

What's the Half-Life of the Economic Vote?

(About a Year and a Half)*

Jack Bailey,
The University of Manchester

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Abstract

One long-standing assumption dominates economic voting research: that voters are retrospective and myopic. Recent research attempts to test this assumption and to estimate a time frame for voters' economic perceptions. But the methods that this research uses face serious problems. To overcome this, I specify a new type of model that allows the economic vote to decay as voters' economic time frames increase. Consistent with voter myopia, I find that the economic vote is strongest where this time frame is shortest. After one and a half years, the economic voting effect falls by half. After five years, it becomes practically-equivalent to zero. This suggests two implications. First, that economic conditions at the time of the election matter most when it comes to deciding the incumbent's fate. Second, that governments receive undeserved leeway on economic policies that they implement early in their terms.

Keywords: Economic voting; Retrospective voting; Bayesian methods.

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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 the early-1990s, most economic voting scholars now believe that voters are both retrospective and myopic. And — again like the early-1990s — most economic voting scholars still do not know just *how retrospective* or *how myopic* these voters really are.

Instead, ad-hoc assumptions fill the void. As a result, the time frames that economic voting scholars expect voters to use vary from one study to the next. To appreciate the full range of assumptions on offer, consider the following examples. Some economic voting scholars assume that voters respond to economic change that takes place only in the year before an election (Bloom and Price 1975; Kramer 1971). Others, instead, assume that voters respond to the difference between the average economic growth in the first three quarters of the election year compared to the annual average of the previous year (Lewis-Beck, Martini, and Kiewiet 2013). Likewise, some assume that voters’ economic perceptions come with a one year lead time (Dassonneville and Hooghe 2017). Others do not and assume instead that voters respond to simple year-on-year (Palmer and Whitten 2011; Clarke, Stewart, and Zuk 1986; Goodhart and Bhansali 1970), quarter-on-quarter (Lanoue 1987), or month-on-month (Lebo and Cassino 2007) changes in the state of the economy. Clearly, not all of these time frames can be correct at the same time.

To address this problem, I specify a new model that estimates both the economic vote and voter myopia at the same time. Data come from two sources. The first is individual-level voting intention data from the British Election Study Continuous Monitoring Survey. The second is aggregate-level economic statistics from the UK’s Office for National Statistics. To model voter myopia, I rely on insights from the physical sciences. In particular, I borrow the concept of a “half-life” from biology and nuclear physics. Like a hour, a minute, or a second, a half-life is a unit of time. But unlike these measures it does not reflect a fixed interval. Rather, it reflects the average amount of time that it takes for a quantity to decay to half of its original value. Ordinarily, scientists would use the associated equation to estimate how much time it might take for radioactive decay to deplete the mass of a block of uranium or for the body’s various physiological mechanisms to remove a dosage of a drug from a patient’s body. That is to say, to estimate the half-life of a substance. Here, I use the equation to estimate the half-life of a parameter instead. Namely, the economic vote itself.

My findings are consistent with voter retrospection and voter myopia: voters respond most strongly to economic change in the recent past. As the time window between the past and the present increases, any economic voting effects being to peter out. After one and half years, they reach their half-life and fall to half of their initial strength. After five years, they become practically equivalent to zero. Consequently, 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). Rather, we should expect them to judge governments based on the state of the economy when it comes time to vote.

These results suggest two implications. The first is that governments may receive undeserved leeway for any economic downturns that take place when they first come to power. Thus, the electoral consequences of poor economic management are likely to be small so long as it occurs far enough away from the next election. The second is that economic myopia might lead voters to opt not for the party best able to *manage* the economy, but instead the one best able to *manipulate* it. Governments might, therefore, seek to time economic rallies around election events to improve their chances of winning, rather than seek to manage the economy to the benefit of all citizens all of the time. That said, it remains possible that economic downturns might affect incumbent support in other ways. For example, they might still have long-term consequences where they condition voters' perceptions of party competence (Fieldhouse, Green, Evans, Mellon, Prosser, et al. 2020).

How Retrospective are Retrospective Voters?

It seems reasonable to expect voters to forget all sorts of details that political scientists might consider important. After all, voters often show little interest in politics (Zaller 1992; Campbell et al. 1960), no one has a perfect memory, and to focus on the recent past appears to be a fundamental aspect of how humans process information (Ariely and Carmon 2000).

Presumably, this is most true for complicated topics like the economy. Not only are there no end of important figures to remember, these figures also often change value, are subject to revision, and reflect on each other in all manner of different ways. To make matters worse, most voters receive little to no formal education in economics. As a result, it would be very unusual if they were to retain far-reaching and detailed memories of the economy's every movement.

Though the economic voting literature now spans more than 600 articles and books (Lewis-Beck and Costa Lobo 2017), there is little direct research on voter myopia. The few pieces that do exist most often investigate the problem in one of two ways: a voter-centric approach that relies on individual-level data and experimental methods and an electorate-centric approach that relies on aggregate-level data instead. Each has its own strengths and weakness and comparing findings across the two approaches can be difficult. Even so, no matter the approach, this research almost always comes to the same conclusion: that voters' economic time frames are very short.

The Voter-Centric Approach

As most economic voting scholars assume that voters are myopic, Stiers, Dassonneville, and Lewis-Beck (2019) provide a useful starting point: they are perhaps the only scholars to suggest that voters are "attentive to the government's performance in the long run as well as the short" (p.647). They argue 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). Storing such information over a government's entire term is clearly burdensome, to say the least. Instead, they contend that voters use online processing and update their perceptions as though maintaining a running tally.

My own view is that it is not clear if this argument really implies that how voters process information should affect their level of myopia. Running tallies work well if the intention is to maintain a belief about the *present* state of the economy. But, in the context of economic voting, this is not the case. Instead, as Fiorina (1981) puts it, “to ascertain whether the incumbents have performed poorly or well, citizens need only calculate the changes in their own welfare” (p. 5). In effect, economic voting theory demands that voters 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 two pieces of information: *past* and *present* economic 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) if they are to engage in economic voting. Consequently, both processes 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’ past satisfaction with the government in one model and the economy in another. But, again, neither model reflects the retrospective voting theory on which economic voting relies. To see why, consider the following retrospective voting model:

$$\begin{aligned} \text{Vote}_i &\sim \text{Bernoulli}(\pi_i) \\ \text{logit}(\pi_i) &= \alpha + \beta(C_0 - C_t) \end{aligned}$$

Consistent with Fiorina (1981), here 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 . That is to say that retrospective voting concerns *change*. When it comes to questions of voter myopia, we should have a very specific target in mind: t , the reference point that voters use when making their retrospective judgements. Stiers, Dassonneville, and Lewis-Beck (2019), however, use a different model:

$$\begin{aligned} \text{Vote}_i &\sim \text{Bernoulli}(\pi_i) \\ \text{logit}(\pi_i) &= \alpha + \beta_1 C_0 + \beta_2 C_t \end{aligned}$$

As we can see, the components here are the same as before. Yet past and present conditions (in this case either satisfaction with the government or the economy) instead each have an independent effect on support for the incumbent party. This independence is a problem¹. As C_0 and C_t each have their own effect on incumbent voting, the model privileges the *level of* — rather than the *change in* — conditions under the current incumbent. In line with my argument above, this is neither consistent

¹It is worth noting here that we 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, the model also likely suffers from multicollinearity problems.

with the online processing theory that they put forward (as it requires two measures and not one) nor retrospective voting theory. As a result, it cannot provide a reliable estimate of voters' retrospective time frames. Instead, it is akin to assuming that voters use a weighted average of past conditions when deciding whether to support the current incumbent.

Other work that investigates voter myopia using a voter-centric approach tends to rely on experimental methods. Huber, Hill, and Lenz (2012), for example, note that evidence from psychology suggests that people do not keep track of their utility over time. Rather, they use a heuristic: how the a given experience ended or how it was at its most intense (Ariely and Carmon 2000). This is known as the peak-end rule. Using an experimental game, they vary when their subjects are made aware of the upcoming "election". They show that those who became aware of the event later on tended also to overweight incumbent performance closer to the event.

Healy and Lenz (2014) conduct a similar study, again drawing on the peak-end rule. Their design is particularly interesting as they ask their subjects how they intend to weight the economy in each year of the incumbent's term before subjecting them to the experimental treatment. Consistent with the argument put forth by Hibbs (2006), their subjects say that they intend to judge the incumbent based on the cumulative economic change over their entire time 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". That is to say, they are myopic.

... And Why Should We Care?

One obvious retort to the points I raise above is "so what?". After all, if voters engage in economic voting, does it really matter what time frame they use? The answer is simple enough: Yes, it does.

First, voters' economic time frames have obvious policy implications. Or, as Tufte puts it, a shorter time frame is likely to result in "myopic policies for myopic voters" (1978, 143). Imagine a scenario in which voters' economic time frames are short and, more importantly, governments are aware of this fact. Here, the incumbent can reasonably expect only to be punished for choices that fall within this short window of time. This, in effect, incentivizes governments to order their policy decisions in a way that takes advantage of voter myopia. They should make any unpopular policy decisions early in their term, safe in the knowledge that voters will forget them. Likewise, they should make more popular policy decisions later in their term so that voters' perceptions of the party at the election are as positive as possible. In the extreme, where governments lack a clear policy agenda, or simply get desperate, profligacy is likely to be the end result. After all, uncosted or unaffordable tax cuts and spending pledges offer struggling governments a last-ditch hope at reelection.

Second, if voters have only a short-sighted view of economic change, then they might be prone to voting not for the best economic *manager* but instead for the best economic *manipulator*. Armed with the levers of the state, incumbent parties can and do use the power of the government to shape voters' preferences in their own favour (Dunleavy and Ward 1981; Tufte 1978). Note that this argument rests on the assumption that governments can make policy choices that affect the

direction of economic change. Some doubt that this is really the case (Dynes and Holbein 2019). Yet, whether true or not, the view is common in the economic voting literature (for recent reviews, see Stegmaier, Lewis-Beck, and Brown 2019; Stewart and Clarke 2017; Stegmaier, Lewis-Beck, and Park 2017; Lewis-Beck and Costa Lobo 2017). If we relax this assumption and instead contend that governments exercise little control over the state of the economy, then must accept that luck — and not competence — decides elections (Achen and Bartels 2016; Wlezien 2015). Clearly, this is not a satisfactory outcome if we hope for voters to hold democratic governments to account.

Third, voter myopia disrupts the mechanism that retrospective voting theory assumes both to encourage democratic accountability and to improve economic outcomes. As Achen and Bartels (2016) argue, if elections are really referenda on the economy (Fiorina 1981), then we should expect economic conditions to improve most where voters reelect the incumbent party. This is because the incumbent has, presumably, demonstrated that it is able to provide better-than-average economic management. What's more, voters should make use of *all* of the information available about the incumbent's ability to manage the economy if they are to make an informed decision (Healy and Lenz 2014; Hibbs 2006). If the information that they have access to covers only a small sliver of time close to the election, then this is simply not possible. No wonder then that there is little evidence in favour of such a process (Achen and Bartels 2016).

Data

To estimate my economic voting model requires two sources of information: individual-level voting intention data and aggregate-level economic statistics. This approach is somewhat unusual: most economic voting research uses only macro- or micro-level data. But doing so presents problems in both cases: macro-level research has problems of ecological inference (Stewart and Clarke 2017) and micro-level research relies on economic perception items that suffer from serious partisan bias (Bailey 2019; Bisgaard 2015; Evans and Andersen 2006). Using data from each level remedies both problems. Voting intention data are at the micro-level, so ecological inference is not necessary. Likewise, aggregate economic statistics do not vary according to the behaviour of any particular voter and, thus, do not suffer from problems of partisan bias as economic perceptions items do.

Individual-level voting intention data come from the British Election Study Continuous Monitoring Surveys (CMS). The CMS is a series of monthly political surveys that took place in Great Britain from April 2004 to February 2014. The polling company YouGov administered the data collection for all 114 survey waves, which were structured as a series of repeated cross-sections. In total, 132,369 people took part. Further, each case is weighted to be nationally-representative according to both past voting behaviour and socio-demographic characteristics.

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 responsible for producing and reporting a range of economic statistics including GDP, unemployment, and inflation. In most cases it does so quarterly, but in some cases monthly estimates are available too. Further, it is also worth noting that, upon

release, these statistics often become news stories in their own right. Though there are a range of economic statistics, the economic voting research most often relies on GDP. Indeed, some go so far as to call it “the most general objective measure of economic welfare” (Kayser and Wlezien 2011, 376). Given that this is the case, I also use GDP data to estimate the economic vote. In particular, I use the ONS’ time series of monthly GDP statistics.

Methods

Where it uses aggregate economic indicators, economic voting research often faces a major constraint: the release schedule of national statistical agencies themselves. In most cases, these agencies release economic statistics like the rate of GDP growth or the level of unemployment on a quarter-by-quarter, or even year-by-year, basis. But this is of little use where your research question requires the use of more granular time periods. This is true in the present case, as estimating voter myopia requires continuous measures of economic change.

I use a two-stage approach to circumvent this problem. In the first stage, I produce a time series of daily GDP estimates for the UK that run from 1 January 1997 to 1 December 2019. To do so, I fit a penalized regression spline to monthly GDP estimates from the ONS and use the model to fill in the missing dates. In the second stage, I link each of the individual respondents in the CMS data to a random date up to five years before the date they took their survey and then calculate GDP growth in percentage terms between the two time points. I then fit my half-life model to these data to estimate the economic vote and voter myopia.

Stage 1: Estimating Daily GDP

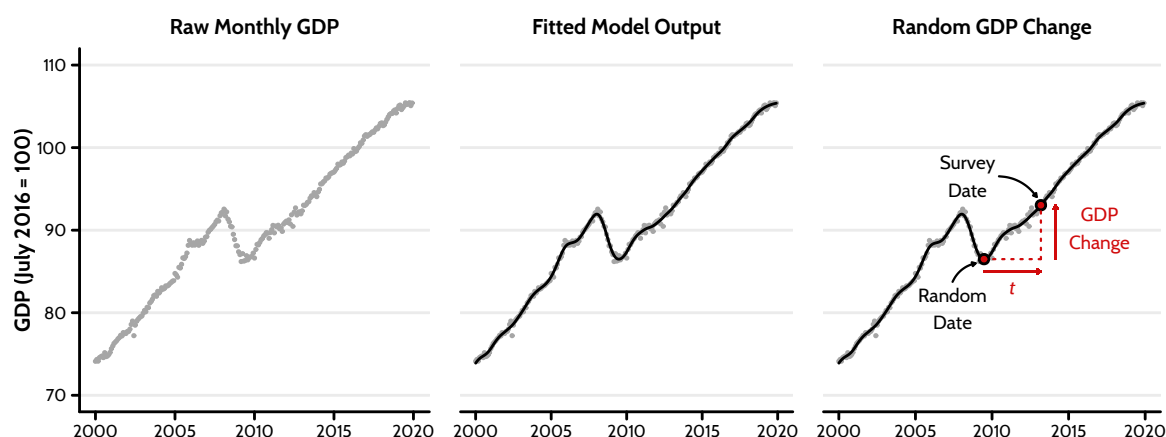


Figure 1: To estimate daily GDP, I fit a spline ($k = 100$) to monthly GDP data from the ONS. I then assign each case to a random date from up to 5 years ago and calculate GDP change between the two dates.

Figure 1 shows the three steps that I take to compute daily estimates of UK GDP. Consider first the left-most panel. Here, each point reflects a single estimate from the ONS’ monthly time series of UK GDP data. These start in January 1997, end in December 2019, and are indexed such that

July 2016 is equal to 100. In viewing the data, we see that two patterns are most obvious. First, that UK GDP tended to grow from one month to the next over the entire period. Second, that the global financial crisis interrupted this process in the mid-2000s. Further, UK GDP did not change at a constant pace either. On average, GDP growth was faster before than after the financial crisis. What's more, periods of faster and slower growth also occur at different points along the series. As a result, it appears that the change in UK GDP is a decidedly non-linear process.

The center-most panel shows the same GDP estimates as the first, though a curve now runs through the series. This curve serves to track 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 generalized additive model to the data that predicts GDP as a non-linear function of time. In particular, I use a penalized cubic regression spline with 100 knots. As we can see, the model has a good fit to the data: it tracks UK GDP well and does so with limited uncertainty due to the large number of cases and relatively consistent changes in the underlying data. Consequently, there is good reason to believe that any estimates that it produces should reflect historic GDP levels.

The right-most panel shows how I intend to put these estimates to use. Each of the 132,369 respondents in the CMS data took their survey on a particular date between 8 April 2004 and 2 February 2014. For example, imagine a respondent who took their survey in March 2013, shown here by a red dot. I allocate the respondent to a random date up to five years before the date that they completed their survey, again shown here as a red dot, then calculate the time, t , that has passed between the two points. This is shown as a red horizontal arrow that spans the distance between the two red points parallel to the x-axis. Next, I use the fitted model whose output is shown in the center-most panel to estimate UK GDP on each day, then compute the amount of GDP growth that has occurred between the two dates in percentage terms. This is shown as a second red arrow, which this time spans the vertical distance between the two points parallel to the y-axis. I repeat this process for each respondent in the data until each is linked to a time interval and GDP growth estimate based on their survey date and their randomly-allocated reference date.

Stage 2: Estimating the Exponential Decay Model

The simplest way to explain the model that I use is to start with a simpler, more familiar, model and then build up each additional element step-by-step. As such, consider the following model:

$$\begin{array}{ll} \text{Vote}_i \sim \text{Bernoulli}(\pi_i) & \text{Likelihood function} \\ \text{logit}(\pi_i) = \alpha + \beta \Delta \text{GDP}_t & \text{Linear model on } \pi_i \end{array}$$

This is, for all intents and purposes, a standard economic voting model. Here, we assume that the voting intention of respondent i is drawn from a Bernoulli distribution with probability π_i and takes the value 1 where person i intends to vote for the incumbent party and 0 otherwise. We then model the vector of voting intention figures as a function of ΔGDP , the change in GDP over some time

frame. This model yields two parameters: α , the log odds of voting for the incumbent where ΔGDP is zero, and β , the change in the log odds of voting for the incumbent for a unit change in ΔGDP .

The CMS data were collected in waves, so it is possible that there might be wave-specific variation that we need to account for. As we are working in a Bayesian framework, we can allow this by including an adaptive prior that lets α vary over each survey wave. We also know how the GDP change data were computed (see stage 1). As such, we can include this information in our equation too:

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

Now, $\alpha_{\text{wave}[i]}$ measures the log odds of voting for the incumbent in each survey wave where GDP change is zero and varies around the grand mean $\bar{\alpha}$, and β measures the effect of a unit change in GDP growth between time 0, when respondent i responded to their survey, and time t , the random date that we allocated them to.

As the time interval t varies for each respondent, it makes little sense to have β , the economic voting effect, be fixed to a single value. Instead, we want β to vary as a function of t . In particular, we expect β to decay as t increases, as people are also more likely to forget events that took place further into the past. One useful way of thinking of this problem is in terms of exponential decay. That is, we expect β to have some initial value which decays quickly before levelling out as it approaches zero.

Exponential decay is a common phenomenon in the physical sciences and described using the following equation (Rösch 2014):

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

Here, $N(t)$ represents the quantity of some substance N that remains at time t after having undergone exponential decay. Note that where $t = 0$, $N(t) = N_0$, the substance's initial quantity. As time passes, this value decays subject to the “decay constant”, λ . Where λ is positive, the substance experiences exponential decay. Where λ is negative, the substance instead experiences exponential growth. Once we know the value of λ , we can use the following simple equation to obtain the substance's half-life (i.e. how long it would take for the substance to decay by half), $t_{1/2}$:

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

In this case, we do not have a *substance* but, instead, a *parameter*: the economic voting effect, β . As such, we can simply substitute N in the original equation for β to obtain the non-linear exponential decay model that we will use to allow for voter myopia:

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

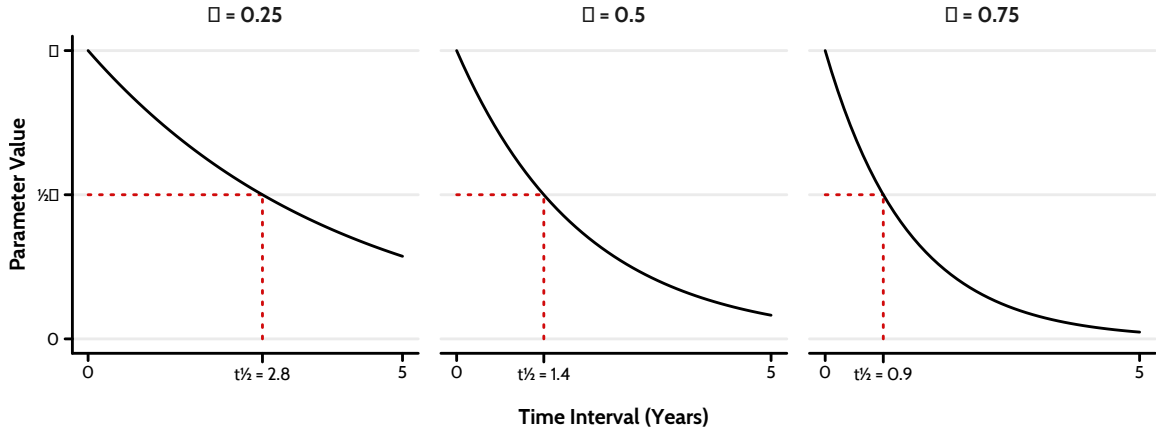


Figure 2: The decay constant and half-life are related. When the former increases, the latter decreases. This is because the relationship between the two is deterministic. More specifically, $t_{1/2} = \ln(2)/\lambda$.

As this approach is somewhat unusual, it is worth considering how λ affects the economic vote in more detail. Figure 2 shows how changes in the decay constant, λ , affect changes in the half-life parameter, $t_{1/2}$. As we move from the left-most to the right-most panel, the decay constant, λ , increases from 0.25, to 0.5, to 0.75. As it does so, two things happen. First, the effect of the economic vote, β , decays more quickly over time. Note, however, that so long as λ is positive, the value of β will always approach zero in the limit. Second, the value of the half-life parameter, $t_{1/2}$, *decreases* to account for the increasing decay in the effect of the economic vote, β . This is because the half-life parameter, $t_{1/2}$, must always occur where the effect of the economic vote, β , reaches half of its initial value. Thus, as the economic voting effect, β , decays more quickly, so too does the point at which it reaches its half-life, $t_{1/2}$.

Figure 3 reveals how the decay shown in figure 2 plays out over time. Here, the time interval between the date that the respondent answered their survey and their random reference date increases as we move from the left to right. In the left-most panel, this time interval is equal to zero. As such, the economic voting effect has undergone no exponential decay and remains at its initial value. In this simulated example, there is a strong economic voting effect: as GDP change increases, these hypothetical voters become more likely to vote for the incumbent party. This is true also in the center-most and right-most panels, though, in both cases, the economic voting effect has undergone some decay due to voter myopia. In the centre-most panel, where the time interval equals one year, an effect persists, though is now more modest than it was when the time interval equalled zero. In the right-most panel, where the time interval now equals two years, the economic voting effect has decayed to

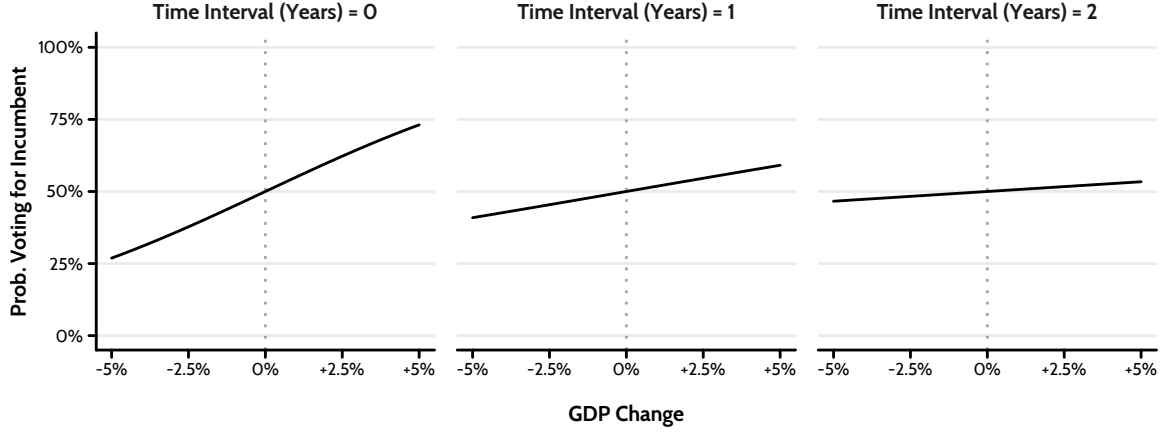


Figure 3: The slope is related to the time interval. As the interval increases, the slope decays. In this simulated example, the slope at time 0 is held at 0.2 and the decay constant is held at 1.

such an extent that it is only marginally distinct from zero.

We can now substitute this equation into our previous one to arrive at the final model that we will fit to the data. Note that in doing so we also include a set of covariates, x , that account for the time trend, the different Prime Ministers in power throughout the period, and their interactions. Finally, we also include a set of prior distributions on each of our parameters. This gives the following model:

$Vote_i \sim \text{Bernoulli}(\pi_i)$	Likelihood function
$\text{logit}(\pi_i) = \alpha_{\text{wave}[i]} + \beta_t \left(\frac{\widehat{GDP}_0 - \widehat{GDP}_t}{\widehat{GDP}_t} \times 100 \right) + \sum_{j=1}^5 \delta_j x_{ji}$	Linear model on π_i
$\beta_t = \beta_0 e^{-\lambda t}$	Exponential decay model on β_t
$\alpha_{\text{wave}} \sim \text{Normal}(\bar{\alpha}, \sigma_{\alpha})$	Adaptive prior on varying intercepts
$\bar{\alpha} \sim \text{Normal}(0, 1.5)$	Prior on grand mean of intercepts
$\sigma_{\alpha} \sim \text{Exponential}(5)$	Prior on standard deviation of intercepts
$\beta_0 \sim \text{Normal}(0, 0.5)$	Prior on β where $t = 0$
$\delta_j \sim \text{Normal}(0, 0.5)$ for j in $1..J$	Prior on δ parameters
$\lambda \sim \text{Normal}(0, 0.5)$	Prior on the decay constant, λ

Results

Table 1 shows the resulting parameter estimates from the fitted model. In all cases, coefficients show the expected relationships. Consider first the chief variable of interest: GDP change at $t = 0$. Consistent with economic voting theory, this effect is positive. As a result, the model does provide some support for the idea that economic growth affects whether individual voters decide to support the incumbent party or not. Note, however, that this effect is small. As few economic voting studies

Table 1: Parameter estimates from the half-life model predicting incumbent voting intention. Note that the model converged with no divergent transitions, no iterations saturated the maximum treedepth, and \hat{R} statistics all equalled 1. 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 \times Time	−0.06	0.04	−0.15	0.02
David Cameron \times Time	−0.13	0.03	−0.20	−0.07
N (Individuals)				130, 145
N (Survey)				112

match aggregate economic statistics to individual voting intention data, it is hard to know whether this effect is usual. But we can rule out that

A series of robustness tests do show

First, GDP change where $t = 0$ is positive. This is consistent with economic voting theory and implies that economic growth does affect whether voters decide to support the incumbent party. Note, however, that the effect is small. What’s more, this small effect persists

Isn’t a product of estimating GDP change where no time has passed. Even a model that estimates year-on-year GDP change (whether using the estimated daily GDP or the raw monthly estimates) shows effects of X , consistent with this model.

Table 1 shows the resulting parameter estimates from the fitted model. Here, each coefficient is in the expected direction. GDP change at $t = 0$ is small, but positive. The decay constant, λ , is also positive, indicating that the economic voting effect undergoes exponential decay consistent with voter myopia. As the costs of governing literature would have us believe, incumbent voting decays over time. And voters were more inclined to vote for Gordon Brown and David Cameron than Tony Blair, to varying extents.

Figure 4 shows how the economic vote diminishes as voters’ time horizons increase. At $t = 0$, GDP change has the same effect as shown in table 1. As t gets larger and larger, the economic voting effect gets smaller and smaller until it finally reaches zero. We can use the equation shown above to convert between the decay constant, λ , and the parameter’s half-life, $t_{1/2}$. As a reminder, the latter reflects the amount of time that it takes for the economic voting effect to fall to half of its initial value. Doing so shows that the half-life of the economic vote is around 1.58 years (95% CI = 1.58 to 1.58)².

²Note that this figure is computed by transforming the entire posterior distribution of the decay constant, λ , 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 two.

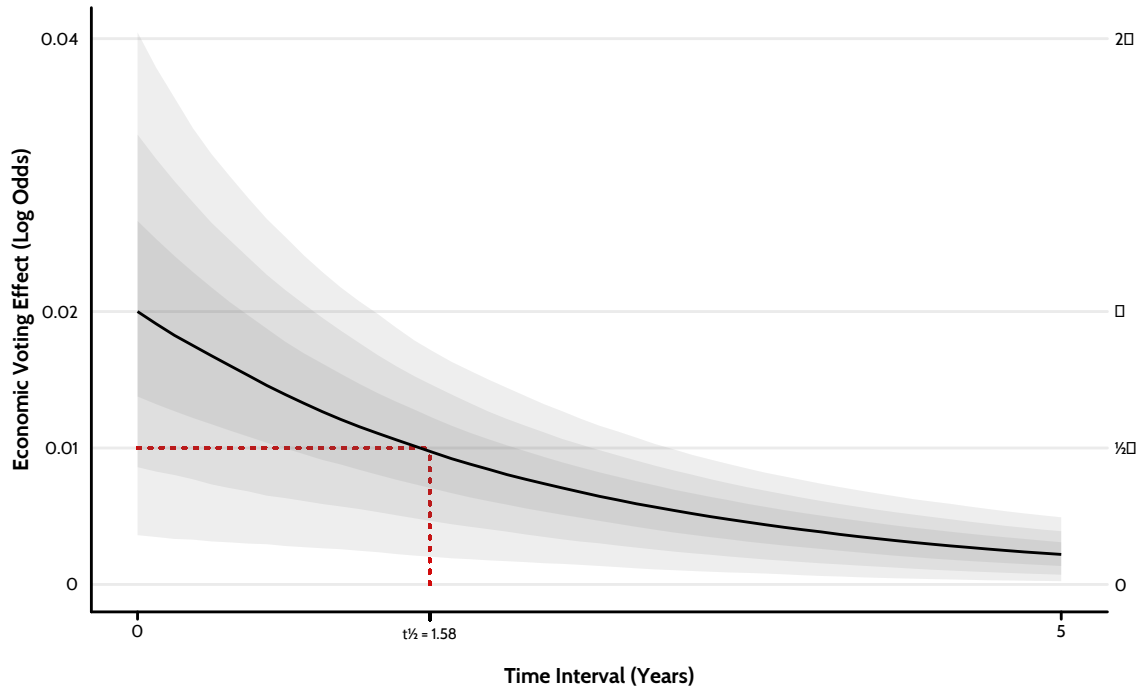


Figure 4: The economic vote diminishes as the time interval between the survey and reference date increases. At a time interval of 1.58 years, the economic voting effect decays to half of its initial value. Here light, medium, and dark areas reflect 95%, 80%, and 50% credible intervals, respectively.

That is to say, were voters to compare the state of the economy now to the state of the economy 1.58 years ago, we would expect the effect to be half the size of the effect where they simply considered the state of the economy in the present moment.

Note how that as the economic voting effect *diminishes*, our certainty about its true value actually *increases*. This might seem unusual: why should we be any more certain about the effect of GDP growth over five years than over, say, one year or even one month? To see why, reflect on what we know about exponential decay. Under this process, we start with some initial quantity that we expect to deplete over time. Eventually, the quantity will fall to such a low amount that it is, for all intents and purposes, equal to zero. Here, we also have to estimate the initial quantity, as it is a parameter and not a substance that we can simply measure with a scale or ruler. Even so, no matter the estimate that we arrive at, we know that it will always equal in the limit where t approaches ∞ if it exhibits exponential decay. As a result, we therefore know that as t increases, the parameter is more likely to be closer to zero.

Figure 5 shows how voter myopia shapes the effect of GDP change on the probability of voting for the incumbent party.

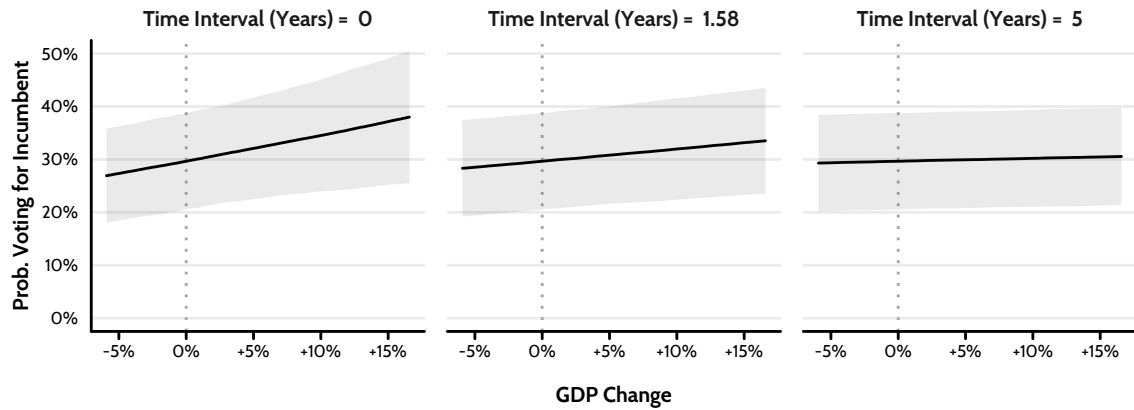


Figure 5: At $t = 0$, the economic vote has a reasonably-large effect on the probability of voting for the incumbent. After 1.58 years, it is only very small. And after 5 years, it is practically-equivalent to zero.

Discussion and Conclusion

Recency is a real concern: current economic conditions matter more. While that raises the problem that voters might vote for the best manipulator and not the best manager, voters' time horizons do look to be long enough that historic performance matters.

For governments: more evidence that they should stack bad economic news at the start of the session.

Another possibility is that some types of economic change linger longer than others. Downturns seem an obvious example.

That said, economic voting effects here are quite weak. Hard to contrast to other figures as most economic voting research relies on economic perceptions (which suffer all sorts of bias) or, where they do use economic statistics do so at the aggregate level.

Another possibility is that some types of economic change linger longer than others. Fieldhouse, Green, Evans, Mellon, and Prosser (2020), for example, argue that British politics felt the effects of the 2008 global financial crisis much longer than

If past events matter less because voters are not attentive to them, then we might expect the half-life of the economic voting effect to also vary according to the attention that voters pay to politics. More attentive voters might also have greater time frames.

References

- Achen, Christopher H., and Larry M. Bartels. 2016. *Democracy for Realists: Why Elections Do Not Produce Responsive Governments*. Princeton, NJ: Princeton University Press.
- Ariely, Dan, and Ziv Carmon. 2000. "Gestalt Characteristics of Experiences: The Defining Features of Summarized Events." *Journal of Behavioral Decision Making* 13 (2): 11.
- Bailey, Jack. 2019. "The Fact Remains: Party ID Moderates How Voters Respond to Economic Change." *Electoral Studies* 61. <https://doi.org/10.1016/j.electstud.2019.102071>.
- Bisgaard, Martin. 2015. "Bias Will Find a Way: Economic Perceptions, Attributions of Blame, and Partisan-Motivated Reasoning During Crisis." *The Journal of Politics* 77 (3): 849–60. <https://doi.org/10.1086/681591>.
- Bloom, Howard S., and H. Douglas Price. 1975. "Voter Response to Short-Run Economic Conditions: The Asymmetric Effect of Prosperity and Recession." *The American Political Science Review* 69 (4): 1240–54. <https://doi.org/10.2307/1955284>.
- Campbell, Angus, Philip E. Converse, Warren E. Miller, and Donald E. Stokes. 1960. *The American Voter*. Chicago, IL: The University of Chicago Press.
- Clarke, Harold D., Marianne C. Stewart, and Gary Zuk. 1986. "Politics, Economics and Party Popularity in Britain, 1979-83." *Electoral Studies* 5 (2): 123–41. [https://doi.org/10.1016/0261-3794\(86\)90002-8](https://doi.org/10.1016/0261-3794(86)90002-8).
- Conover, Pamela Johnston, Stanley Feldman, and Kathleen Knight. 1987. "The Personal and Political Underpinnings of Economic Forecasts." *American Journal of Political Science* 31 (3): 559–83. <https://doi.org/10.2307/2111283>.
- Dassonneville, Ruth, and Marc Hooghe. 2017. "Economic Indicators and Electoral Volatility: Economic Effects on Electoral Volatility in Western Europe, 1950-2013." *Comparative European Politics* 15 (6): 919–43. <https://doi.org/10.1057/cep.2015.3>.
- Dunleavy, Patrick, and Hugh Ward. 1981. "Exogenous Voter Preferences and Parties with State Power: Some Internal Problems of Economic Theories of Party Competition." *British Journal of Political Science* 11 (3): 351–80. <https://doi.org/10.1017/S0007123400002684>.
- Dynes, Adam M., and John B. Holbein. 2019. "Noisy Retrospection: The Effect of Party Control on Policy Outcomes." *American Political Science Review*, November, 1–21. <https://doi.org/10.1017/S0003055419000649>.
- Evans, Geoffrey, and Robert Andersen. 2006. "The Political Conditioning of Economic Perceptions." *The Journal of Politics* 68 (1): 194–207. <https://doi.org/10.1111/j.1468-2508.2006.00380.x>.
- Fieldhouse, Edward, Jane Green, Geoffrey Evans, Jonathan Mellon, and Christopher Prosser. 2020. "British Election Study Internet Panel, 2014-2023."
- Fieldhouse, Edward, Jane Green, Geoffrey Evans, Jonathan Mellon, Christopher Prosser, Hermann Schmitt, and Cees van der Eijk. 2020. *Electoral Shocks: The Volatile Voter in a Turbulent World*. New York, NY: Oxford University Press.

- Fiorina, Morris P. 1981. *Retrospective Voting in American National Elections*. New Haven, CT: Yale University Press.
- Goodhart, C. A. E., and R. J. Bhansali. 1970. "Political Economy." *Political Studies* 18 (1): 43–106. <https://doi.org/10.1111/j.1467-9248.1970.tb00659.x>.
- Healy, Andrew, and Gabriel S. Lenz. 2014. "Substituting the End for the Whole: Why Voters Respond Primarily to the Election-Year Economy." *American Journal of Political Science* 58 (1): 31–47. <https://doi.org/10.1111/ajps.12053>.
- Hibbs, Douglas A. 2006. "Voting and the Macroeconomy." In *The Oxford Handbook of Political Economy*, edited by Barry R. Weingast and Donald Wittman, 565–86. Oxford, UK: Oxford University Press.
- Huber, Gregory A., Seth J. Hill, and Gabriel S. Lenz. 2012. "Sources of Bias in Retrospective Decision Making: Experimental Evidence on Voters' Limitations in Controlling Incumbents." *The American Political Science Review* 106 (4): 720–41.
- Kayser, Mark Andreas, and Christopher Wlezien. 2011. "Performance Pressure: Patterns of Partisanship and the Economic Vote." *European Journal of Political Research* 50 (3): 365–94. <https://doi.org/10.1111/j.1475-6765.2010.01934.x>.
- Kiley, Kevin, and Stephen Vaisey. 2020. "Measuring Stability and Change in Personal Culture Using Panel Data." *American Sociological Review* 85 (3): 477–506.
- Kramer, Gerald H. 1971. "Short-Term Fluctuations in U.S. Voting Behavior, 1896-1964." *The American Political Science Review* 65 (1): 131–43. <https://doi.org/10.2307/1955049>.
- Lanoue, David J. 1987. "Economic Prosperity and Presidential Popularity: Sorting Out the Effects." *Western Political Quarterly* 40 (2): 237–45. <https://doi.org/10.1177/106591298704000203>.
- Lebo, Matthew J., and Daniel Cassino. 2007. "The Aggregated Consequences of Motivated Reasoning and the Dynamics of Partisan Presidential Approval." *Political Psychology* 28 (6): 719–46. <https://doi.org/10.1111/j.1467-9221.2007.00601.x>.
- Lewis-Beck, Michael S., and Marina Costa Lobo. 2017. "The Economic Vote: Ordinary Vs. Extraordinary Times." In *The Sage Handbook of Electoral Behaviour*, edited by Kai Arzheimer, Jocelyn Evans, and Michael S. Lewis-Beck, 2:606–30. Thousand Oaks, CA: Sage.
- Lewis-Beck, Michael S., Nicholas F. Martini, and D. Roderick Kiewiet. 2013. "The Nature of Economic Perceptions in Mass Publics." *Electoral Studies* 32 (3): 524–28. <https://doi.org/10.1016/j.electstud.2013.05.026>.
- MacKuen, Michael B., Robert S. Erikson, and James A. Stimson. 1992. "Peasants or Bankers? The American Electorate and the U.S. Economy." *The American Political Science Review* 86 (3): 597–611. <https://doi.org/10.2307/1964124>.
- Palmer, Harvey D., and Guy D. Whitten. 2011. "Through Thick and Thin? The Dynamics of Government Support Across Income Groups During Economic Crises." *Electoral Studies*, Special Symposium on the Politics of Economic Crisis, 30 (3): 427–37. <https://doi.org/10.1016/j.electstud.2010.11.008>.
- Rösch, Frank. 2014. *Nuclear and Radiochemistry, Volume 1: Introduction*. Vol. 1. Berlin, DE: De

Gruyter.

- Stegmaier, Mary, Michael S. Lewis-Beck, and Lincoln Brown. 2019. "The Economic Voter Decides." *Oxford Research Encyclopedia of Politics*, May. <https://doi.org/10.1093/acrefore/9780190228637.013.931>.
- Stegmaier, Mary, Michael S. Lewis-Beck, and Beomseob Park. 2017. "The VP-Function: A Review." In *The SAGE Handbook of Electoral Behaviour*, 2:584–605. London: SAGE.
- Stewart, Marianne C., and Harold D. Clarke. 2017. "Economic Voting." In *The Routledge Handbook of Elections, Voting Behavior and Public Opinion*, edited by Justin Fisher, Edward Fieldhouse, Mark N. Franklin, Rachel Gibson, Marta Cantijoch, and Christopher Wlezien, 192–204. Abingdon: Routledge.
- Stiers, Dieter, Ruth Dassonneville, and Michael S. Lewis-Beck. 2019. "The Abiding Voter: The Lengthy Horizon of Retrospective Evaluations." *European Journal of Political Research* 59 (3): 646–68. <https://doi.org/10.1111/1475-6765.12360>.
- Tufte, Edward R. 1978. *Political Control of the Economy*. Princeton, NJ: Princeton University Press.
- Wlezien, Christopher. 2015. "V.O. Key, Jr., Public Opinion and American Democracy." In *The Oxford Handbook of Classics in Public Policy and Administration*, edited by Martin Lodge, Edward C. Page, and Steven J. Balla, 137–53. Oxford, UK: Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199646135.001.0001>.
- Zaller, John R. 1992. *The Nature and Origins of Mass Opinion*. Cambridge, UK: Cambridge University Press.