What's the Half-Life of the Economic Vote? (About a Year and a Half)*

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Abstract

Economic voting research assumes that voters focus their attention on the recent past. Yet testing this assumption is difficult and previous research remains inconclusive. To estimate voter's economic time frames, I specify a new model that borrows insights from the physical sciences. I show that voter myopia is real and that the economic vote is strongest when economic time frames are shortest. After a one and half years, the strength of the economic vote falls by half. After five years, it becomes practically equivalent to zero. This suggests that voters are less short-sighted than some past research suggests. Still, there is some cause for concern: voters' economic time frames remain short enough that governments are likely to receive undeserved leeway for mistakes they make early in their tenure.

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‡Click here for the most recent version of the paper and here for all associated replication materials.

Introduction

In 1992, MacKuen, Erikson, and Stimson argued that economic voting research had moved "little beyond introspection in understanding the processes by which citizens come to perceive economic movement" (MacKuen, Erikson, and Stimson 1992, 597). Three decades later, and we remain none the wiser. Just like in the early-1990s, economic voting scholars now believe that voters are both retrospective and myopic. Yet — again like the early-1990s — economic voting scholars still do not know just *how retrospective* or *how myopic* voters really are.

Most economic voting research relies on ad-hoc assumptions to fill these gaps in our understanding. And, as different scholars make different assumptions, different studies often expect voters to use different economic time frames. To demonstrate this point, consider the following examples taken from the literature. Some economic voting scholars assume that voters respond to economic change only in the year before an election (Bloom and Price 1975; Kramer 1971). Others, instead, that voters respond to the difference between the average economic growth in the first three quarters of the election year and the annual average for the previous year (Lewis-Beck, Martini, and Kiewiet 2013). Likewise, some economic voting scholars assume that voters respond to the economy with a one year lead time (Dassonneville and Hooghe 2017). Others do not and assume that voters respond either to simple year-on-year (Palmer and Whitten 2011; Clarke, Stewart, and Zuk 1986; Goodhart and Bhansali 1970), quarter-on-quarter (Lanoue 1987), or even month-on-month (Lebo and Cassino 2007) changes in the state of the economy.

Given how much uncertainty remains, my central contribution here is to test whether voters really are myopic by estimating how their support for the incumbent responds to economic change over different periods of time. To do so, I rely on insights from the physical sciences. In particular, I borrow the concept of a "half-life" from biology and nuclear physics. Like an hour, minute, or second, a half-life is a unit of time. But unlike these measurements, it does not reflect a fixed interval. A quantity's half-life is equal to the average amount of time that it takes for it to decay to half of its initial value. For example, scientists might estimate how

long it takes for radioactive decay to reduce the mass of a block of uranium or for physiological mechanisms to remove some drug from a patient's body. That is to say, to estimate the half-life of a *substance*. Here, instead, I estimate the half-life of a *parameter*: the economic vote itself. My data come from two sources: individual-level voting intention data from the British Election Study Continuous Monitoring Survey and aggregate-level economic indicators from the UK's Office for National Statistics.

I show that voters are myopic: they pay most attention to economic change that has taken place in the recent past. As the time between the past and the present increases, any economic voting effects begin to peter out. After about a year and a half, they reach their half-life. After five years, they reach the point where they are practically equivalent to zero. This suggests that we should not expect voters to judge governments based on the cumulative economic change during their time in office (Healy and Lenz 2014; Hibbs 2006). Instead, we should expect only economic growth over the final few years of the government's term to affect how they vote, with diminishing effects.

My results suggest two main implications. First, that voters are not quite so short-sighted as some past research would have us believe. They vote based not only on economic change at the time of the election, but further in the past too. Second, and nevertheless, voters remain myopic enough to provide governments with an effective "get out of jail free" card. As I show, economic change over the past fives years has little to no effect on how people vote. Thus, governments stand to benefit from undeserved leeway for mistakes that they make early in their tenure.

How Retrospective are Retrospective Voters?

It seems reasonable to expect voters to forget all sorts of details that political scientists think of as important. After all, voters often show very little interest in politics (Zaller 1992; Campbell et al. 1960), no one has a perfect memory, and to forget past events appears to be a fundamental aspect of how human beings process information (Ariely and Carmon 2000).

Presumably, this is all the more true for complicated topics like the economy. Not only are there no end of important figures for voters to remember, these figures also change value, are

subject to revision, and relate to one another in all manner of different ways. To make matters worse, most people receive little to no formal education in economics. No wonder then that they so often seem not to know how the economy is really doing (Paldam and Nannestad 2000), or at least not without a little help (Ansolabehere, Meredith, and Snowberg 2013). Given all of this, it would be unusual if voters were to able to retain far-reaching and detailed memories of the economy's every movement.

What's more, voter myopia has serious economic policy consequences. Or, as Tufte puts it, it leads to "myopic policies for myopic voters" (1978, 143) and government that act as they please, safe in the knowledge that their behaviour will have little effect on their chance of reelection. It also suggests that voters might vote not for the best economic *manager* but instead for the best economic *manipulator*. Armed with the levers of the state, parties can and do use their power to shape voters preferences in their favour (Dunleavy and Ward 1981; Tufte 1978). Still, some doubt whether governments really have such a high degree of control over the state of the economy (Dynes and Holbein 2019). If we relax the assumption the results are not much better: it is luck, not competence, that decides elections (Achen and Bartels 2016; Wlezien 2015). Clearly, these are not a satisfactory outcomes for democratic accountability.

Though the economic voting literature now spans more than 600 articles and books (Lewis-Beck and Costa Lobo 2017), the research on voter myopia remains limited. Most simply assume the problem away. The few pieces that do engage with this problem tend to do so in one of two ways: a voter-centric approach that relies on individual-level data and experimental methods or an electorate-centric approach that relies on aggregate-level time series data instead. Each has its own strengths and weaknesses, and comparing findings from one to the other can be difficult. Even so, they tend to come to the same conclusion: that voters' economic time frames are short. Yet how short remains in question.

Voter-Centric Research

Stiers, Dassonneville, and Lewis-Beck (2019) provide a useful starting point as they are perhaps the only scholars to hold that voters are "attentive to the government's performance in the long

run as well as the short" (p.647). Their argument hinges on voter psychology. They claim that proponents of voter myopia make the implicit assumption that voters engage in memory-based information processing. Here, voters store information (e.g. economic conditions) in memory until such time as it is needed (e.g. to form an economic perception). As they note, storing such information over a government's entire term is clearly burdensome, to say the least. Instead, they contend that voters rely on online processing where they update they beliefs as though maintaining a running tally.

My own view is that it is unclear why information processing style should influence voter myopia. I make this point because retrospective voting under either memory-based or online processing requires exactly the same amount of information. A running tally is certainly more efficient than cataloguing events if one's intention is to maintain a belief about the *present* state of the economy. But that is not the task at hand. Instead, to "ascertain whether the incumbents have performed poorly or well, citizens need only calculate *the changes* in their own welfare" (Fiorina 1981, 5, emphasis own). That is, voters must ask themselves the same question that Ronald Reagan posed during the 1980 US Presidential election campaign, "Are you better off than you were four years ago?". Note that this requires not one but two pieces of information: *present* and *past* conditions. Thus, voters must either retain two specific memories (if we assume memory-based processing) or instead two running tallies (if we assume online processing). As such, both approaches to information processing appear equally demanding.

Stiers, Dassonneville, and Lewis-Beck (2019) test their argument by using panel data from the Netherlands and the US to model incumbent voting as a function of voters' current and past satisfaction with the government in one model and their current and past satisfaction with the economy in another. Yet, again, these models do not reflect retrospective voting theory. To see why, consider the following simple retrospective voting model:

$$Vote_i \sim \text{Bernoulli}(\pi_i)$$

$$logit(\pi_i) = \alpha + \beta(C_0 - C_t)$$

Consistent with Fiorina (1981), respondent i's voting intention, $Vote_i$, is a function of the difference between conditions now, C_0, and conditions at some point in the past, C_t[1]. That is to say, retrospective voting concerns *change*. Stiers, Dassonneville, and Lewis-Beck (2019), however, use a slightly different model as follows:

$$Vote_i \sim \text{Bernoulli}(\pi_i)$$

$$logit(\pi_i) = \alpha + \beta_1 C_0 + \beta_2 C_t$$

The components here are the same as before. Yet now past and present conditions (in this case either satisfaction with the government or the economy) each have their own effect on support for the incumbent party. This is a problem. As C_0 and C_t each have an independent effect on whether respondent i votes for the incumbent, the model privileges the *level of* — rather than the *change in* — conditions. This is akin to assuming either that voters use a weighted average of past conditions when determining how to vote or that their past beliefs continue to have some effect on their voting behaviour that does not operate through their current beliefs[2]. But as neither interpretation concerns change, the model has little to say about voter myopia.

The remaining voter-centric work on voter myopia relies on experimental methods. Huber, Hill, and Lenz (2012), for example, note that psychological evidence suggests that people do not keep track of their utility over time. Rather, they use a heuristic called the "peak-end rule: they rate an experience based either on how it ended or how it was at its most intense (Ariely and Carmon 2000). They specify an experimental game to test this in a retrospective voting setting where they vary when their subjects are made aware of the upcoming"election". They find that those subjects who became aware of the event later on tended also to overweight incumbent

[1]Note that this is also the form that conventional economic voting models take. The only difference is that we measure $C_0 - C_t$ using the standard retrospective voting question ("How do you think the *general economic situation in this country* has changed over the *last 12 months*?") and not two separate items that measure voters' perceptions of economic conditions now and in the past.

[2]It is worth nothing here that we also know that stable aspects of voters' personalities affect how they respond to these items (Conover, Feldman, and Knight 1987) and that many attitudinal items exhibit trait-like stability (Kiley and Vaisey 2020). Thus, we cannot rule out the possibility that both current and past items really tap some stable latent trait or that they are not the product of multicollinearity problems.

performance closer to the event.

Healy and Lenz (2014) conduct a similar study, again drawing on the peak-end rule for inspiration. Their design is particularly interesting as they allow their subjects to explain how they intend to weight the economy in each year of the incumbent's term before conducting their experiment. Consistent with Hibbs (2006), their subjects say that they intend to judge the incumbent party based on the cumulative economic change over its entire term in office. Even so, just like Huber, Hill, and Lenz (2012), Healy and Lenz (2014) show that their subjects instead "substitute the end for the whole". In other words, voters are myopic and focus most of their attention on election year performance.

Electorate-Centric Research

Most electorate-centric research follows the precedent set by Hibbs (1987) and focusses not only on how myopic voters are but also the functional form that their myopia takes. Hibbs' approach is as follows. First, he assumes that voters' memories decay at a known exponential rate. He then takes past estimates of year-on-year real income growth, weights them according to his exponential function, and uses them to predict incumbent vote share across a range of US presidential elections. This, he claims, shows that voters are myopic. Achen and Bartels (2016) come to a similar conclusion using both the same approach as Hibbs and an even more limited one, which assumes that voters respond only to economic growth in the two quarters before an election.

Wlezien (2015) argues that these approaches are overly-conservative and that the extent to which we consider the electorate to be myopic depends on the functional form that we assume their myopia to take. Rather than use an exponential weighting function like Hibbs, he uses a logistic one instead. Due to its shape, the logistic function is less conservative and allows voters' some time to reflect on the recent past. Wlezien's results indicate that voters are myopic, though less so than often thought: they do not respond to GDP growth at the very start of the incumbent's term, but they do respond to it over at least the past few years.

By and large, this research arrives at a conclusion that satisfies the assumptions that it makes

about how voter myopia operates. Though this is perhaps unsurprising, it is a problem. Consider the equation below, which characterises this approach:

$$Vote_i \sim \text{Normal}(\mu_i, \sigma)$$
$$\mu_i = \alpha + \sum_{q=1}^{Q} \beta_q w_q (GDP_q - GDP_{q-4})$$

Here, the incumbent party's vote share at election i, $Vote_i$, is equal to some constant, α, plus the sum of the product of year-on-year change in GDP growth in quarter q, $GDP_q - GDP_{q-4}$, and the weight associated with that figure according to the chosen weighting function of choice, w_q.

This approach requires that we make two ad-hoc assumptions. The first and most obvious is that we must assume that voter myopia takes some particular form, whether exponential or otherwise. But to do so reliably requires some prior knowledge of how myopic voters really are. Of course, if this were possible then there would be no need to research voter myopia in the first place. The second is that these models force us to assume that voters in the present should care about GDP growth over the past year, but also, for example, between two years ago and one year ago. For the same reasons that I point out above, this does not reflect how retrospective voting theory really works. That is to say, we should not expect voters to care about lagged year-on-year GDP growth, but instead the difference between GDP now and at different points in the past.

Towards a Hybrid Approach

I have hoped to show that while the research tends to find that voters are myopic, much uncertainty remains. Ultimately, this is because estimating voters' retrospective economic time frames is complex. Voter-centric approaches have had to deal with items that suffer from known biases (Conover, Feldman, and Knight 1987) and experimental methods that may not generalise outside of the survey context (Barabas and Jerit 2010). Likewise, electorate-centric approaches have had to rely on ad-hoc assumptions and suffer with problems of ecological

inference (Stewart and Clarke 2017).

Thus, the most sensible way forward is perhaps to combine the strengths of each approach. That is, to make use of individual-level voting intention data, to avoid problems of ecological inference, and aggregate-level economic indicators, to avoid problems of bias. This hybrid approach is rare in the economic voting literature, where most research relies on cross-sectional surveys (though see Reidy, Suiter, and Breen 2017). Still, when paired with the appropriate methods, it offers the possibility of estimating voters' retrospective time frames in a way that avoids many of the prevailing assumptions.

Data

As I discuss above, I take a hybrid approach here that combines the strengths of the voter-centric and electorate-centric economic voting research. This requires two sources of information: individual-level voting intention data and aggregate-level economic statistics.

My individual-level voting intention data come from the British Election Study Continuous Monitoring Survey (CMS). The CMS comprises a series of monthly political surveys that took place in Great Britain between April 2004 and February 2014. The polling company YouGov administered the data collection process in all cases and the data were structured as a series of monthly repeated cross-sections. In total, 132,369 people took part in the CMS. To ensure that the data are representative, YouGov also weights each respondents according to both their past voting behaviour and their socio-demographic characteristics (Twyman 2008).

My aggregate-level economic data come from the UK's Office for National Statistics (ONS). The ONS is the UK's national statistics body and is charged with producing and reporting a range of economic statistics including GDP, the rate of unemployment, and the level of inflation. In most cases, it does so on a quarterly basis, though the most popular indicators are often available as monthly time series too. The economic voting literature most often uses GDP as its indicator of choice. Indeed, some go so far as to call it "the most general objective measure of economic welfare" (Kayser and Wlezien 2011, 376). As such, I follow suit and use the ONS' time series of monthly UK GDP.

Methods

Economic voting research that uses aggregate economic indicators faces a major constraint: the release schedule of the statistical agencies behind them. In most cases, these agencies release new data on a quarter-by-quarter, or even year-by-year, basis. This is of little use if your research question concerns much more granular time periods. Clearly, this is true in the present case.

To circumvent this problem, I use a two-stage approach. In the first stage, I produce a time series of daily GDP estimates for the UK from 1 January 1997 to 1 December 2019. In the second stage, I link each of the individual respondents in the CMS to a random date up to five years before the date that they took their survey, then calculate GDP growth between the two time points. I then fit a model to these linked data that estimates both the economic vote and voter myopia at the same time.

Stage 1: Estimating Daily GDP

Figure 1 shows the three steps that I take to estimate daily UK GDP. Each point in the left-most panel reflects a single estimate from the ONS' monthly time series of UK GDP. These begin in January 1997, end in December 2019, and are indexed such that July 2016 equals 100. Two patterns are most obvious. First, that UK GDP has tended to grow from one month to the next. Second, that the global financial crisis interrupted this process in the mid-2000s. GDP growth was faster before than after the financial crisis, on average. The rate of growth also appears to differ at different points in time.

The centre-most panel shows the same GDP estimates as the first, though a curve now runs through them. This reflects the average level of GDP across the time series and, due to its form, does not assume that UK GDP changes at a constant rate. To compute this curve, I fit a penalised cubic regression spline with 100 knots to the data. As we can see, the model fits well. Consequently, there is good reason to believe that any estimates that it produces should also reflect historic UK GDP.

The right-most panel shows how I put these estimates to use. The 130,145 respondents in the data took their survey on some day between 8 April 2004 and 2 February 2014. Imagine,

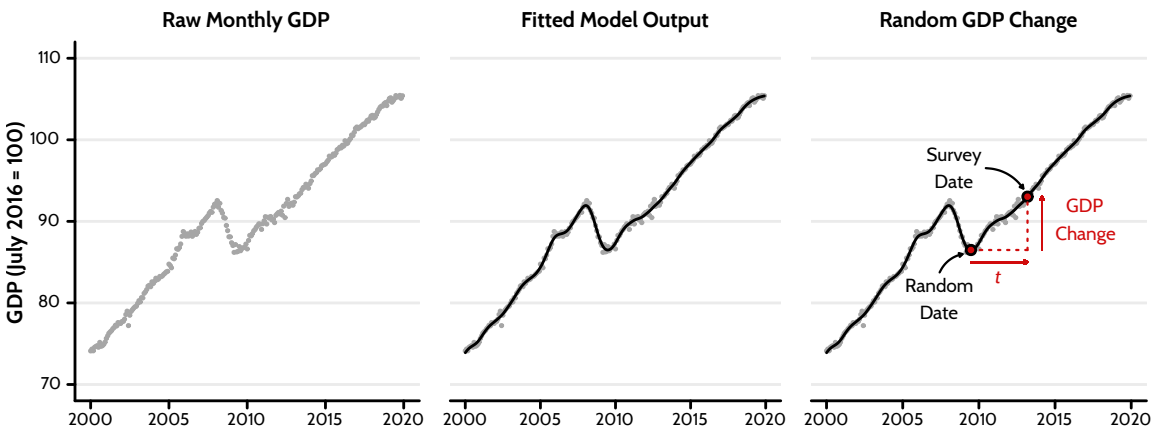

Figure 1: To estimate daily GDP, I fit a spline to monthly GDP data from the ONS. I then assign each case to a random date up to 5 years before and calculate GDP change between the two dates.

for example, a respondent who took their survey in March 2013. I allocate this respondent to a random date up to five years before the date that they completed their survey, then calculate the time that has passed between the two points. Next, I use my penalised regression spline to estimate UK GDP on each day, then compute GDP growth between the two dates in percentage terms.

Stage 2: Estimating Voters' Economic Time Frames

To specify a model that estimates both the economic vote and voter myopia requires considerable flexibility. Such flexibility is difficult to achieve using conventional Frequentist methods. To account for this, I fit my model using Bayesian methods instead. As the model is quite complex, the simplest way to explain it is to start with a simpler, more familiar, model and then build up each element of the model step-by-step. To this end, consider the retrospective voting model that I discuss above:

$$Vote_i \sim \text{Bernoulli}(\pi_i) \qquad \text{Likelihood function}$$

$$logit(\pi_i) = \alpha + \beta(C_0 - C_t) \qquad \text{Linear model on } \pi_i$$

At present, the object of retrospection is some abstract condition, C, which is thought to predict voter i's willingness to vote for the incumbent party, $Vote_i$. The latter variable takes the

value 1 where voter i said that they would vote for the incumbent party and 0 otherwise[3]. The first step in building the model is to replace this abstract condition with a more meaningful one: the change in the state of the economy. As I mentioned in the previous section, my measure of economic change is the percentage change in GDP between the date that each respondent took their survey and the random date to which I assigned them. As the CMS was collected on a monthly basis, there is likely some survey-specific variation to account for. To this end, I also include an adaptive prior on the intercept, α, that allows it to vary from month to month:

$$
\begin{aligned}
Vote_i &\sim \text{Bernoulli}(\pi_i) && \text{Likelihood function} \\
logit(\pi_i) &= \alpha_{\text{wave}[i]} + \beta(\frac{\widehat{GDP}_0 - \widehat{GDP}_t}{\widehat{GDP}_t} \times 100) && \text{Linear model on } \pi_i \\
\alpha_{\text{wave}} &\sim \text{Normal}(\overline{\alpha}, \sigma_\alpha) && \text{Adaptive prior on varying intercepts} \\
\overline{\alpha} &\sim \text{Normal}(0, 1.5) && \text{Prior on grand mean of intercepts} \\
\sigma_\alpha &\sim \text{Exponential}(5) && \text{Prior on standard deviation of intercepts}
\end{aligned}
$$

Note that the economic voting effect, β, is currently fixed for all values of t. No matter if I link the respondent to GDP change over the past five years or the past five days, the estimate remains fixed. But this makes little sense if voters are myopic. Instead, the economic voting effect should vary as a function of t. In particular, it should decay as t increases to reflect the fact that people are more likely to forget events that took place a longer time ago.

One way to conceive of voter myopia is as a process of exponential decay[4]. Where a quantity undergoes exponential decay, it begins at some initial value then diminishes quickly before levelling out as it approaches zero. Such processes are common in the physical sciences, where they are used to study the radioactive decay of chemical elements like iron or uranium or to

[3]As my data cover the transition from the 1997-2010 Labour government and the 2010-2015 Coalition government, the incumbent party changes. Where the data were collected before 11 May 2010, when David Cameron became Prime Minister, the incumbent is the Labour Party. After, it is the Conservative Party or the Liberal Democrats, the two parties that formed the Coalition.

[4]This is similar to the approach that Hibbs (1987) takes, and which I discuss in some detail above. Note, however, that unlike Hibbs, I do not fix the degree of exponential decay a-priori. Instead, I estimate it from the data.

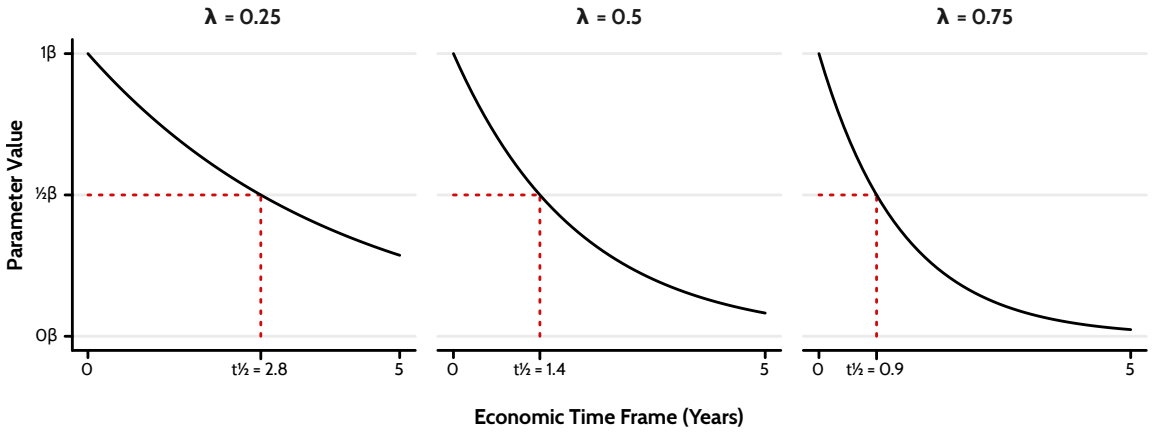

Figure 2: The decay constant and half-life are related. When the former increases, the latter decreases. This is because their relationship is deterministic. More specifically, t½ = log(2)/λ.

estimate how long a quantity of some drug might spend in a patients body. I draw on these insights here and approximate voter myopia using the following equation taken from Rösch (2014):

$$N(t) = N_0 e^{-\lambda t}$$

In this equation, $N(t)$ represents the quantity of some substance N at time t. Where $t = 0$, the equation simplifies such that $N(t) = N_0$, the substance's initial quantity. As time passes, the substance decays subject to the "decay constant", λ. Further, the larger the value that the decay constant takes, the faster the substance decays. The amount of time that it takes for the substance to decay by half is known as its "half-life", $t_{1/2}$. Fortunately, the decay constant, λ, and the half-life parameter, $t_{1/2}$, share a close relationship. As such, it is relatively straight-forward to use the value of the former to compute the value of the latter:

$$t_{1/2} = \frac{log(2)}{\lambda}$$

Of course, in this case, the quantity of interest is not really a substance. Instead, it is a parameter: the economic voting effect itself. Given this, substituting N for the economic

voting effect, β, allows the model to estimate the economic vote while allowing its effect to vary according to the time interval t, consistent with voter myopia:

$$\beta_t = \beta_0 e^{-\lambda t}$$

At this point it is worth pausing for a moment and considering how the decay constant and half-life parameters relate to one another in greater detail. Figure 2 shows how changes in former affect changes in the latter. Moving from the left-most to the right-most panel, the value that the decay constant takes increases from 0.25, to 0.5, to 0.75. As it does so, two things happen. First, the economic voting effect decays more quickly. Second, the value of the half-life parameter, $t_{1/2}$, decreases to account for the increased rate of decay.

Figure 3 uses simulated data to show how this decay process affects the probability that a voter will vote for the incumbent across different time intervals. In the left-most panel, the time interval between the date that the respondent answered their survey and their random reference date is set to zero. In effect, the voter is evaluating the state of the economy in the immediate present. As such, the economic vote has undergone no exponential decay and remains at its initial value. In this scenario, there is a strong economic voting effect: as GDP change increases, voters become more likely to vote for the incumbent party. This is true also in the centre-most and right-most panels, though, in both cases, the economic voting effect diminishes due to voter myopia. In the centre-most panel, where the time interval equals one year, some effect persists, though it is now more modest than it was when the time interval was equal to zero. In the right-most panel, where the time interval now equals two years, the economic voting effect has decayed to such an extent that it is only slightly different to zero.

Substituting this exponential decay model into the retrospective voting model above gives the final model that I fit to my data. Note that I also include a set of covariates, x, that account for any macro-level factors that might otherwise explain how people vote. These include variables to account for the three Prime Ministers that the country had in this period, variables to account for both the passage of time and each Prime Minister's time in office to control for spurious

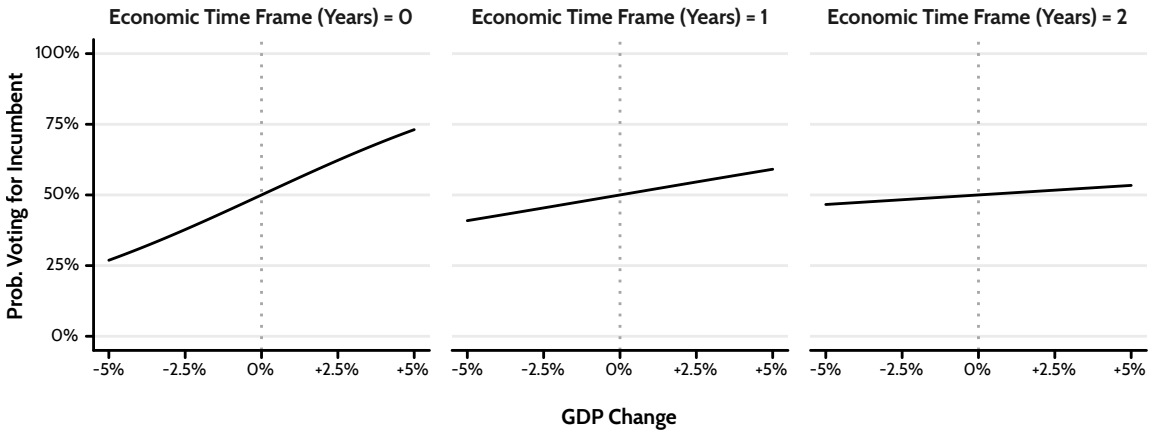

Figure 3: The slope is related to the time interval that voters use. As the interval increases, the slope decays. In this example, the slope at time 0 is held at 0.2 and the decay constant is held at 1.

correlation over time (Woolridge 2012), and the interaction between each leader and their time in office to account for the costs of governing. Finally, as this is a Bayesian model, I also include a prior distribution for each parameter. In all cases, I use conservative and weakly informative prior distributions that gently regularise my estimates. Given this, I specify the model that I fit to my data as follows:

$$Vote_i \sim \text{Bernoulli}(\pi_i) \quad \text{Likelihood function}$$

$$logit(\pi_i) = \alpha_{\text{wave}[i]} + \beta_t(\frac{\widehat{GDP}_0 - \widehat{GDP}_t}{\widehat{GDP}_t} \times 100) + \sum_{j=1}^{6} \delta_j x_{ji} \quad \text{Linear model on } \pi_i$$

$$\beta_t = \beta_0 e^{-\lambda t} \quad \text{Exponential decay model on } \beta_t$$

$$\alpha_j \sim \text{Normal}(\overline{\alpha}, \sigma_\alpha) \text{ for } j \text{ in } 1..114 \quad \text{Adaptive prior on varying intercepts}$$

$$\overline{\alpha} \sim \text{Normal}(0, 1.5) \quad \text{Prior on grand mean of intercepts}$$

$$\sigma_\alpha \sim \text{Exponential}(5) \quad \text{Prior on standard deviation of intercepts}$$

$$\beta_0 \sim \text{Normal}(0, 0.5) \quad \text{Prior on } \beta \text{ where } t = 0$$

$$\delta_j \sim \text{Normal}(0, 0.5) \text{ for } j \text{ in } 1..6 \quad \text{Prior on } \delta \text{ parameters}$$

$$\lambda \sim \text{Normal}(0, 0.5) \quad \text{Prior on the decay constant, } \lambda$$

Table 1: Parameter estimates from the half-life model predicting incumbent voting intention. Data come from the BES Continuous Monitoring Survey, 2004–2014.

	Median	Error	2.5%	97.5%
Intercept	−0.59	0.23	−1.05	−0.15
GDP (t = 0)	0.02	0.01	0.00	0.05
Decay Constant	0.44	0.17	0.17	0.84
Years Passed	−0.01	0.04	−0.08	0.06
Time in Office	−0.06	0.03	−0.11	0.01
Gordon Brown (vs. Tony Blair)	−0.45	0.30	−1.04	0.15
David Cameron (vs. Tony Blair)	0.30	0.39	−0.45	1.06
Gordon Brown × Time	−0.06	0.04	−0.15	0.02
David Cameron × Time	−0.13	0.03	−0.20	−0.07
N (Individuals)				130, 145
N (Survey)				112

Results

Table 1 shows the resulting parameter estimates from the fitted model[5]. In all cases, the model's parameters show relationships consistent with economic voting theory and voter myopia.

Contrary to the strong effects often found in individual-level economic voting research, I find only weak evidence in favour of the economic vote (0.02, 95% CI: 0.00 to 0.05). Note that this is not due to the way that I specify my model. As I show in my appendix, a more conventional economic voting model using the raw ONS data and assuming a 12 month time frame shows much the same conclusion (see table A1). Instead, these smaller effect sizes likely reflect the fact that, unlike subjective economic perception items, voters' own personal characteristics do not confound the effect that GDP data have on their willingness to vote for the incumbent party.

As past research on voter myopia would have us expect, the decay constant that controls the rate of exponential decay that the economic vote experiences is positive (0.44, 95% CI: 0.17 to 0.84). As I discuss above, there is a simple transformation that converts between this and the half-life parameter. Doing so reveals that the economic vote has a half-life of 1.58 years (95% CI: 0.81 to 3.90), or about a year and a half[6]. In simpler terms, this implies that the economic vote

[5]Note also that the model converged well and showed no pathological behaviour: the number of effective samples was high in all cases, there were no divergent transitions, no iterations saturated the maximum treedepth, and $\hat{R}$ statistics for all parameters equalled 1.

[6]Note that this figure is computed by transforming the entire posterior distribution of the decay constant, λ,

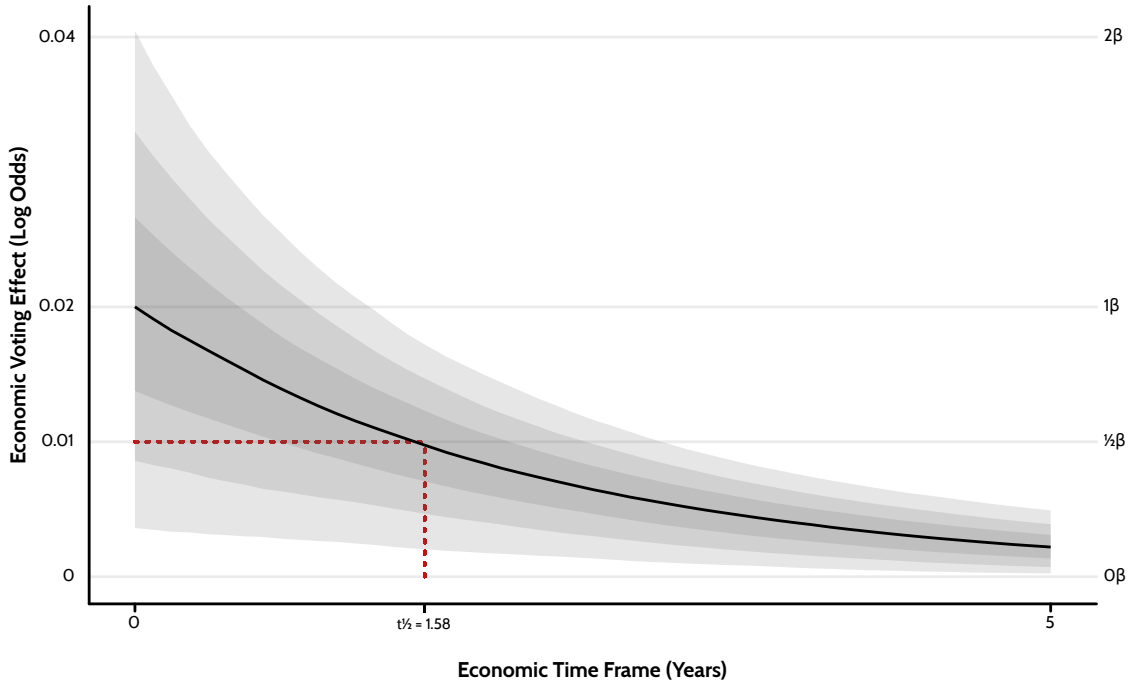

Figure 4: The economic vote diminishes as the time interval between the survey and reference date increases. At a time interval of 1.58 years, the economic voting effect decays to half of its initial value. Here light, medium, and dark areas reflect 95%, 80%, and 50% credible intervals, respectively.

is half as strong where voters compare the state of the economy now to the state of the economy 1.58 years ago than where they consider only the state of the economy in the immediate present.

As it can be hard to intuit what these parameters really mean, figure 4 shows how the economic voting effect decays as voters' time horizons increase. Where the time interval is equal to zero, the economic vote has the same effect as shown in table 1. As the time interval increases, the economic voting effect diminishes, before eventually approaching zero.

Note that as the economic voting effect diminishes, the certainty about its true value actually *increases*. This might seem unusual: why should the model be any more certain about the effect of GDP growth over five years than over, say, one year or even one month? To understand why, reflect on the nature of exponential decay. As I lay out above, any quantity that undergoes this process will eventually decay to such a small value that it is, for all intents and purposes, equal to zero. Thus, no matter what initial value the economic voting effect takes, it will always be equal to zero in the limit where the time interval approaches infinity. Consequently, we know that the

and then taking its median and not simply transforming the point estimate shown in table 1. As such, there may be a small discrepancy between the values that one arrives at using the two approaches.

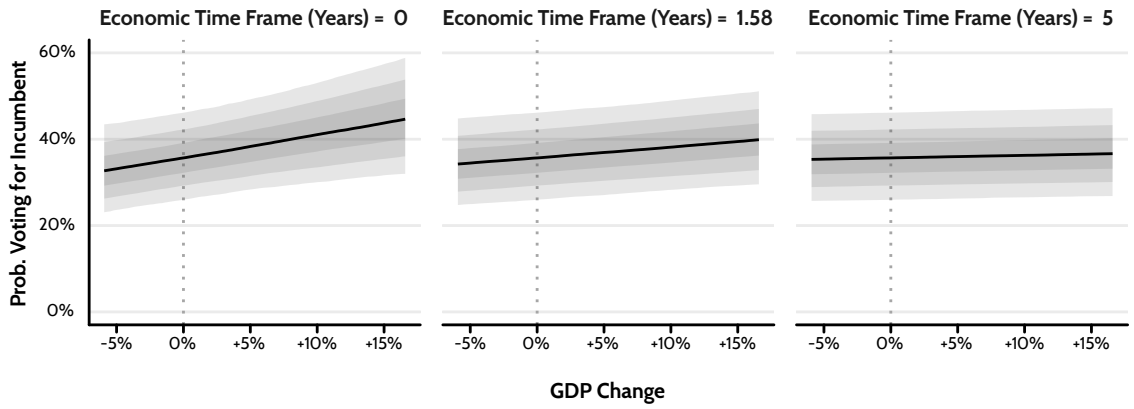

Figure 5: At t = 0, the economic vote shifts the probability of voting for the incumbent by a few percentage points. After 1.58 years, this effect lessens. And after 5 years, it is practically-equivalent to zero. Again, light, medium, and dark areas reflect 95%, 80%, and 50% credible intervals.

larger the time interval, the more certain we should be that the economic voting effect is equal to zero.

Figure 5 shows how voter myopia conditions voters' willingness to support the incumbent party at three different time intervals. The left-most panel shows how voters' probability of supporting the incumbent changes where they consider the state of the economy in the immediate present. The effect is reasonable in size, if uncertain: voters appear a few percentage points more likely to support the incumbent where the economy is growing than where it is not. Their level of support then appears to diminish as their retrospective time frames increase in the centre- and right-most panels. Indeed, where voters compare the state of the economy now to the state of the economy five years before, there appears to be no practical effect on their probability of voting for the incumbent party[7].

Discussion and Conclusion

Voter myopia is real. When it comes to the economy, voters respond most strongly to how things are *right now*. Yet they are not quite so short-sighted as some past research would suggest. My results suggest that voters do not have economic times frames that react only the election year

[7]It is worth also noting that the time interval that voters use and the level of economic growth will have a strong positive correlation. After all, the economy almost always grows over time. Still, as the coronavirus pandemic demonstrates, it is perfectly possible for a country to experience double-digit negative growth in only a very short period of time.

economy (Healy and Lenz 2014) or economic change over just the past few months (Achen and Bartels 2016). But neither is their an abiding effect of the past economy on which party they choose to support (Stiers, Dassonneville, and Lewis-Beck 2019). Rather, voters respond to economic change over the past few years, though to diminishing effect.

In one respect, that voters are less myopic than we thought is reassuring. Put simply, it means that governments must contend with the consequences of more of their actions. Some suggest that this myopia might reflect a rational decision on the part of the electorate (Achen and Bartels 2016; Wlezien 2015): it makes sense to ignore the first view years of economic conditions as decisions that the incumbent's predecessor made continue to reverberate through the system. I am not so sure. Roughly half of my data cover a period when the government had been in power for the best part of a decade, yet still suggests that voters are myopic. Given that to forget is a fundamental part of the human condition, I expect that it is simply a happy accident that voters remember more than we might have given them credit for.

In another respect, that voters are myopic at all suggests that the three issues I raise above remain a problem. First, the time frames that I identify are short enough that "myopic policies for myopic voters" (Tufte 1978, 143) remain a real concern. Countries like Australia and New Zealand with term lengths of only three years might, therefore, also offer their citizens a greater chance of holding their governments to account. Second, as voters respond most strongly to recent economic change, strong economic manipulators might still outperform strong economic managers. To prevent this, we might begin to consider policies that inform the public about the cumulative change that they consider most important (Healy and Lenz 2014). Third, it is possible that voters lack the necessary impetus to vote for governments that will improve economic outcomes. As before, the only real solution to this problem is to provide voters with the information that they need to make an informed decision. But, ultimately, the ball is in their court.

Though these implications may be worrisome, it is worth noting that the economy might still influence voters through other means. As Fieldhouse et al. (2020) argue, economic downturns can have long and lasting consequences beyond their direct effect on jobs and living standard:

they can affect how competent voters consider the incumbent party to be. Arguably, the UK Labour Party is still suffering from this apparent lack of economic competence more than a decade after the global financial crisis first began. Another possibility is that the small economic voting effects that I find here indicate only that voters respond to some other indicator. One obvious alternative being the events and topics made salient in the media that they consume (Garz and Martin 2020; B. B. Park 2019; Soroka, Stecula, and Wlezien 2015).

Finally, there are many opportunities to extend the analysis that I present here. Though I expect my findings to generalise to other contexts, one extension would be to replicate them in other countries and at other points in time. Given the shear amount of elections data that now exist, one possibility might be to compile data on many elections, whether within a single country or, instead, a comparative setting. Another possible extension would be to engage with the literature on the grievance asymmetry in economic voting (J. Y. Park 2019; Soroka 2006; Bloom and Price 1975). Given the serious ramifications that economic downturns can have for voters' material well-being, it seems reasonable to expect their memories of bad times to outlast those of good ones. Likewise, voters' economic time frames probably differ according to their own personal characteristics too. Though some voters do not pay attention to politics, some do. As such, a final extension might be to test if more attentive voters are also less myopic. In doing so, we might finally come to understand how voter myopia shapes our democracy and the governments that we elect.

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Table A1: Parameter estimates from my conventional economic voting model. Here, year-on-year GDP change data come from the ONS' monthly time series of UK GDP and individual-level voting intention data come from the BES Continuous Monitoring Survey, 2004–2014.

	Median	Error	2.5%	97.5%
Intercept	-0.64	0.23	-1.11	-0.19
Year-on-Year GDP Change	0.02	0.01	0.00	0.03
Years Passed	-0.01	0.03	-0.08	0.06
Time in Office	-0.05	0.03	-0.11	0.01
Gordon Brown (vs. Tony Blair)	-0.40	0.31	-1.00	0.23
David Cameron (vs. Tony Blair)	0.33	0.39	-0.45	1.10
Gordon Brown $\times$ Time	-0.05	0.04	-0.14	0.04
David Cameron $\times$ Time	-0.13	0.03	-0.19	-0.06
N (Individuals)				$130,145$
N (Survey)				112