variable as a control to the set of models already estimated in Table 1, and report estimates of these extended models in the first four columns of Table S.8. As can be seen from Table S.8, the interaction remains negative, it has the same size and is statistically significant ($p < 0.1$).

Table S.8: Controlling for Election Timing

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Economic growth	0.68*	0.85*	0.76*	0.89*	0.91*	0.44	0.49*	0.87+
	(0.22)	(0.26)	(0.24)	(0.27)	(0.45)	(0.33)	(0.16)	(0.52)
Tenure	-0.00	0.05	-0.11	-0.18	0.25*	-0.03	-0.53*	0.11
	(0.11)	(0.10)	(0.12)	(0.17)	(0.05)	(0.06)	(0.27)	(0.08)
Economic growth × Tenure	-0.05+	-0.07*	-0.06*	-0.06*	-0.09*	0.01	-0.13*	-0.10*
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)	(0.05)	(0.04)
Lagged Support	-0.23*	-0.24*	-0.38*	-0.38*	-0.04	0.01	-0.82*	-0.34*
	(0.05)	(0.05)	(0.07)	(0.11)	(0.08)	(0.07)	(0.16)	(0.15)
Executive election	-0.96	0.08	1.68	12.30*	-2.63	-1.81	2.32	
	(1.68)	(1.46)	(1.68)	(1.69)	(3.99)	(2.37)	(1.56)	
Time FE		✓	✓			✓	✓	
Country FE			✓	✓			✓	✓
Leader FE				✓				✓
Observations	409	409	409	409	60	60	60	60

Standard errors clustered by country in parentheses.
Executive election dummy omitted in column eight due to perfect collinearity with Leader FE.

Second, we disentangle election-timing and tenure by restricting the sample of elections to the five countries in our dataset where terms are fixed. This leaves 60 of the original 409 elections. In these countries, the executive cannot time the election, and accordingly, any relationship found between time in office and the importance of the economy cannot be attributed to election timing. Using this restricted sample, we re-estimate the models from Table 1. The key estimates from these models are reported in the four rightmost columns of Table S.8. As can be seen from Table S.8, the interaction effect remains negative and statistically significant in the most demanding model, which includes the leader fixed effects.

Across both types of control for election timing the interaction thus remains negative and substantially unchanged in the most demanding model specification (see columns four and eight of table S.8).

S9: Coalition and Single-party Governments

Table S.9 re-estimates the models from Table 1 subsetting on single-party governments (columns one through four) and on coalition governments (columns five through eight).[2] The estimated interaction coefficients are consistently negative, however, there are some differences across the two sets of models. In the models with no controls and the model with leader fixed effects, the negative interaction seems to be smaller for single-party governments. In the models with year and country fixed effects, the interaction seem to be smaller for multi-party governments. As such, there are no consistent differences in the size of the estimated interaction across the two groups.

This suggests that the negative interaction term identified in the country-level data cannot be explained in terms of differences in how voters judge coalition and single-party governments over time. If this was the case, we would expect to see no interaction between time in office and economic voting for single-party governments, and a very strong and statistically significant interaction among coalition governments. This is not what we find.

Table S.9: Differences Between Single-Party and Multi-Party Governments in the Country-level Data

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Economic growth	0.69*	0.88+	0.61	0.89	0.46*	0.64*	0.75*	0.21
	(0.33)	(0.48)	(0.49)	(0.58)	(0.22)	(0.26)	(0.20)	(0.27)
Tenure	-0.27	-0.03	-0.27	-0.62*	0.06	0.02	-0.09	-0.18
	(0.17)	(0.31)	(0.27)	(0.30)	(0.12)	(0.12)	(0.13)	(0.16)
Economic growth × Tenure	-0.02	-0.05	-0.06	-0.01	-0.05+	-0.05	-0.07*	-0.04
	(0.04)	(0.08)	(0.07)	(0.09)	(0.03)	(0.03)	(0.03)	(0.03)
Lagged Support	-0.30*	-0.29*	-0.47*	-0.45+	-0.21*	-0.21*	-0.27*	-0.24*
	(0.13)	(0.14)	(0.14)	(0.25)	(0.04)	(0.04)	(0.05)	(0.07)
Time FE		✓	✓			✓	✓	
Country FE			✓	✓			✓	✓
Leader FE				✓				✓
Observations	113	113	113	113	239	239	239	239

Standard errors clustered by country in parentheses.

Table S.10 re-estimates the models from Table 2 only for single-party governments (columns one through three) and only for multi-party governments (columns three through six). There are no substantial differences across the two sets of models. In line with the findings above, this suggests that any differences in economic voting across time in office *cannot* be explained by differences in how voters hold single-party and coalition governments electorally accountable for the economy.

[2]We exclude all presidential elections from this analysis because these *always* feature single party government.

Table S.10: Differences Between Single-Party and Multi-Party Governments in the Individual-level Data

	(1)	(2)	(3)	(4)	(5)	(6)
Executive party vote						
National Economic Perceptions	2.56*	2.55*	2.44*	1.51*	1.50*	1.58*
	(0.25)	(0.26)	(0.27)	(0.20)	(0.19)	(0.22)
Tenure	0.04	-0.01		0.06+	-0.05	
	(0.04)	(0.04)		(0.03)	(0.04)	
National Economic Perceptions × Tenure	-0.07*	-0.07+	-0.06	-0.06*	-0.06*	-0.07*
	(0.03)	(0.04)	(0.04)	(0.02)	(0.02)	(0.02)
Lagged executive party vote	4.52*	4.51*	4.52*	4.32*	4.32*	4.30*
	(0.45)	(0.45)	(0.45)	(0.18)	(0.18)	(0.19)
Ideology	2.20*	2.20*	2.21*	2.40*	2.38*	2.41*
	(0.29)	(0.30)	(0.29)	(0.33)	(0.33)	(0.34)
Religiosity	-0.05	-0.04	-0.04	0.24	0.25+	0.25+
	(0.19)	(0.19)	(0.19)	(0.15)	(0.15)	(0.15)
Class	0.44+	0.46+	0.45+	0.29+	0.28+	0.27+
	(0.23)	(0.24)	(0.24)	(0.16)	(0.16)	(0.16)
Observations	14,165	14,165	14,165	25,048	25,048	25,048

Standard errors clustered by country in parentheses.
Tenure omitted in model (3) and (6) due to collinearity with Survey FE.

S10: Mismatch in Tenure

Table S.11 re-estimates the models from Table 1 including a control for whether the tenure of the executive officer (i.e., president or prime minister) is different from that of the executive party. We include this control by itself and interact it with economic growth. This control is, obviously, highly correlated with time in office (because the longer a party is in power the more likely it is that they will replace the executive officer). Adding these controls shift the estimates and standard errors slightly, leaving the interaction estimates significant at the 10 percent level (rather than at the five percent level) in columns one, two and three.

Table S.11: Controlling for Mismatch between Party and Personal Tenure

	(1)	(2)	(3)	(4)
Mismatch tenure (person v. party)	-2.53	-2.09	-0.94	-2.65
	(1.73)	(1.94)	(2.15)	(2.13)
Economic growth	0.69*	0.84*	0.74*	0.88*
	(0.21)	(0.26)	(0.25)	(0.27)
Tenure	0.05	0.12	-0.02	-0.21
	(0.21)	(0.21)	(0.20)	(0.27)
Mismatch tenure (person v. party) × Tenure	0.09	0.04	-0.03	0.19
	(0.22)	(0.23)	(0.28)	(0.28)
Economic growth × Tenure	-0.04+	-0.06+	-0.06+	-0.06*
	(0.03)	(0.03)	(0.03)	(0.03)
Executive election	-0.94	0.12	1.92	-1.89
	(1.57)	(1.38)	(1.64)	(1.33)
Lagged Support	-0.23*	-0.24*	-0.38*	-0.37*
	(0.05)	(0.05)	(0.06)	(0.12)
Year FE		✓	✓	
Country FE			✓	✓
Leader FE				✓
Observations	409	409	409	409

Standard errors clustered by country in parentheses.

S11: Two-step Models of Individual-level data

Another way to examine whether there is an interaction between time in office and national economic perceptions is to estimate a multilevel model which allows for a random slope with respect to national economic perceptions across the different surveys, and then examine whether the size of the survey-specific slopes are related to the tenure of the incumbent party at the time of the survey.

To do this, we estimate a set of multi-level logit models of the probability of voting for the executive party with the full set of individual-level controls, omitting time in office and allowing the effect of national economic perceptions to vary across the surveys (i.e., estimate a random slope model). Using this method, we obtain 60 different logit coefficients, which represent the effect of national economic perception in the individual surveys. Figure S.3 plots these logit coefficients against incumbent tenure at the time of the surveys.

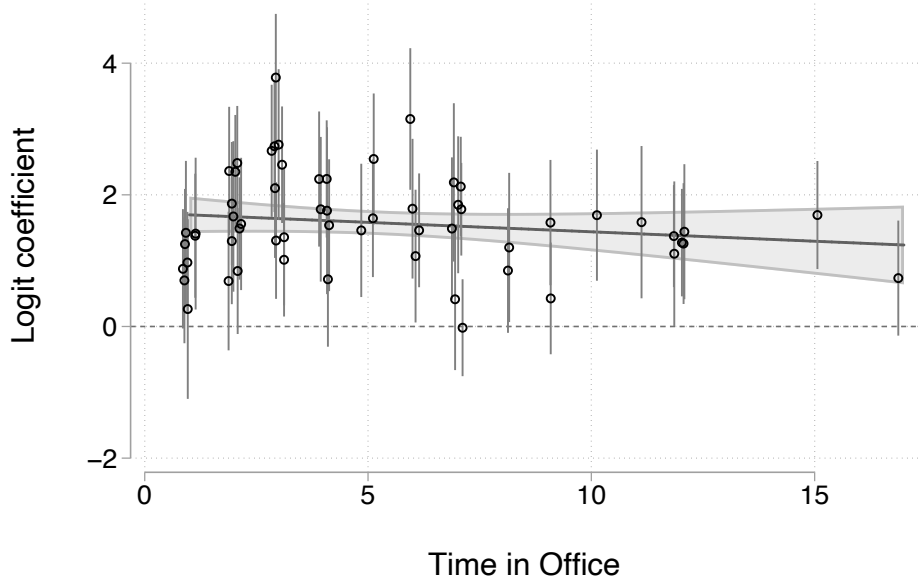

Figure S.3: Random slope of NEP plotted with 95 pct. confidence intervals. Uniformly distributed random noise added to the horizontal placement of the dots. Figure includes a linear fit with 95 pct. confidence intervals.

There is a negative relationship between time in office and the size of the logit coefficients. A linear regression of time in office on the logit coefficients reveal that the negative relationship is statistically significant ($p < 0.05$ using country-clustered standard errors).This alternative way of estimating the effect of time in office on the economic vote therefore gives us the same basic result as the one we found in the multi-level analysis.

S12: The Role of Prospective Economic Conditions

Table S.12 re-estimates the models presented in Table 2 excluding the economic perceptions variable used so far, but including a measure of prospective national economic perceptions and an interaction between these perceptions and time in office.

In particular, we use the following item from the EES: "Over the next 12 months, how do you think the general economic situation in this country will be: a lot better, a little better, stay the same, a little worse, or a lot worse?". We rescale this variable to go from zero (a lot worse) to one (a lot better). This question was not asked in the '89 and the '99 EES, and we therefore omit these years when estimating the models with prospective economic perceptions.

There is a statistically significant negative interaction between prospective economic perceptions and time in office. As such, there is no evidence that incumbents time in office lead voters to shift their focus from one type of economic percepts to another. Voters simply become less reliant on their perceptions of the economy, regardless of whether these perceptions are prospective or retrospective, as incumbents' time in office increases.

Table S.12: Prospective Economic Perceptions and Support for the Executive Party

	(1)	(2)	(3)
Prospective NEP	2.06*	2.07*	2.08*
	(0.28)	(0.29)	(0.28)
Tenure	0.08^{+}	0.05	
	(0.04)	(0.06)	
Prospective NEP $\times$ Tenure	-0.07*	-0.07*	-0.07*
	(0.03)	(0.03)	(0.03)
Lagged executive party vote	4.28*	4.29*	4.29*
	(0.16)	(0.16)	(0.16)
Ideology	2.41*	2.42*	2.42*
	(0.33)	(0.33)	(0.33)
Religiosity	0.11	0.10	0.11
	(0.15)	(0.16)	(0.16)
Class	0.33*	0.31*	0.32*
	(0.14)	(0.14)	(0.15)
Observations	28,557	28,557	28,557

Standard errors clustered by country in parentheses.
Tenure omitted in model (3) due to collinearity with Survey FE.

S13: Endogeneity in National Economic Perceptions

We found higher levels of economic voting across levels of tenure in the individual-level analysis than we did in the country-level analysis. This might be because the endogeneity of national economic perceptions is leading us to overestimate the level of economic voting in the individual-level data. To investigate whether this is the case, we re-analyze the individual-level data in two different ways, both of which might allow us to sieve out (some of) this endogeneity.

First, we exclude those who voted for the incumbent at the last election, because these are more likely to be incumbent partisans and therefore more likely to be engaged in the type of "wishful thinking" that drives part of the correlation between economic perceptions and electoral support for the incumbent.[3] In the first three columns of Table S.13, we present the results of this analysis with model specifications similar to those used in the main analysis.[4] Figure S.4 plots the average marginal effects of national economic percepts across tenure for the censored sample based on the model presented in column three of Table S.13. As can be seen from this figure, the pattern identified in this censored sample matches up more closely with what we found in the country-level data—that is, when we leave out incumbent "partisans" incumbent tenure tends to completely crowd out economic voting.

Table S.13: Adressing Endogeneity Problems in the Individual-level Data

	(1)	(2)	(3)	(4)
main				
National Economic Perceptions	2.37*	2.49*	2.46*	0.39*
	(0.31)	(0.31)	(0.31)	(0.04)
Tenure	0.05	-0.00		0.01*
	(0.03)	(0.04)		(0.00)
National Economic Perceptions × Tenure	-0.13*	-0.17*	-0.14*	-0.02*
	(0.05)	(0.05)	(0.05)	(0.01)
Ideology	3.00*	3.03*	3.01*	
	(0.29)	(0.29)	(0.29)	
Religiosity	-0.15	-0.16	-0.13	
	(0.13)	(0.14)	(0.14)	
Class	0.30+	0.35*	0.33+	
	(0.17)	(0.18)	(0.19)	
Observations	24,996.00	24,996.00	24,996.00	47,951.00

Standard errors clustered in parentheses. Clustered at the country-level for columns one, two and three. Tenure omitted in model (3) due to collinearity with Survey FE.

Second, we use aggregate objective economic conditions to instrument national economic perceptions. This approach sidesteps problems with endogeneity by only examining the differences in national economic perceptions which are caused by changes in objective economic conditions (for the details of this method see Nadeau, Lewis-Beck and Bélanger 2013). This means sieving out variation in national economic perceptions which is caused by factors such as partisanship.

In measuring objective economic conditions we include election year inflation, unemployment and economic growth at the country-level. All these variables were taken from the World Banks database. The reason we do not simply use economic growth, as we did in the analysis

[3] A more standard measure of party identification would be preferable, however, no such measure is included in the EES.

[4] To more effectively estimate the multi-level model, we do not estimate random slopes for national economic perceptions in this analysis.

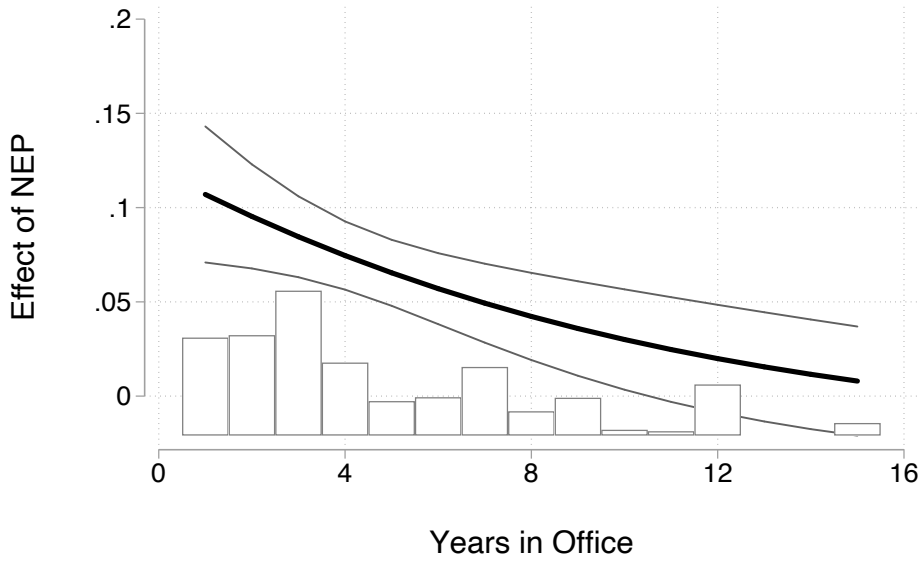

Figure S.4: Average marginal effects of national economic perceptions on the probability of voting for the executive party across levels of tenure with 95 pct. confidence intervals. Estimated based on the model presented in column three of Table S.13. The bar plot shows the density of the variable years in office.

of the country-level data, is that it is possible to get estimates for unemployment and inflation for the time period covered by the EES. This is not possible for all elections used in the country-level data. Turning to estimation, we instrument national economic perceptions and the interaction between these percepts and time in office using growth, unemployment and inflation, as well as an interaction between these three variables and time in office. We omit the individual-level controls, since these are potentially endogenous as well. We also drop survey and leader fixed effects as these would be perfect or near-perfectly collinear with the aggregate level economic indicators. Finally, we link the instrumented economic perceptions and incumbent support using a linear probability model rather than a logit model to make the estimation less computationally complex.

The estimates produced using this instrumental variables approach are presented in the fourth column of Table S.13. As can be seen from this model, we still see a statistically significant negative interaction between tenure and the now-instrumented national economic perceptions. Figure S.5 plots marginal effects across tenure based on the instrumental variables regression. Here we see that after taking potential problems with endogeneity into account, the level of economic voting becomes statistically indistinguishable from zero after roughly 15 years in office. This trajectory is roughly similar to what we find in the country-level data, where the effect of economic voting also becomes statistically indistinguishable from zero as time in office increases (although this already happens after eight years, see Figure 1).

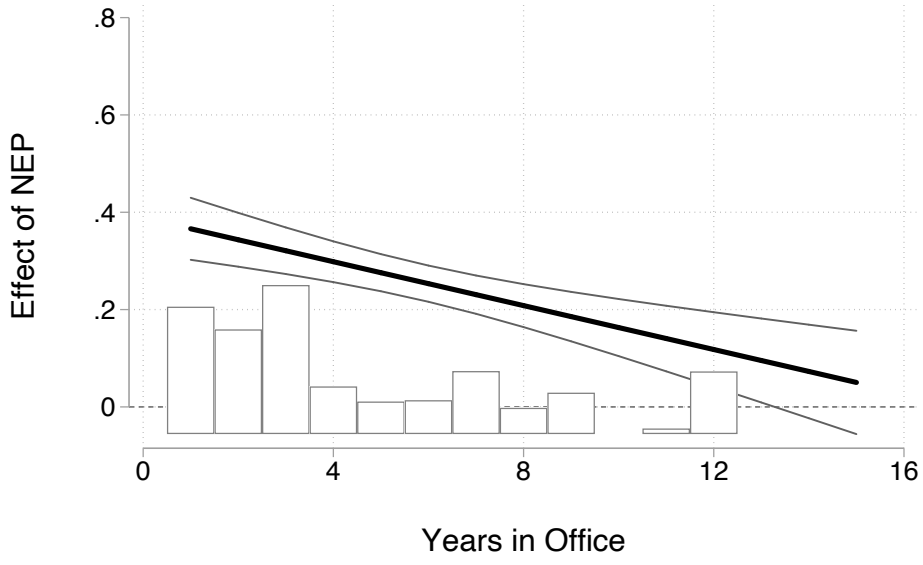

Figure S.5: Average marginal effects of national economic perceptions on the probability of voting for the executive party across levels of tenure with 95 pct. confidence intervals. Derived from the instrumental variables estimation (see column four of Table S.13). The bar plot shows the density of the variable years in office.

S14: Balance Test for the Subnational Data

Were there any systematic differences between precincts that got a new incumbent following the jurisdictional reform and precincts that did not (i.e., the main treatment variable)? To find out, we first run a regression of getting a new incumbent on the pre-reform unemployment rate (i.e., 2007 unemployment rate), clustering standard errors at the municipal level. As can be seen from Table S.14 there was a small insignificant difference corresponding to one tenth of a percentage point. Next, we ran a set of regressions of getting a new incumbent on right-wing support, logged number of eligible voters and turnout. In each of these regressions we include municipality fixed effects to take into account that we look at within municipality differences of getting a new incumbent in our main analysis. Number of right-wing voters and turnout seems balanced across precincts that got a new incumbent and precincts that did not. However, there is a difference in logged number of voters—precincts that got a new incumbents were roughly 20 percent smaller than those who did not. The difference is statistically significant at the ten percent level.

Table S.14: Effect of Different variables on the Probability of Having a New Incumbent.

	(1) Unemployment	(2) Right-wing	(3) Log(votes)	(4) Turnout
New incumbent	0.13	0.02	-0.19^{+}	0.00
	(0.13)	(0.02)	(0.10)	(0.00)
Municipality FE		✓	✓	✓
Observations	1,465	1,465	1,465	1,465

Standard errors clustered by municipality in parentheses.

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