Voting and the Economic Cycle

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Abstract

Sophisticated voters assess incumbent competence by filtering out economic cycles (which they do not like) from trend growth (which they do). Naive voters on the other hand respond only to raw economic growth. This implies that voting in the aggregate should respond asymmetrically to the economic cycle. Upswings are rewarded by the naive, but punished by the sophisticated. Downswings are punished by all voters. Using an established dataset of over 400 general elections we find that the incumbent vote share a) responds differently to trend growth than to the cycle, b) does not respond significantly to positive variation in the economic cycle, and c) responds significantly and negatively to negative realizations in the economic cycle. In contrast to standard formulations of the 'grievance asymmetry' this asymmetric vote response is found to be independent of trend growth.

1 Introduction

In a recent survey of the literature on how election results are linked to economic performance Lewis-Beck and Stegmaier (2013) reaffirmed Nannestad and Paldam's (1994) finding that the economic vote is "almost always... strong... and statistically significant." Voters reward incumbents that deliver strong growth, and punish those that do not. However, despite over 40 years of research, the underlying mechanisms are still not very well understood. Are voters rationally rewarding competence? Or are they naively responding to unsustainable pre-electoral booms?

The contribution of this paper is to decompose economic performance into constituent measures of trend growth and the economic cycle.[1] Empirical work to date examining voting responses to GDP growth has focused almost exclusively on measures reported in raw terms.[2] This is surprising, and we argue mistaken, because separation of the economic cycle and underlying economic growth, and their respective drivers, is central to much of modern macroeconomic thinking. Furthermore it seems plausible that voter welfare would be differently affected by sustainable trend growth and unsustainable booms.[3]

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[1]The trend and cycle are macroeconomic performance measures; hence, this paper is consistent with literature emphasizing 'sociotropic' economic voting (though it is quite feasible that changes in the trend and cyclical components of GDP translate into 'pocketbook' effects).

[2]One important exception is Palmer and Whitten (1999), who decompose macroeconomic data into expected and unexpected components. These are quite distinct from trend and cycle. For example, the economic cycle displays a lot of persistence - a recession in one quarter predicts recession in the next (and hence would be expected). Another approach, taken by Leigh (2009) and Kayser and Peress (2012), decomposes GDP into national and global elements in order to benchmark national performance.

[3]Note also that the duration of economic and electoral cycles are of the same order of magnitude. For the United States, Burns and Mitchell (1946) found that business cycle duration ranged from 6 to 34 quarters and more recently the National Bureau of Economic Research registered 7 postwar business cycles with a minimum duration of 6 quarters and a maximum of 43 quarters. (See Everts 2006 for an examination of these numbers.) These duration statistics compare with electoral cycles usually varying between 3 and 5 years.

In short-run models of the macroeconomy, the volatility embedded in the economic cycle reduces welfare.[4] Indeed, upswings in the economy - positive values of the 'output gap' as sometimes defined, typically are modeled to generate as much disutility as downswings - negative values of the output gap. Therefore policymakers are almost always modeled to have quadratic disutility in the output gap (e.g., see Clarida, Gali and Gertler 1999).[5] In the context of this paper this means that *any* unnecessary volatility - downswings and upswings, when perceived to be the fault of the incumbent, would under rational voting be punished at the polls. A related criticism is leveled by Alesina and Roubini (1992) against early versions (e.g., Nordhaus 1975) of the 'political business cycle'. Rational voters should ignore (if not punish) opportunistically engineered pre-electoral booms as they will be recognized to be unsustainable (see also Alesina et al., 1999).

The idea that volatility would be unpopular is also explored in Quinn and Woolley (2001). Indeed they write that "the literature... has been couched in terms of rates of economic growth alone. The implicit assumption is that citizens have an unqualified preference for more rather than less growth. A related implicit assumption is that higher growth involves no significant costs in terms of economic disruption or volatility." (ibid., p. 636) This concern is exactly what motivates the present paper. In their empirical work Quinn and Woolley (2001) find robust evidence that volatility (measured as the standard deviation of raw growth) affects the incumbents' vote share negatively, although they do not address the possibility

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[4]One (very plausible) element of this argument is that individuals cannot fully insure themselves against the vagaries of the economic cycle, and in particular the possibility of unemployment.

[5]Quadratic utility is not just a mathematical convenience - Woodford (2003) derives it as a second-order approximation to the utility function (which can take very general form) of a representative agent. In the New Keynesian literature upswings and downswings both generate dispersion in the distribution of prices in the economy, given some degree of price rigidity, which changes consumption patterns and is detrimental to welfare.

of heterogeneity across individuals in how the vote responds to volatility, or indeed the asymmetry hypothesis that is proposed here.[6]

On the other hand it must also be noted that output fluctuations may stem from external shocks such as oil price shocks, global financial shocks like the recent and ongoing credit crunch, or indeed "irrational exuberance" in the good times. These are plausibly outside of the control of policymakers.[7] But even here, informed rational voters might still hold the government responsible for its handling of the cycle. Overall it seems plausible in most instances that the rational voter would, to some degree at least, hold the incumbent to account, negatively, for fluctuations in the economic cycle.

In contrast, within economics at least, it is close to axiomatic that long-run (trend) economic growth increases welfare, all else equal.[8] Trend growth, by construction, can be thought of as 'long-run' economic growth, and of course there is a huge literature examining international and temporal variation in this variable and its potential determinants (see Temple 1999). Moreover the idea that cross-country differences in income per capita are driven partly by government policy is central to the literature on economic growth. For example, Hall and Jones (1999) argue for the fundamental importance of 'social infrastructure' defined explicitly as "the institutions and government policies that determine the economic

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[6]It should also be acknowledged that GDP (whether expressed in terms of raw or decomposed measures or volatility) is not the only potential macroeconomic driver of the vote. Carlsen (2000) and Jordahl (2006) analyze inflation and unemployment. However, GDP is certainly the prominent overall measure of macroeconomic performance. For instance, Stigler (1973) writes that "income is a more comprehensive measure of economic conditions than unemployment". Peltzman (1990) writes that "voters... probably give greater weight to income growth than to unemployment and inflation." Wlezien and Erikson (1996) and Hibbs (2006) also stress income growth as the primary macroeconomic performance measure.

[7]Incumbent 'responsibility' also undoubtedly varies across institutions and countries. Important advances here include Powell and Whitten (1993) and Whitten and Palmer (1999).

[8]This chimes with Peltzman's (1990) argument that only permanent improvements in the voter's welfare should be rewarded.

environment within which individuals accumulate skills, and firms accumulate capital and produce output". Empirically, Rodrik et al. (2004) find that institutional quality "trumps" other potential determinants of cross-country income levels. Given the wide dispersion in economic performance it is clear that social infrastructure cannot be taken for granted and extending this view to a model of rational voting means that improved trend growth will be rewarded at the polls. Relatedly, Döpke and Pierdzioch (2006) and Fauvelle-Aymar and Stegmaier (2013) both find that incumbent approval is related to the stock market over and above economic control variables. In principle, the stock market index represents market expectations of the future potential output levels, hence there could be a correspondence with the trend component of output.

But are voters at all able to separate trend from cycle, when evaluating macroeconomic performance? On this question we identify two extreme views. The first, arguably implicit in the literature to date, is that all voters have no idea whatsoever what is trend and what is cycle, and cannot begin to disentangle the two. If this is the case, then empirical work should not identify distinct effects. One of the earliest predictions of the public choice literature was 'rational ignorance' in voting (see Tullock 1967, 2008). Voters anticipate that their individual impact on an election will be extremely small, and consequently do not burden themselves by acquiring costly political and economic knowledge. In its unadulterated form, rational ignorance suggests that voters will have no knowledge of the macroeconomy at all, let alone specific knowledge of the trend and cycle.[9] To some extent this prediction sits awkwardly with the stylized fact that there is at least some sort of economic vote, and more directly with the fact that some voters on some dimensions at least are very well informed.[10]

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[9]A related consequence is the Downs (1957) 'paradox of voting'.

[10]In differing contexts, Peltzman (1990) and Gomez and Wilson (2001) find evidence to support some

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Consequently later theoretical work within the field has softened. Aidt (2000) discusses some possible rationales for acquiring such knowledge even accepting the correct premise of a zero individual effect on the voting outcome. Voters may obtain detailed information through 'cues', obtained through the media, or as 'by-product' at zero or very low cost. Alternatively political and economic information may have intrinsic or consumption value - for example, by delivering utility via social interaction.

The second is that all voters can perfectly decompose the trend and cycle. This is unlikely: at any point in time forecasters and commentators may differ substantially in their estimates of trend and cycle, and it is tempting to argue that if experts cannot agree then the lowly electorate must have no idea at all. The signals by which the electorate gleans information concerning incumbent competency will therefore not literally take the form of exact measures of contemporaneous trend and cycle.

The truth is likely to be somewhere in between. In reality there is considerable heterogeneity in voters' knowledge sets. Blendon et al. (1997) document in the US context that knowledge of the state of the economy increases with educational attainment. Prior (2005) also documents a wide degree of political knowledge across the population. Voters who are interested in politics listen to political arguments over the economy, and this includes arguments that a government is achieving growth only by stoking up an unsustainable boom, perhaps inducing unnecessary and visible inflation; or that the inflation rate has been brought down only by throwing people out of work. If voters can imperfectly perceive such cyclical movements, they must also be able to perceive, imperfectly, the trend around which it revolves. Conover et al. (1986) and Lewis-Beck and Nadeau (2009) both found that voters

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degree of 'sophistication' in the electorate.

can estimate the unemployment rate quite accurately. Given that the unemployment rate is highly correlated with the business cycle it follows that voters have a reasonable idea of the business cycle as well.

In this paper heterogeneous political knowledge is modeled, in the simplest possible way, by having two types of voters: sophisticated and naive. The sophisticates are defined by the ability to decompose output into trend and cycle. They like trend growth for the standard material reasons, whilst they dislike unnecessary volatility around that trend. On the other hand, naive voters have standard preferences and are interested only in raw output levels at the time of the election. The first upshot of this reasoning is that trend growth should be rewarded at the polls - sophisticated voters like it for its own sake, and given that raw growth is increasing in trend growth, naive voters also respond positively. The more interesting hypotheses relate to the cycle. Upswings are rewarded by the naive, but punished by the sophisticated. Ambiguity therefore arises concerning whether cyclical upticks will increase incumbents' vote shares. On the other hand, downswings are punished by both sets of voters. The naive dislike lower output levels, and the sophisticated dislike the volatility. There is no ambiguity here: downswings should have a strong negative effect on the incumbent voter. We therefore posit an asymmetric vote response to the economic cycle.

The conception of 'sophistication' used in this paper differs with alternatives proposed in the literature. For example, in Gomez and Wilson (2001) 'low-sophisticates' seek to maximize 'proximal consistency' in their beliefs and, hence, are less able to draw connections, and thus attribute responsibility, between (micro) pocketbook effects and (macro) government policy decisions. On the other hand, they are more likely to connect (macro) sociotropic consequences with (macro) government decision-making. In contrast, 'high-sophisticates' seek

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'distal consistency' and thus may be able to connect pocketbook consequences with policy decisions, and simultaneously may also recognize disconnect between sociotropic performance (that is perhaps induced through global forces) and government policy. Empirically, using micro-data of subjective evaluations of personal and national economic circumstances Gomez and Wilson find that sociotropic voting is undifferentiated by voter sophistication, whilst pocketbook voting is predominantly found amongst their sophisticates. Their approach - which emphasizes heterogeneity in voters' capacities to *attribute* cause and effect - is distinct, but of course is not mutually exclusive of that proposed here - which emphasizes heterogeneity in voters' capacities to *process* visible information. Here all agents witness GDP. The sophisticates recognize the difference between growth and unnecessary volatility, whilst the naive do not.

Also relatedly, Zaller (2004) finds that independent/floating voters are both less sophisticated in the sense of exhibiting less political knowledge yet more inclined to vote with the economy. Sophisticated (politically knowledgeable) voters tend to be more partisan and inured to economic circumstances. This is potentially problematic for our argument, because the dependent variable here is the aggregate vote; any variation hence necessarily must come from voters whose allegiances change - independent voters. One way of reconciling Zaller's findings with the arguments of this paper would be to distinguish between economic sophistication (where one can distinguish trend from cycle) from political sophistication (where one demonstrates general knowledge of politics and current affairs). Even taking as given that independent voters are generally politically less knowledgeable, they may yet within themselves respond heterogeneously to the economy.

Our empirical analysis provides strong support for the cyclical asymmetry hypothesis

proposed in this paper. Using the large dataset of general elections provided by Hellwig and Samuels (2007) - covering 75 countries between 1975 and 2002 - we find that trend growth positively impacts the incumbent vote share as anticipated, and that the impact of the cycle is indeed asymmetric. The results are consistent with a reasonable degree of 'sophistication' in the electorate because the vote response to positive values in the cycle is slightly negative (though the magnitude of this estimated effect is small and is statistically insignificant.) A one standard deviation 'boom' is estimated to result in a vote loss to the incumbent of 0.71%. However, the vote response to negative values in the cycle is strongly negative and statistically significant. A one standard deviation downswing in the cycle is estimated to result to a vote loss of 3.56%.

The idea that voters respond asymmetrically to the economy *as a whole* is not new. The standard theoretical rationale given is the 'grievance asymmetry' (Nannestad and Paldam 1997). This can arise firstly from asymmetry in the utility function - reductions are argued to be felt more acutely than gains in terms of utility differences. Alternatively, the salience of the economy may rise in bad economic times, as the news media devote more air time to the economy.[11] However, on the empirical question of whether or not the vote responds asymmetrically to raw measures of economic performance, Lewis-Beck and Stegmaier (2013) find that the literature is mixed.[12]

In order to test the standard grievance asymmetry against our own model, which does

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[11]Indeed, Soroka (2006) and Singer (2013) find a strong negative correspondence between the extent to which voters regard the economy as an important issue in survey data, and the overall performance of the economy.

[12]This literature began with Bloom and Price (1975), who found in favor of asymmetry in US congressional elections. Using international data, Kiewiet (1983) and Lewis-Beck (1988) rejected it. Nannestad and Paldam (1997) found asymmetry using Danish microdata and Pacek and Radcliffe (1995) also found an asymmetric response in emerging economies.

not rely on asymmetric preferences or media penetration, we split the sample depending on whether trend growth is higher or lower than the median. The point of doing this is that downswings in the cycle when trend growth is robust imply a less detrimental economic outcome in absolute terms. The cyclical downswing is offset by strong trend growth. In contrast, cyclical downswings mean adverse economic consequences in the aggregate when, by construction, trend growth is slow. The standard grievance asymmetry predicts a stronger response to cyclical downswings when trend growth is low, because in these circumstances absolute growth is especially low. In the empirical analysis we find no variation in the subsamples split by trend growth. Voters respond asymmetrically to the cycle, to the same extent when trend growth is high and when it is low.

2 Theory

Mainstream macroeconomic theory decomposes GDP (y_t, measured in logarithms at time t) into

$$y_t = \bar{y}_t + \widetilde{y}_t,$$

where $\bar{y}_t$ is trend and $\widetilde{y}_t$ the cyclical component. The latter by construction is centred on zero, with positive values denoting booms, and negative values denoting output below its potential trend. Note that $\widetilde{y}_t < 0$ does not by itself technically imply a recession, which typically is defined as two consecutive quarters of negative absolute growth. If $\bar{y}_t$ is increasing, then this can offset $\widetilde{y}_t < 0$ to prevent a formal recession. As discussed in the introduction the drivers of these two components are typically argued to be distinct - e.g., see Romer (2012).

We suppose two types of voter.[13] Both are materially motivated, but the 'sophisticated' group by definition recognize the difference between trend and cycle. These voters like trend growth, because on average it increases income levels. If some of the responsibility for current trend growth is attributed to the incumbent, then these voters will ceteris paribus vote for incumbents delivering strong trend growth.

One possible objection at this point is that trend growth is very slow moving, and cannot be contemporaneously changed by the government of the day. To counter this we make a number of observations. Firstly, in the empirical work we document considerable variation both within and across countries in measured trend growth and note that the measure of trend growth refers to the year of the election, so in most instances the incumbent will at least have been in power for some years prior to that date. Secondly, even if policies enacted today take several years actually to result in stronger growth, the stronger future growth will itself increase measured trend growth *today*. The trend is constructed empirically as a smoothed average and so if output increases are manifest in the future, current trend output will reflect this. Third, it seems plausible that politics matters. In most countries governments are important in providing the basis for (or indeed retarding of) investment and factor accumulation. For example, it could be that Ronald Reagan was re-elected, because of his tax-cutting and anti-inflationary economic policy, whilst Bill Clinton was re-elected, for supporting the North American Free Trade Agreement. Both of these specific examples conceivably improved the capacity of the economy in the future, and would thus have increased trend growth by the point of the relevant re-election date. Indeed one alternative (and by no means mutually exclusive) way of framing our argument is that 'on the ground' policies such

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[13]One could equally imagine a continuum of voters, differentiated by their political knowledge.

as these are visible, interpreted and evaluated by the electorate. When evaluated overall as positive then these policies will translate into votes. If the assessment also is at least to some extent more predisposed to be correct than incorrect, then trend growth, measured *ex post*, can be understood as a proxy for good policy visible on the ground, at least to the sophisticated part of the electorate.

However, if responsibility for current trend growth is deemed hard to assign - for example, voters attribute its position as resulting from exogenous processes alone, then the upshot of this would be that one would not expect sophisticated voters, as we have defined them, to respond to trend growth.

On the other hand, sophisticated voters dislike the volatility encapsulated in the economic cycle. Volatility may reduce utility if consumption cannot be smoothed over the cycle. In the New Keynesian macroeconomics literature, both positive and negative output gaps engender price dispersion which change consumption patterns from their ideal, reducing utility. Alternatively, excessive volatility may just increase uncertainty in the economy, which in turn could suppress investment. Sophisticated voters may thus punish 'artificial' pre-electoral booms for unnecessarily increasing volatility in the economy. In different contexts they may also punish incumbents for failing to curtail excessive volatility when originating from exogenous processes. Again, as long as there is some responsibility for the cycle attributed to the incumbent, then these voters will ceteris paribus vote against incumbents associated with larger absolute cycles and hence, greater volatility.

In contrast, the 'naive' group only responds to raw GDP. Regardless of whether or not the growth is induced by sustainable trend or unsustainable boom these voters reward immediate

material gain.[14]

This very simple set-up delivers immediately interesting and novel hypotheses that have not to date been investigated.

Firstly, trend growth should have an unambiguous positive impact on the vote. Sophisticated voters like trend growth as described and, given that at least some responsibility for improved trend growth is attributed to the incumbent, then strong trend growth increases the incumbent vote share. Furthermore, given independence between $\bar{y}_t$ and $\widetilde{y}_t$, then naive voters also will respond positively, because higher $\bar{y}_t$ implies higher y_t. We therefore have hypothesis 1 (H1):

H1: The incumbent vote will be increasing (reducing) for stronger (weaker) values of trend growth.

More interestingly, the implications for the cycle are asymmetric. Positive values of $\widetilde{y}_t$ are rewarded by the naive, but punished by the sophisticated. When $\widetilde{y}_t$ is positive, then raw output growth is increased, but the sophisticates recognize this as undesirable, and attribute some of the responsibility for this volatility to the incumbent. On the other hand, negative values are punished by both groups of voters. Sophisticates dislike volatility, and the naive dislike low growth. We therefore have hypotheses 2 (H2) and 3 (H3):

H2: The incumbent vote will respond positively to the economic cycle.

H3: The incumbent vote will respond negatively to the economic cycle in absolute terms.

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[14] An alternative way of modeling the naive voters, leading to the same conclusions, would be to assume an infinite discount rate. One problem that sophisticated voters have with a boom today (i.e., a positive value for $\widetilde{y}_t$) is that by construction it entails slower growth in the future. If this is discounted completely, then only y_t (i.e., output today) determines the vote.

H2 encapsulates 'naive' voting, and by itself predicts a straightforward linear response to the cycle. Upswings are rewarded and downswings are punished. H3 encapsulates 'sophisticated voting'. For sophisticates, any deviation from the trend is undesirable and if incumbents are held partly responsible for such deviations then they will lose votes. The implication of H2 and H3 is that the aggregate vote share for the incumbent will be asymmetric to the cyclical component of output. Theoretically, a stronger response to negative than to positive cyclical movement will be observed.

3   Empirical Evidence

Ideally, we would have micropolitical data for perceived trend growth and cycles, but to the best of our knowledge these do not exist. The approach taken here is to use standard decomposition procedures, and make the assumption that the generated data are representative of the electorate's actual perceptions. It seems likely to us that some voters at least will have a sense of when growth is below its potential, and whether abnormally high growth is sustainable or not, for example indirectly by observing other macroeconomic data, such as inflation and unemployment. The data generated from the standard decomposition will at least be correlated with these perceptions, given the assumption that perceptions on average are correct.

The starting point for the empirical analysis is Hellwig and Samuels (2007), who use the total vote share of the incumbent parties in general elections as the dependent variable, denoted $Vote_{it}$, where i identifies the country and t the election date. This dataset consists of 424 usable observations - from 75 countries between 1975 and 2002. The dataset is quite

inclusive - including every national-level executive and legislative election in countries with a population of one million or more, and receiving a democracy rating of +6 or better on Polity IV's ranking system. As they document, this dataset is several times larger than used in previous comparative research.

Annual real GDP per capita data were taken from the World Development Indicators. In most countries these data begin in 1960 and end in 2012, which overlaps the general election data by a minimum of 10 years.[15] This overlap means that the 'end-point' problem associated with decomposing time-series into trend and cyclical elements is avoided. In order to obtain measures for economic trend and cycle, these data were transformed into natural logarithms (y_t) and then decomposed using the Hodrick-Prescott (HP) filter.[16,17] The Hodrick-Prescott filter estimates the trend $(\bar{y}_t)$ by minimizing

$$\min_{\bar{y}_t} \sum_{t=1}^{T} \left(\left(y_t - \bar{y}_t \right)^2 + \lambda \left(\left(\bar{y}_{t+1} - \bar{y}_t \right) - \left(\bar{y}_t - \bar{y}_{t-1} \right) \right)^2 \right),$$

hence the key element is the parameter λ. High values put more weight on smoothing ($\lambda = \infty$ implies a constant trend growth rate), whilst low values allow the trend to change ($\lambda = 0$ implies that actual output equals trend output at all times.) Ravn and Uhlig (2002) show

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[15] The earliest usable election in the sample is in 1977 (because the lagged incumbent vote share is a control variable), and the latest is in 2002. In the small number of instances where WDI series were unavailable, we took comparable data from the IMF's International Financial Statistics database.

[16] Transforming the data into logarithims prior to filtering renders the resulting series comparable across countries.

[17] An extensive econometric literature exists examining alternative means of decomposing time-series data into trend and cycle, and alternatives to the HP filter exist. Nonetheless, according to the World Bank, the HP filter is the most common method used to this end in applied macroeconomic research.

Alternatives such as the Baxter-King (1999) band-pass filter differ substantially only at the end-points of the data. Because the election dates all fall well within the time period for which we have GDP data, no substantive differences emerge between the cycle estimates of the alternative filters. Using the Baxter-King filter does not change any of the results reported here in any important way.

that under particular characteristics of the underlying data, the appropriate weight in annual data (and that used here) is $\lambda = 6.25$.

Table 1 contains descriptive statistics of the data used in this study, and shows that over the full sample average trend growth, $g_{\bar{y}}$, in the year of the election, is about 1.8% with meaningful dispersion around this.[18] As observed in the introduction it is possible that some of this variation may be attributed to good policy, whilst some may well be determined by exogenous processes outside the control of the policymaker. But on average we would expect a positive effect on the incumbent vote. Within the sample, trend growth rates are slightly (though not significantly) higher in the OECD democracies, and furthermore the non-OECD sample exhibits somewhat more variation in both the trend and cyclical elements of macroeconomic performance as would be expected.

TABLE 1 HERE

In a panel regression of $g_{\bar{y}}$ on country fixed effects and annual time effects the adjusted R-squared is 0.37 - showing considerable unexplained variation both within and between countries. Trend growth is of course correlated with conventional raw economic growth (defined as g_y), but Figure 1 below demonstrates that sizeable variation exists between the trend and raw growth measures. The R-square in a bivariate regression is equal to 0.59, hence there is also meaningful cyclical variation in the raw data as would be expected. The HP cyclical component of GDP is denoted by $\widetilde{y}$; its dispersion is similar to that of $g_{\bar{y}}$. The

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[18]Following Hellwig and Samuels (2007), we used data from the year preceding the election if the election was held in the first six months of the year, and data from the year of the election itself if the election was held in the second half of the year. In principle, it would also of interest to examine how lagged performance (of both trend and cycle) may impact the vote. Honorable exceptions in this regard include Peltzman (1990) and Wlezein and Erikson (1996). However, because contemporaneous economic performance measures are the 'industry standard' in the economic voting literature, we follow suit in order that the results are more directly comparable.

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average position in the cycle at the time of election is small but positive (less than 20% of one standard deviation).

FIGURE 1 HERE

It should be noted that the cyclical component of the HP-filter is not random. By construction it has mean zero, but booms and recessions may last several years and this sort of persistence is built into the HP-filter. When a country experiences output levels that are above (below) the weighted long-run average, then $\widetilde{y} > (<) 0$. In the US in 1982, for example, the filter produces $\widetilde{y} = -3.74\%$. Furthermore, trend growth at this point in time was estimated to be quite low historically, though positive at 1.34%.[19] Hence, a recession was declared formally in 1982 because raw output growth was negative. The HP-filter measure of trend growth in the US increased to 2.35% by the year 2000 (perhaps due to exogenous technological progress, or domestic policy), at which point the economy was growing much faster, and $\widetilde{y} = 1.60\%$. The data thus correspond to experience of the economy when it was known to be respectively underperforming and overheating.

Essentially the HP-filter provides a purely statistical decomposition of the GDP data into estimated trend and cyclical elements. It must be emphasized that the filter certainly does not isolate politically induced growth or indeed politically induced cycles. But as noted in the introduction it is central to modern macroeconomics that trend growth should add to voter utility whilst cyclical variation will subtract from it. Interpretation of the results below thus requires two premises. Firstly that some of the electorate at least are able (quite

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[19] Jorgenson et al. (2008) describe the evolution of long-run US productivity growth: it slowed down in the 1970s and 1980s, and then resurged after around 1995. This characterization is also revealed in the HP-filtered series for $\bar{y}_t$.

possibly imperfectly) to decompose y_t into trend and cycle components and, secondly, that some degree of responsibility for the inferred performance is attributed to the incumbent.

The benchmark for the empirical analysis is Model 1 in Hellwig and Samuels (2007). In their specification, the dependent variable is the incumbent vote share, and the key explanatory variable is raw growth (in Hellwig and Samuels 2007 this variable is called 'Economy'). We replicate their Model 1 in column 1 of Table 2, but using the newly collected GDP per capita data. The results confirm the original findings.[20] Raw growth has a positive and statistically significant effect on the incumbent vote share.

TABLE 2 HERE

In column 2, the raw growth data are decomposed separately into trend and cycle. This specification presupposes symmetry in response to the cycle, but is of interest as a preliminary examination of the question of whether or not the trend and cycle affect the vote differently. As noted above, if all voters are naive, and only raw output matters, then the two elements should have equal effects on the vote. The results show that the impact of the trend is estimated to be positive and statistically significant, with an estimated coefficient quite close to that estimated for raw growth. In contrast, the coefficient estimate corresponding to the cycle is about half that of the trend and is not statistically significant. The takeaway here would be that the trend is important, whilst the cycle isn't, though of course this specification ignores the potential asymmetry in the vote response to the cycle.

When the absolute value of the cycle is included as an additional explanatory variable, in accordance with hypothesis 3 (in column 3 of table 2) the results change as follows. The

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[20]The small (and unimportant) differences between the results in column 1 of Table 2 and Model 1 in Hellwig and Samuels (2007) can be attributed to data revisions.

impact of trend growth is still positive, though is now significant only at the 10% level. More interestingly, the impact of the cycle is entirely consistent with hypotheses 2 and 3 above. The coefficient estimate on $\widetilde{y}$ is now positive and significant at the 5% level. In contrast the coefficient on the absolute value of the cycle, $Abs\,|\widetilde{y}|$, is negative and significant with a p-value of 1.1%. Thus, the positive electoral response induced by positive values for $\widetilde{y}$ is cancelled out by $Abs\,|\widetilde{y}|$. In contrast the negative electoral response induced by negative values for $\widetilde{y}$ is augmented by $Abs\,|\widetilde{y}|$. This provides strong support for the asymmetry hypothesis advanced above. Because the coefficient estimate for $Abs\,|\widetilde{y}|$ is greater in absolute terms than that for $\widetilde{y}$, even positive fluctuations in the cycle are estimated to be detrimental to votes. Using these parameter estimates, a one standard deviation 'boom' ($\widetilde{y} = 1.888$) is estimated to result in a 0.71% vote loss for incumbents. Conversely a one standard deviation 'growth recession' ($\widetilde{y} = -1.888$) is estimated to result to a vote loss of 3.56%. Output fluctuations are to be avoided - but most especially negative values.[21]

In column (4), the two interaction control variables, which constitute the specific research agenda explored in Hellwig and Samuels (2007), are dropped. The resulting specification is thus more representative of standard vote regressions. The findings are unaltered: $\widetilde{y}$ induces a significant and positive vote response, whilst $Abs\,|\widetilde{y}|$ induces a larger negative vote response. Similarly, column (5) contains results when GDP per capita is dropped (which may be collinear with the key explanatory variables). Again the results are unaltered qualitatively.

Our interpretation of these findings is that the electorate is heterogenous in its knowledge of the economy. A meaningful fraction has some degree of sophistication, and dislikes output gaps of any sort. Another sizable part of the electorate doesn't recognize the economic

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[21] These results are entirely consistent with Quinn and Woolley (2001), who find an unconditional negative effect of volatility on the incumbent vote. On average, any volatility is bad for the incumbent.

cycle, but is nonetheless motivated by raw GDP. These voters reward upswings and punish downswings. There is no evidence at all for an electoral reward to a cyclical boom. There is considerable evidence that voters punish negative values of the cycle.

The standard rationale given for possible asymmetry in the economic vote is the 'grievance asymmetry'. Column (6) reports results for the standard asymmetry hypothesis by separately including regressors for raw growth, g_y, and the absolute value of raw growth, $Abs |g_y|$. If the standard grievance asymmetry is correct, then a negative sign on $Abs |g_y|$ should be returned: positive growth should yield a smaller vote gain (the negative effect of effect of $Abs |g_y|$ offsets the positive effect of g_y), whilst negative growth should result in a larger vote loss (the negative effect of $Abs |g_y|$ augments the negative effect of g_y). The results show that the estimated coefficient for $Abs |g_y|$ is negative as anticipated, but not statistically significant. Consistent with the literature summarized in Table 2 of Lewis-Beck and Stegmaier (2013), the estimated results here at best support this view only weakly.

The 'grievance asymmetry' applies to the economy as measured in raw terms. Voters are more aggrieved in recessions than in booms. The mechanism could be issue saliency - as 'bad news' is reported to a fuller extent than 'good news', or it could straightforwardly be asymmetry in the utility function. In order to test this explanation against ours, we split the sample in two, depending on whether trend growth is above or below its median value of 1.8%. The point here is that when trend growth is low, negative values for $\widetilde{y}$ will to a greater extent imply recession, which is defined in terms of negative growth in actual (raw) output. When trend growth is high, this will cancel out negative values for $\widetilde{y}$ in the aggregate, and voters will be less aggrieved. If the grievance asymmetry is correct, we would expect to see that the economy, especially $Abs |\widetilde{y}|$, would be a stronger (negative) determinant of the vote

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when trend growth is low. If voters instead divide into naive and sophisticated, with only the latter disliking volatility, then we would expect to see no change in the impact of $Abs\,|\widetilde{y}|$ on the incumbent vote share.[22]

Columns (7) and (8) of Table 2 repeat column (3), respectively for the low and high trend growth samples. When trend growth is low (column 7) the parameter estimates for $\widetilde{y}$ and $Abs\,|\widetilde{y}|$ are again respectively positive and negative, with lesser significance relative to the full sample. When trend growth is high (column 8), if anything the sensitivity to recessions (embodied in the estimate for $Abs\,|\widetilde{y}|$) is strengthened - contrary to the grievance/saliency argument. Negative fluctuations in $\widetilde{y}$ are if anything punished to a greater extent when trend growth is high than when it is low, although the differences in the cyclical parameter estimates for columns (7) and (8) are not statistically significant.

The finding that the asymmetric electoral response to the economic cycle is essentially independent of the prevailing level of trend growth sits awkwardly with the grievance asymmetry. It is hard to imagine that voters will be equally aggrieved when the cycle is 2% below trend growth of 4% than when it is 2% below 0%. However, this finding is quite consistent with the argument proposed here, that voters are heterogenous, and respond differentially to the economic cycle.

4   Conclusion

This paper examines how decomposed GDP data affect the incumbent vote share in general elections. Following mainstream macroeconomic theory, trend growth and the cycle are ar-

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[22]We are implicitly assuming that the degree of sophistication of the electorate does not correlate with the economic cycle.

gued to have different drivers, and affect voter welfare differently. Voters are modeled to be heterogenous in their knowledge of the state of the economy. The sophisticated separately observe both, whilst the naive only observe raw growth - the aggregate of the two. The sophisticated like trend growth, but dislike the volatility associated with any deviation from trend - be it positive or negative. The naive just plainly like raw growth. This very simple set up generates an asymmetry hypothesis. The incumbent vote share should respond more strongly to cyclical downswings than it should to upswings. In the former case the sophisticated and the naive are aligned in their disapproval of incumbents, whilst in the latter they are conflicted.

Using an established and inclusive dataset we find strong evidence in favor of an asymmetric vote response to the economic cycle. Upswings yield nothing, at least in terms of statistical significance. Downswings are punished significantly at the polls. This relationship holds equally at high levels of trend growth and low, in contrast to more familiar conceptions of the 'grievance asymmetry'.

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Variable	mean			std. dev.		
	(all)	(OECD)	(non-OECD)	(all)	(OECD)	(non-OECD)
$Vote$	34.36	35.33	33.60	14.77	11.99	16.63
g_y	1.887	2.209	1.628	3.173	1.952	3.871
$g_{\bar{y}}$	1.810	2.077	1.595	2.044	1.205	2.506
$\widetilde{y}$	0.337	0.041	0.574	1.888	1.310	2.222

Table 1: Descriptive Statistics. $Vote$ is the total incumbent vote share. g_y is raw economic growth in the year of the election (or the preceding year if the election takes place in the first half of the year). $g_{\bar{y}}$ denotes trend growth, and $\widetilde{y}$ denotes the HP cyclical component of GDP.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Vote_{t-1}$	0.477 (0.082)***	0.462 (0.080)***	0.462 (0.081)***	0.468 (0.081)***	0.474 (0.082)***		0.559 (0.102)***	0.327 (0.094)***
g_y	0.960 (0.282)***					0.960 (0.282)***		
$Abs\ |g_y|$						−0.086 (0.252)		
$g_{\overline{y}}$		0.992 (0.436)**	0.763 (0.442)*	0.423 (0.357)	0.454 (0.360)		−0.510 (1.359)	2.768 (1.116)**
$\widetilde{y}$		0.512 (0.321)	0.756 (0.352)**	0.642 (0.310)**	0.656 (0.307)**		0.537 (0.312)*	0.720 (0.568)
$Abs\ |\widetilde{y}|$			−1.132 (0.433)**	−1.218 (0.439)***	−1.273 (0.445)***		−1.032 (0.623)	−1.617 (0.801)**
Observations	422	422	422	422	422	422	210	212
Sample	Full	Full	Full	Full	Full	Full	low trend growth	high trend growth
R^2	0.63	0.63	0.64	0.63	0.63	0.63	0.64	0.69

Table 2: Regression results.

Estimation follows Hellwig and Samuels (2007). Parameter estimates are reported with robust standard errors clustered within countries in parentheses. Control variables used in columns (1)-(3) and (6)-(8) (results not reported) include trade openness and its interaction with economic growth, a dummy variable denoting Presidential elections and its interaction with economic growth, a re-election dummy for elections where incumbents were running in Presidential or semi-presidential elections, the effective number of parties, GDP per capita in constant US dollars, and geographic dummy variables for Africa, Asia, Central and Eastern Europe and Latin America and the Caribbean. Column (4) excludes the interaction terms. Column (5) additionally excludes GDP per capita. *** denotes significance at the 1% level, ** denotes significance at the 5% level and * denotes significance at the 10% level.

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Figure 1: Trend Growth and Raw Growth