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**Voting and the macroeconomy:
separating trend from cycle
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Voting and the macroeconomy: separating trend from cycle

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Abstract

Voters respond differently to trend growth as opposed to economic cycles in GDP. When assessing incumbent competence the rational voter filters out economic cycles when they are the product of external shocks but rewards strong trend growth over the previous term of office. Voters also respond to policy platforms, and parties closest to the median voter have an advantage à la Downs (1957). This advantage is theorized to be heightened in times of recession. Using data from elections in OECD countries and a much more exacting econometric specification than used in previous analyses we find robust evidence of a positive vote response to strong performance in trend growth. We also find evidence to support the hypothesis that centralizing garners additional votes during recession.

Keywords: economic voting, competence, median voter, voter rationality

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1 Introduction

If voters are rational and care about the state of the economy, and politicians differ in their capacity or willingness to deliver particular economic outcomes, then economic voting follows inexorably as a theoretical prediction. Moreover, without evidence that economic performance affects the vote, the extent to which elections operate at all as a mechanism holding the government to account can be called into question (Cheibub and Przeworski, 1999). However, the current consensus in the voluminous empirical literature on economic voting is of "great instability" (Paldam, 1991).[1] Anderson (2007), citing McDonald and Budge (2005) summarizes this mysterious impasse: "Cumulatively, the evidence available to date strongly suggests that the economic voting effect - defined by a bad economy leading to lower government support or loss of office - is intermittent, highly contingent, and substantively small. ... Economic effects on election outcomes do not qualify as a 'robust fact' about elections."

   We contend that the premises in the opening sentence are reasonable.[2] As such the absence of evidence is a problem. In this paper we propose a simple reconciliation: the performance variable in previous work conflates randomness with competence. The headline macroeconomic performance measure is GDP, but empirical work to date examining voting responses to GDP has focussed exclusively on measures reported in raw terms. This is surprising, and we argue mistaken, because separation of the short-run economic cycle and

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[1] For systematic evaluations of the literature see Anderson (2007), Duch and Stevenson (2008), and Lewis-Beck and Steigmeier (2000).

[2] Voter rationality in particular has recently come under attack. Caplan (2007) argues that democracies frequently adopt and maintain damaging policies due to systematically erroneous beliefs held at large. Empirical work by Achen and Bartels (2004), Leigh (2009) and Wolfers (2007) amongst others finds that events that are recognizably outside the control of the government influence incumbent popularity.

long-run economic growth is central to modern macroeconomic thinking. At any point in time GDP is constituted of its trend and the cyclical component around that trend, and the drivers of each are almost always theorized to be distinct. As a result the two separate elements should have quite different impacts upon voting. In particular, in short-run models of the macroeconomy fluctuations typically stem from shocks of some sort, which in many instances are outside the control of policymakers. Such events may include oil price shocks,[3] global financial shocks such as the recent and ongoing credit crunch, or indeed "irrational exuberance" in the good times. Recessions and booms come and go, with politicians disassociating themselves from the former, whilst taking credit for the latter.[4] If the cyclic movements are born out of events outside of the control of the government,[5] rational voters will hold the government responsible for its handling of the cycle, but not for originating it.[6] Indeed, the absence of evidence of an economic vote in these instances constitutes evidence in favor of, rather than evidence against, rationality in voting.

On the other hand underlying trend growth, or growth in potential output, certainly when it exceeds the global average, should be a key driver of voting. The idea that cross country differences in income per capita are partly driven by government policy is central to the literature on economic growth. For example Hall and Jones (1999) argue for the

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[3]Hamilton (2008) notes that 9 out of the 10 post-war US recessions were preceded by spikes in oil prices and in this and argues for a causal relationship.

[4]Towards the end of the Great Moderation politicians were also, it turns out prematurely, congratulating themselves on the "end of boom and bust".

[5]We would not want to rule out cyclic movements initiated by policy completely. For example it is possible that the UK recession of the early 1980s was brought about by anti-inflationary monetary policy. Incumbent governments have also been blamed for the current and ongoing recession by opposition parties around the world. Even here, however, the main electoral response has been to the way governments dealt with the recession once it was there.

[6]A similar criticism is leveled by Alesina and Roubini (1992) against early versions (e.g. Nordhaus, 1975) of the 'political business cycle'. Rational voters should ignore opportunistically engineered pre-electoral booms as they will be recognized to be unsustainable (see also Alesina et al, 1999).

fundamental importance of 'social infrastructure' defined explicitly as the "the institutions and government policies that determine the economic environment within which individuals accumulate skills, and firms accumulate capital and produce output". 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 ballot. Rational voters will attribute a high value of competence to incumbent politicians delivering strong trend growth, whose re-election prospects will be enhanced. Recent work by Duch and Stevenson (2010) theoretically justifies this type of 'retrospective voting' in a signal-extraction model which we build upon below, though their work does not distinguish between cycle and trend as argued for here.[7]

Distinction between economic trend and cycle would not be necessary were economic business cycles more short-lived events than they actually are. However the duration of economic and electoral cycles are of the same order of magnitude. For the US 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.[8] These duration statistics compare with electoral cycles usually varying between 3 and 5 years. The point is that a government commencing in recession and ending in unsustainable boom may prove electorally unpopular if trend growth is weak. Conversely an incumbent who began office during a boom standing for re-election in recession may yet win if the electorate are persuaded

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[7]Norpath (1996) argues strongly for retrospective voting, while Mackuen, Erikson and Stimson (1992) argue that voters are 'sophisticated' insofar that they reward incumbents for future events rather than past economic performance. The approach taken by Duch and Stevenson provides a reconciliation of these views: voters may both be sophisticated and backward-looking.

[8]See Everts (2006) for an examination of these numbers.

that the fundamental state of the economy has been enhanced.

In the theoretical analysis we model voters as able to decompose output levels into trend and cycle. This is a strong assumption: at any point in time forecasters and commentators may differ substantially in their estimates of trend and cycle,[9] 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 glean information concerning competency are clearly unlikely to literally take the form of accurate and contemporaneous measures of trend and cycle. However, voters listen to political argument over the economy, and this includes arguments that a government is only achieving respectable growth by stoking up an unsustainable boom; or that the inflation rate has been brought down only by throwing people out of work. If voters can perceive a cycle they must also be able to perceive the trend around which it revolves. So the possibility that they can pick out the trend - even if we are merely talking about just some voters, some of the time - should at least be modeled so that it can be tested.

As well as signals of competence manifest in trend growth, the rational forward-looking voter will also have an interest in how candidates at election propose to deal with the particular inherited cyclical position of the economy. The *Clientele Hypothesis* advocated by Rattinger (1991) and Swank (1993) posits that left-wing parties might be elected to deal with unemployment (because they are seen as more competent or enthusiastic at tackling it) while right-wing parties are voted in to deal with inflation.[10] Carlsen (2000) finds a degree

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[9] For example the 'end-point problem' in filtering trend from cycle has generated a substantial econometric literature (see e.g. Baxter and King, 1999).

[10] Of course this line of reasoning requires substantive ideological differences between the parties. An often heard criticism of political parties in Anglo-Saxon countries at least is that parties are indistinguishable from one another. Nonetheless, empirical research often finds that there are systematic party differences, as found e.g. in the US by Ansolabehere et al (2001) and Poole and Rosenthal (1984 and 1997) and internationally within analyses of Manifesto content (Budge et al, 1987).

The uni-dimensional policy assumption has also been questioned, but there is widespread recognition of

of support for these ideas using popularity data, though the results vary substantially across countries and regime types. In the theory below, following Alesina and Rosenthal (1989, 1995) and others, parties are distinguished by how they weight output relative to inflation in their objective function. Left- (right-) wing parties are less (more) inflation averse than the median voter, and place greater (less) weight on output. It turns out that voting should not follow a clientele hypothesis as previously proposed. Rather, as per Downs (1957) the party closest to the median voter always has an electoral advantage. The novel result here is that the reward to centralizing is higher during recessions than in economic good times. The underpinning of this result lies in the convexity of the loss function. In good times the economy is closer to the 'bliss point' and in such circumstances voters are more tolerant of deviation from the median. Conversely when the economy is in recession deviations from the median result in proportionately greater welfare losses and are therefore punished more severely by voters.

The empirical work builds on Whitten and Palmer (1999), examining the response of incumbent party vote shares in general elections in OECD countries. In contrast to previous research we argue that it is appropriate in cross-national empirical work to control for both country fixed effects and time effects. For one thing the average vote required to obtain a majority varies with the political system and, as argued by Whitten and Palmer (1999) and Powell and Whitten (1993), particular features of different polities might be expected to affect incumbent vote shares differently. These considerations point towards the use of

the existence of a meaningful left-right ideological dimension. In theoretical models multi-dimensionality frequently brings with it instability (e.g. McKelvey (1976)) whilst as Grofman (2004) observes policy positions taken in practice are often quite stable. Empirically Poole and Rosenthal (1991) argue that roll-call voting in the US is characterised by a singular 'predominant major dimension'. Furthermore a central argument of the Comparative Manifestos Project, which we draw upon for our empirical research, is that their left-right measure is a meaningful predictor of actual party policy.

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fixed effects on top of the controls advocated by Whitten and Palmer (1999). Time effects are justified following recent research by Leigh (2009) who finds an influence of the world economy on national election results (though as is common in the literature he does not disentangle trend from cycle), and the essence of the argument propounded here is that it is national trend growth net of the global average that signals competency. Hence for example trend growth of 3% per year would represent more of an achievement in the early 1980s when average rates were low than in the 1960s when they were considerably higher. For this reason it is essential to net out time effects, which otherwise would contaminate the interpretation of trend growth as a competency measure.

We find that incumbent parties' vote shares in general elections are positively and significantly associated with trend growth during the previous term of office. This holds in contrast to data for raw economic growth (i.e. that conflates trend and cyclical effects). The results are strongest for the cases where governments should be more plausibly held accountable as argued by Powell and Whitten (1993) and Whitten and Palmer (1999). The strength of the evidence is such that we posit, contrary to the extant empirical research, that the trend growth-voting relationship constitutes a robust fact of elections. Using ideology data generated from manifestos we also find support of the auxiliary hypothesis that the electoral rewards to centralizing are strongest in recessions. We also find that the premium to centralizing is reduced as inflation increases. It appears that as inflation increases voters look to more radical solutions in terms of macroeconomic management. However the inference for these latter hypotheses is somewhat weaker as the analysis is necessarily restricted to two-party systems.

The next section presents a formal model of how voting might separately respond to the

economic trend and cycle. The third section details the empirical analysis and section 4 concludes.

2 Theory

The theory builds on Duch and Stevenson (2010), though here we distinguish trend from cycle. GDP in logarithms (y_{it}) is indexed by political party (i) and time (t) and is decomposed into

$$y_{it} = \bar{y}_{it} + \widetilde{y}_{it} \tag{1}$$

where $\bar{y}_{it}$ is trend and $\widetilde{y}_{it}$ the cyclical component. The trend follows a process,

$$\bar{y}_{it} = d + \bar{y}_{t-1} + \eta_{it} \tag{2}$$

where $d \geq 0$ is a deterministic drift common across parties (e.g. driven by technological progress). The first distinction between prospective parties of government pertains to competence. In particular η_{it} is a composite shock term comprised of

$$\eta_{it} = \varepsilon_{it} + \xi_t \tag{3}$$

where ε_{it} is the 'competence' of party i and ξ_t is 'luck', e.g. depending on global economic conditions outside the control of the national government. The problem that the voter faces is a signal extraction problem where η_{it} is observed at date t, but the separate ingredients of competence and luck are only learnt with a one-period lag. Nonetheless competence for the incumbent party can be partially inferred from economic performance, depending on

the underlying distributions of ε_{it} and ξ_t which are known. Competence is assumed to be persistent, i.e.

$$\varepsilon_{it} = \mu_{it} + \mu_{it-1} \tag{4}$$

where μ_{it} is independently and identically distributed with mean zero (hence this is the expected competence of the opposition) and variance σ_μ^2. Similarly the non-political (luck) shocks are IID with zero mean and variance σ_ξ^2.

From here suppose two party competition and define $i = \{I, O\}$ where I represents the incumbent party and O the opposition. When facing an election in period t to determine the government in period $t+1$ voters infer future competence of the incumbent by taking expectations

$$E\left[\varepsilon_{It+1}\right] = E\left[\mu_{It+1}\right] + E\left[\mu_{It}|\, \bar{y}_{It}\right].$$

Following Duch and Stevenson (2010) and before them Alesina and Rosenthal (1995) voters learn the value of competency with a one period delay, hence in period t voters know μ_{It-1} and $\bar{y}_{It}$ but not μ_{It} which must be inferred. Using (2), (3) and (4) define

$$\kappa_{It} \equiv \mu_{It} + \xi_t = \bar{y}_{It} - d - \bar{y}_{t-1} - \mu_{It-1}$$

which is analogous to equation (1.7) in Duch and Stevenson (2010). κ_{It} is in aggregate observed (because the RHS of the equality is observed in period t) but comprises two unknown elements, whose distributions are known. The conditional expectation of μ_{It} is thus

$$E\left[\mu_{It}|\, \kappa_{It}\right] = \frac{\sigma_\mu^2}{\sigma_\mu^2 + \sigma_\xi^2} \left(\bar{y}_{It} - d - \bar{y}_{t-1} - \mu_{It-1}\right)$$

and the expectation of $\bar{y}_{It+1}$ is therefore

$$E\left[\bar{y}_{It+1}\middle|\kappa_{It}\right] = d + \bar{y}_{It} + \frac{\sigma_\mu^2}{\sigma_\mu^2 + \sigma_\xi^2}\left(\bar{y}_{It} - d - \bar{y}_{t-1} - \mu_{It-1}\right). \tag{5}$$

On the other hand because the opposition is not in power their competence cannot be inferred, so expectations of future output under the opposition are straightforwardly

$$E\left[\bar{y}_{Ot+1}\right] = d + \bar{y}_{It}. \tag{6}$$

The difference between incumbent and opposition in expected trend growth boils down to the second term on the RHS of (5). In general, increases in trend growth will help the incumbent, and will do so to a greater degree when it is known that the government, as opposed say to global technological progress, is identifiably responsible for those increases. The argument of this paper is that competence is a key driver of domestic trend growth, which analytically means that σ_μ^2 is at least of the same order of magnitude as σ_ξ^2. Nonetheless external drivers of trend growth clearly exist. Duch and Stevenson (2010) point out that the extent of openness might matter. If a country is substantially engaged in international trade, then demand for exports will depend on growth in partner nations. Nonetheless the domestic production process underpinning exports will still be governed domestically, most directly through trade policy, but also through public sector investment decisions in human capital and industrial policy. Hence even in an economy that exports its entire GDP voters might still be expected to reward trend growth insofar as it encapsulates competence. On the other hand the external driver might be global technological progress, which given the public good nature of knowledge would transcend international borders. With the exception

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of the US this realistically would be outside national government control.

The second distinction between the two parties is ideological, and relates to the management of the economy in the short-run (i.e. left and right are assumed to equally value long-run trend growth). The policy trade-off between the cyclical component of output and inflation is defined in a Phillips curve,

$$\widetilde{y}_t = \alpha \widetilde{y}_{t-1} + \pi_t - \pi_t^e + v_t \tag{7}$$

where $0 \leq \alpha < 1$ defines the degree of persistence in the short-run economy, π_t and π_t^e are inflation and its expectation and v_t is an IID short-run supply shock with zero mean and variance σ_v^2.

Here denoting $i = \{L, R\}$ the two parties have visible distinct left- and right-wing ideologies. Specifically their objective functions are

$$W_{it+1} = -\frac{\pi_{it+1}^2}{2} + \beta \bar{y}_{it+1} - \gamma_i \frac{(\widetilde{y}_{it+1} - k)^2}{2} \tag{8}$$

where $\beta > 0$ is a common-to-all taste parameter for underlying growth (i.e. shared also by the general public) and $\gamma_L \geq \gamma = 1 \geq \gamma_R \geq 0$ represents (ideologically dependent) aversion to the deviation of the output gap from some target level $k > 0$.[11] Following convention in the literature the party of the left (right) has greater (less) aversion to output gaps and the concurrent unemployment[12] than the moderate voters - denoted without subscript. Without loss of generality we have set $\gamma = 1$ (hence $\gamma_L \geq 1$ and $\gamma_R \leq 1$) for analytical convenience.

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[11]The parameter k is commonly used in the inflation bias literature: one possible rationale is that the natural rate of the economy entails a certain degree of inefficiency (e.g. resulting from monopolistic competition) hence a desire to expand the economy.

[12]i.e. through Okun's law.

The welfare function proposed here is a generalization of Duch and Stevenson (2010) who do not distinguish between short- and long-run, or indeed policy differences along ideological grounds. The short-run policy instrument is monetary policy, which amounts to choosing an inflation rate to maximize (8) subject to (7). The first order condition yields ex post policy

$$\pi_{it+1} = \frac{\gamma_i}{1+\gamma_i}\left(k - \alpha\widetilde{y}_t + \pi_{t+1}^e - v_{t+1}\right) \tag{9}$$

and

$$\widetilde{y}_{it+1} = \frac{\alpha\widetilde{y}_t + \gamma_i k - \pi_{t+1}^e + v_{t+1}}{1+\gamma_i} \tag{10}$$

hence $\pi_{Lt+1} > \pi_{Rt+1}$ and $\widetilde{y}_{Lt+1} > \widetilde{y}_{Rt+1}$ as in Alesina and Rosenthal (1989). For given inflation expectations both inflation and the output gap are higher (lower) under the left (right) than the values preferred by society.

Inflation expectations depend on the probability (p) of a left-wing election victory and the expected policies of the two candidates i.e.

$$\pi_{t+1}^e = p\pi_{Lt+1}^e + (1-p)\pi_{Rt+1}^e.$$

Applying rational expectations to (9) yields

$$\pi_{t+1}^e = \left[\frac{\frac{p\gamma_L}{1+\gamma_L} + \frac{(1-p)\gamma_R}{1+\gamma_R}}{1 - \frac{p\gamma_L}{1+\gamma_L} - \frac{(1-p)\gamma_R}{1+\gamma_R}}\right]\left(k - \alpha\widetilde{y}_t\right)$$

which implies

$$k - \alpha\widetilde{y}_t + \pi_{t+1}^e = \frac{(1+\gamma_L)(1+\gamma_R)}{1 + (1-p)\gamma_L + p\gamma_R}\left(k - \alpha\widetilde{y}_t\right) \tag{11}$$

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which we make use of below.

Voters evaluate the difference in expected welfare $E\left[\Delta\right] \equiv E\left[W_{Lt+1}\right] - E\left[W_{Rt+1}\right]$, with the left winning if $E\left[\Delta\right] > 0$. Using (5), (6), (9) and (10) then

$$E\left[\Delta\right] = D.\beta\frac{\sigma_\mu^2}{\sigma_\mu^2 + \sigma_\xi^2}\left(\bar{y}_{It} - d - \bar{y}_{t-1} - \mu_{It-1}\right) + \frac{\left(\gamma_L - \gamma_R\right)\left(1 - \gamma_L\gamma_R\right)}{\left(1 + \gamma_R\right)^2\left(1 + \gamma_L\right)^2}\left(k - \alpha\widetilde{y}_t + \pi_{t+1}^e\right)^2 \tag{12}$$

where $D = \pm 1$ depending on whether the incumbent is from the left or right. Substituting (11) into this yields

$$E\left[\Delta\right] = D.\beta\frac{\sigma_\mu^2}{\sigma_\mu^2 + \sigma_\xi^2}\left(\bar{y}_{It} - d - \bar{y}_{t-1} - \mu_{It-1}\right) + \frac{\left(\gamma_L - \gamma_R\right)\left(1 - \gamma_L\gamma_R\right)}{\left[1 + \left(1 - p\right)\gamma_L + p\gamma_R\right]^2}\left(k - \alpha\widetilde{y}_t\right)^2 \tag{13}$$

Equation (13) links the vote to the economy on two separate dimensions. The first term on the RHS relates to the long-run economic trend and the capacity of voters to disentangle luck from competence (which depend on the underlying distributions of μ_{it} and ξ_t). The second term relates to the short-run cycle, and depends on the policy platforms (characterized by the parameters γ_L and γ_R) taken by the two parties. We are not of course assuming that equation (13) encapsulates the whole of a voter's welfare gain or loss from retaining the incumbent. Not only would that be to assert that voting is exclusively economic but, given the set-up of the model, it would make elections unanimous affairs. We are merely postulating that the likelihood that any given voter will support the government is increasing in $E\left[\Delta\right]$. So too, therefore, will be the incumbent's share of the vote.

Economic competence impacts the vote as it does in Duch and Stevenson (2010), except here it is represented by trend growth rather than growth in raw terms. The bracketed part of the first term on the RHS is positive or negative depending on the difference between total

observed trend growth and that part of it known to be independent of government competence. Positive values of this differential denote high expected future (relative) competence. As in Duch and Stevenson (2010) this is tempered if global (luck) shocks are known to have larger variation than competence shocks in which case the impact of trend growth on the vote will be relatively small.

The impact of the short-run economic position on the vote is encapsulated in the second term on the RHS of (13). Note first that this term is positive only if $\gamma_L \gamma_R < 1$. There is a clear median voter type interpretation of this result. When the product term $\gamma_L \gamma_R$ is greater than unity (recall we have set $\gamma = 1$), the right-wing party is more moderate than the left. High values of γ_L represent extremism by the left, whilst high values of γ_R represent moderation by the right. If the product term is low then it is the left who are more moderate.[13] Whilst the median voter argument is not new, it is interesting and we believe novel that the result is sharpened in economic adversity, i.e. the further away the economy is from its 'bliss point' k.[14] The sensitivity of the expected welfare difference (and hence voting) to ideological differences is increasing as the state of the economy deteriorates. A recession ($\widetilde{y}_t < 0$) magnifies the effect of the relative ideological positions taken by the parties,

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[13]In the case of identical policies, i.e. $\gamma_L = \gamma_R = \gamma = 1$, then voters are indifferent between the parties, at least as far as management of the economic cycle is concerned.

[14]A maintained assumption in the theoretical work is that the ideological positioning of the parties is exogenous to the state of the economy. A natural reaction to the analysis is that parties ought to moderate in general, at least if they are office motivated. There is a large theoretical literature examining the ideological positioning choices made by political parties (e.g. see Grofmann, 2004). These decisions will in part depend on constitutional features. In systems with primaries (e.g. the US) or two stages of elections (e.g. France) candidates may polarize in the first stage in order to maximize their chances of reaching the second stage. A universal property of democratic systems is that prospective prime ministers must first win the approval of their party (usually as party leader) and then win the approval of the electorate at large. The costs of reneging ex post are likely to be quite high, so adjustment to the median voter in the second round may not be feasible. Alternatively politicians may themselves have ideological preferences which they weight as well as being motivated by office.

where as ideological differences become less important as $\widetilde{y}_t$ approaches k. Observe that the model does not deliver a conventional clientele hypothesis as described in the introduction. Previous work has argued that the left-wing get an electoral bonus when the economy is in recession, and that the right-wing does well in times of inflation. The results we derive are quite different: there is no such clientele effect in the framework studied here, rather an impetus for moderation that becomes increasingly potent during economic adversity. Hence the model does not predict that the left will benefit from recession, nor that the right will benefit from inflation.

A possible extension to the theoretical framework presented here would be to endogenize p, the probability of a left-wing victory. The essence of the story here is that this probability depends on economic circumstances. However endogenizing p is not a straightforward exercise,[15] nor would it alter the conclusions as presented. Because the denominator in the second term of the RHS of (13) is squared, whatever the value of p, the arguments of the previous paragraph still hold.

In sum equation (13) is the bottom line of a model of economic voting where voters are rational and forward-looking and distinguish between economic trend and cycle. There are two distinct influences of the economy on the vote. The first is the impact of underlying trend growth and is forward-looking, though also retrospective in the sense that past economic performance affects expected future competence. The second influence is also forward-looking in that voting depends on expectations of how parties would trade off output against inflation depending on the current position in the economic cycle. Taken together the two influences provide a formalization of why incumbent parties have done well in particular elections when

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[15]For example, if we proxy p by $E\left[\Delta\right]$ itself then equation (13) becomes cubic.

the economy is in recession. For example on a naive interpretation of economic voting, conditions in the UK in both 1983 and 1992 would (incorrectly) point to a loss for the Tory incumbents. However during these elections the opposition Labour party, arguably at least and also in the data utilized below, was too far from the center-ground, and in both instance the Tories maintained power, in the first instance with an increased majority, and in the second winning power for an unprecedented fourth term.[16] The reverse happened in 1997, when the Tory incumbent was defeated in a landslide, but economic conditions were favorable, while the Labour party had by now substantially shifted to the ideological middle ground. France in 1968 provides another interesting case study. The economy was in a deep recession, yet the incumbent Gaullist party increased its majority over the Socialists. However while the cycle was strongly negative we estimate trend growth in France at this point in time to be quite strong. Given also that the Gaullists were more moderate than the Socialists,[17] their reelection is entirely consistent with the model of economic voting presented here. Anderson (2000, 2007) and Sanders and Carey (2002) make the related point that citizens will desert the governing party only when a viable alternative exists.

In short, if voters are forward-looking then we would expect instability in the vote-economy relationship when the economy is surmised only in raw terms. The instability arises because the impact of trend growth and the economic cycle should be separated. The

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[16]Labour's verbose manifesto for the 1983 general election was described by Gerald Kaufman (a Labour MP) as the 'longest suicide note in history' in light of its ideological extremism. There is a commonly held view that Labour had not completed its journey to the center ground until Tony Blair's election victory in 1997 with the 'New Labour' party. For example the infamous 'Clause IV' was not revised until 1995.

[17]France in 1968 was quite polarized. The Socialists' *rile* score (described below) for this election was -42.1 against the Gaullists' 31.3. To put these numbers into context note that the median voter in France on average has had an ideological position of 0.54. Throughout the 1960s the Socialists maintained a consistently radical stance, with scores of -49.5 in 1962 and -38.0 in 1967. In contrast the Gaullists were relatively moderate with scores of 9.6 and 11.0.

next section investigates these hypotheses empirically.

3   Empirical Evidence

The theory proposes two distinct hypotheses. The primary hypothesis is that trend economic growth is a significant predictor of incumbent vote share. Moreover it is anticipated that trend economic growth has greater statistical strength in predicting election results than raw economic growth, which is contaminated by the cycle. This is a straightforward hypothesis that plausibly should hold across democratic systems and hence we make full use of the data set in order to test it. The secondary hypothesis, relating to the economic cycle, is that the electoral reward to centralizing is stronger during recessions. The model above relates to two-party competition, and as such is difficult to apply in multiple-party democracies where questions of ideological positioning become substantially more complex. For this reason in this instance the analysis is restricted to elections that can reasonably be characterized as being contested by two main parties. This necessarily reduces the sample quite considerably, though these results are also of interest in their own right.

3.1   Data

The starting point for the empirical analysis is Whitten and Palmer (1999) who use the total vote share of the incumbent parties in general elections as the dependent variable,[18] denoted $Vote_{it}$ where i identifies the country and t the election date. We look at the same countries

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[18]To identify whether or not the party was in office during the previous regime we used the data of Waldendorp et al (1998) and for more recent elections the World Bank's Database of Political Institutions.

as Whitten and Palmer (1999),[19] and extend their data set (which ends in the early 1990s) to include recent elections, increasing the dataset from 142 elections to 243 elections.

Real GDP series were taken from the OECD Quarterly National Accounts database, measured for all countries in US dollars at purchasing power parity. These data begin in 1960(Q1) and end in 2009(Q4). In order to obtain measures for economic trend and cycle these data were transformed into natural logarithms and then decomposed using the Hodrick-Prescott (HP) filter.[20] The annualized average quarterly growth rate of the GDP trend during the term of office ($g_{\bar{y}}$) is used to measure incumbent competence. Table 1 contains descriptive statistics of the data used in this study, and shows that average trend growth in the sample is about 3% with meaningful dispersion around this. In a panel regression of $g_{\bar{y}}$ on country fixed effects and annual time effects the adjusted R^2 is 0.57 - showing considerable unexplained variation both within and between countries. As is well known growth was strongest across the board during the 1960s, and was for some time systematically higher in Japan and Ireland whilst notably lower in Denmark, Switzerland and the UK. Trend growth is of course correlated with conventional raw economic growth as measured over the corresponding time periods (defined as g_y), but Figure 1 below demonstrates that there is sizeable variation between the trend and raw growth measures. The R-square in a bivariate regression is equal to 0.75, hence there is also meaningful cyclical noise in the raw data as

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[19]Specifically Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Spain, Sweden, Switzerland, the UK and the US.

[20]There is a considerable econometric literature 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 there are no substantive differences 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.

would be expected. $\widetilde{y}$ denotes the HP cyclical component of GDP in the quarter of the election, and whilst the average position in the cycle at the time of election is almost exactly zero, $\widetilde{y}$ has similar dispersion to $g_{\bar{y}}$. Following previous empirical analyses of voting we also include inflation in the empirical analysis and inflation data (π) are taken from the World Development Indicators.

For the secondary hypothesis the sample of elections is necessarily restricted to elections where there are two clearly identifiable main parties fighting the election (two party systems). This reduces the sample to the Anglo Saxon countries, Spain and four elections from Austria from the 1970s. The ideology data are taken from the Comparative Manifestos Project (CMP), described in Budge et al (2001) and Klingemann et al (2006). This database contains detailed policy platform data ascertained from party manifestos for lower house[21] general elections. The CMP right-left ideological data, $rile_{ijt}$ where j denotes the party, lie on an interval between -100, representing the extreme left, and $+100$ representing the extreme right.[22] Using voting data as well allows computation of the median voter at each election, following the method of Kim and Fording (2001). To measure the extent to which incumbent parties capture the middle ground, their ideological distance from the median voter (*govdist*) is compared with that of the opposition (*oppdist*) and relative distance is defined as $reldist = govdist - oppdist$. Values of $reldist > (<)0$ imply that the governing party is further from (closer to) the median voter than the opposition. Descriptive statistics for *reldist* are reported in Table 1. Its mean value is close to zero, implying that on average the two

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[21] Excepting the United States, where presidential elections are the unit of observation.

[22] The *rile* series are the principal output of the CMP research project and are "reliable and valid" according to the original authors when compared against expert opinion and mass perceptions data. These data have been used in a variety of different settings, e.g. by McDonald et al (2004) and Pickering and Rockey (forthcoming).

parties are equidistant from the median voter. Nonetheless there is quite a lot of dispersion, with many instances of either the incumbent and/or the opposition being far away from the center.

Throughout the regression analysis we follow Powell and Whitten (1993) and Whitten and Palmer (1999) by controlling for the clarity of responsibility of the incumbent parties. Essentially the incumbent vote is argued to decline over time more sharply when clarity of responsibility is greater. Clarity of responsibility is diminished in a number of different ways. Firstly in Italy, Japan, Switzerland and the US there is markedly weaker party cohesion in that representatives in the same party regularly vote against one another. Secondly in a number of countries opposition parties have taken on important roles such as committee chairs in the legislature.[23] Third, in Australia, the US and Germany the upper house has a substantial policymaking role and has sometimes been controlled by opposition parties. Fourth, minority governments cannot pass legislation without some support from opposition parties. The argument in all cases is that the loss in votes for incumbent parties will be reduced when identifiable responsibility is reduced. Following Whitten and Palmer the regression analysis controls for dummy variables *weakpty*, *oppchair*, *bicamopp* and *minority* respectively set equal to one in situations of weak party cohesion, opposition representation in chairs of key committees, meaningful bicameralism and minority government. Two further controls are also included by Whitten and Palmer (1999) - the duration of office in the case of minority governments (*mindur*) and the number of government parties (*ngovpty*).

Lastly, and again following previous work, the regression analysis controls for the vote share of the incumbent at the previous election ($Vote_{it-1}$) as voting patterns are widely

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[23]Specifically Austria, Belgium, Denmark (after 1973), West Germany, the Netherlands, Norway, Sweden and Switzerland.

known to be highly persistent, although on average governments tend to lose support from one election to the next (Paldam, 1986). In addition to the lagged dependent variable and the 'clarity of responsibility' controls, but in contrast to previous work, we also include country dummy variables and time effects. Inclusion of fixed effects ensures that any unobserved and non-time-varying country specific variables that might affect the incumbent vote (either through 'clarity of responsibility' or otherwise) are controlled for. Inclusion of time effects ensures that any common world events (in particular global technological progress, but also for example changes in oil prices, global economic cycles, or indeed common ideological trends) that might affect the incumbent vote share (i.e. following Leigh, 2009) are also controlled for. Previous comparative studies have controlled neither for fixed effects nor for time effects: their inclusion represents a much more onerous, though statistically more legitimate, test of the economic data in voting regressions.

3.2 Trend growth and the economic vote

The benchmark for the empirical analysis is Whitten and Palmer (1999) who estimate

$$Vote_{it} = \beta_0 + \beta_1 Vote_{it-1} + \beta_2 bicamopp_{it} + \beta_3 weakpty_{it} \tag{14}$$
$$+ \beta_4 oppchair_{it} + \beta_5 minority_{it} + \beta_6 mindur_{it} + \beta_7 ngovptys_{it}$$

The results of this regression are contained in column (1) of Table 2. These results are comparable with Whitten and Palmer (1999: Table 2, p. 56). There is a high degree of persistence in voting, and the sign, size and significance of the estimated coefficients corresponding to the political control variables are consistent with the previous findings. In

particular, when the clarity of responsibility is weakened, so is the erosion of the incumbent vote. To investigate the extent of the economic vote, this specification is augmented to include data for trend economic growth, the current position in the cycle and inflation, with the results presented in column (2). As anticipated trend growth positively impacts the vote and is strongly statistically significant (at the 1% level). In column (3) of Table 2 average trend growth is replaced by raw average growth over the term of office. In the absence of trend growth raw growth is a significant regressor. As already acknowledged raw growth and trend growth are correlated, so this significance is potentially entirely due to the trend. Column (4) contains estimation results of a "horse-race" regression that includes both trend growth and raw growth. Whilst inference here is problematic because of multicollinearity (biasing the standard errors upwards) the horse-race is at least indicative that it is the trend rather than raw growth that is driving the result. Even here trend growth is estimated to have a positive impact on the incumbent vote and is estimated to be significant at a level of 11.9%. In contrast raw growth exhibits a negative sign and is wholly insignificant.[24]

Also notable from Table 2 is the finding that the cyclical element plays no role in driving the incumbent vote. Curiously it is also found that inflation positively impacts the incumbent vote share. This last finding is counterintuitive, though is not a new finding in the literature.[25]

The results are encouraging in that it is clear that the trend and cycle in GDP impact the incumbent vote differentially. Consistent with the above theory the trend is a significant

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[24]To reiterate, interpretation of the "horse-race" regression is potentially problematic because of multicollinearity. Indeed the VIF value of g_y in this regression is 8.97 (indicative that multicollinearity may be a problem). However the econometric literature is not yet decided on critical VIF values (e.g. O'Brien, 2007). Because the central purpose of the present paper is a comparison of the statistical strength of the trend and raw growth measures for completeness we report regressions containing each variable separately and both.

[25]For example Palmer and Whitten (1999) also report a positive and significant coefficient for inflation.

determinant whilst the cycle is not. In Table 3 we investigate whether the finding of a significant impact of trend growth holds in different subsamples. In light of Powell and Whitten (1993) clarity of responsibility should qualify the impact of trend growth. Where it is easier to attribute success or otherwise to the governing party the electoral response to trend growth should be stronger. Where clarity of responsibility is low rational voters will attribute at least part of the inferred competency to the opposition. To investigate this columns (1)-(4) split the sample according to two of the clarity of responsibility variables.[26] Columns (1) and (2) distinguish between regimes where opposition parties do and do not chair important committees in government. Column (1) corresponds to regimes without opposition representation (59% of the sample), and here the estimated coefficient for trend growth actually increases and maintains significance at the 1% level. In contrast, in column (2), where responsibility is less clear, the economic vote is of the same sign and magnitude, but much less precisely estimated and significant only at the 10% level. On the other hand the distinction between outright majority governments (74% of the sample - in column 3) and minority governments (column 4) is less clear cut. Trend growth is positive and significant in both, and if anything the economic vote is stronger in the minorities subsample, though the difference is not significant and the sample size of minorities is quite small.

However, as we have argued, a much stronger test of the significance of the economic vote lies in an econometric specification that includes both fixed effects and time effects, which have been omitted in previous studies. Moreover, a regression of the incumbent vote on its lag, fixed effects and time effects already explains a very large fraction of the

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[26]The reason for focussing on just two of these variables is that splitting the sample by other clarity of responsibility variables leads to very small sample sizes. (The means of the dummy variables reported in Table 1 imply this.)

economic vote - the R^2 using the full data set is 0.88. This does not leave much room for an economic vote, should one exist. Nonetheless there are good reasons for including fixed effects and time effects and subsequent regression analysis thus includes these additional controls. Column (1) of Table 4 is the same specification as column (2) of Table 2 but includes fixed effects and time effects. In this regression trend growth is significant at the 2% level, and the estimated coefficient increases in size relative to the previous results. A one standard deviation improvement in trend growth on average yields the incumbent an additional 1.7% of the vote, all else equal. This is a small, but meaningful average effect. To put this into context note that there have been 4 US presidential elections since 1960 in which the winner's absolute lead was less than 1% (including a negative lead in 2000). Strong performance in terms of trend growth clearly could be enough to decide the election. It is also noticeable from this regression that the curious positive impact of inflation is washed out by the additional controls (confirming the suspicion that this finding is driven by elections from the 1970s.)

In column (2) of Table 4 average trend growth is replaced by raw average growth over the term of office. Unlike trend growth raw growth is not robust to the inclusion of fixed effects and time effects. Whilst the estimated impact is positive it is not statistically significant. This regression characterizes the current state of knowledge as summarized in the introduction: in the literature raw economic growth has not really proven a robust predictor of incumbent vote shares. On the other hand the principal contribution here is that trend growth *is* a robust predictor of the vote, surviving in the presence of a considerable battery of control variables. The "horse-race" regression of column (3) confirms the argument. When trend growth and raw growth are both included the former is significant with a p-value of

1.2%, whilst as previously raw growth is estimated to have a negative though insignificant impact on incumbent vote shares. The evidence clearly points to the superiority of trend growth over raw growth as a determinant of the vote.

Columns (4)-(7) of Table 4 repeat the analysis of Table 3 to include fixed and time effects. Comparison of columns (4) and (5) shows that trend growth is a positive and significant determinant of the incumbent vote only in democracies where opposition parties do not have a role chairing important government committees. With majority governments (column 6) the estimated coefficient for trend growth increases slightly to 1.27 and whilst the estimated coefficient for trend growth actually increases further in the minorities sample, it is not significant at conventional levels. In both cases the evidence for an economic vote is most clear in countries where clarity of responsibility is greatest, as would be expected.

Overall the evidence from this section points towards a robust economic vote. The inclusion of fixed effects and time effects in the econometric analysis of economic voting represents a considerable up-shift in terms of econometric rigour, making it a big ask to find evidence for an economic vote. Nonetheless trend growth over the term of office is found to be a statistically significant predictor of the incumbent vote share, and as expected this relationship is clearest in elections where clarity of responsibility is greatest.

3.3   Cycles and the median voter

The secondary hypotheses relate to the ideological positioning taken by the two parties. If the incumbent centralizes relative to the opposition this should yield votes in accordance with standard Downsian argument. Furthermore our model predicts that this centralizing premium will be increasing, the further away the economy is from the bliss point, or equiva-

lently as the economy moves into recession. To investigate these hypotheses we develop the regression model to estimate

$$Vote_{it} = \beta_0 + X\beta + \beta_{\bar{y}}g_{\bar{y}} + \beta_I reldist + \beta_{\tilde{y}}\tilde{y} + \beta_{I\tilde{y}} reldist * \tilde{y}$$

where X are the control variables detailed in (14) above.[27] As discussed earlier the sample in this section is necessarily restricted to two party systems. The specific hypotheses are firstly that $\beta_I < 0$, implying that greater ideological distance of the incumbent, relative to the opposition party, from the median voter will reduce the incumbent vote share. This represents a test of the median voter theorem and is of interest in its own right. In order to investigate the novel hypothesis that the median voter argument is contingent on the state of the economy interactive terms are employed. The theory above (equation 13) implies that $\beta_{I\tilde{y}} > 0$: the worse the state of the economy (more strictly the lower the value of $\tilde{y}$) the greater the electoral penalty to polarizing. When welfare losses are quadratic (or in general convex) then the penalty for deviating from the median voter increases the further the economy is from the preferred output gap of k.

The regression results are contained in Table 5. Column (1) excludes fixed and time effects, and finds that in two party systems the estimated size of the trend growth effect increases relative to the full sample analyzed in column (2) of Table 2. Arguably clarity of responsibility is greatest in two-party systems; hence it is reassuring that a strong effect for trend growth is found even in the substantially reduced sample.

There is also support for the median voter theorem in that relative distance from the median is found to be penalized by the voters. The coefficient estimate pertaining to *reldist*

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[27]That is all of the clarity of responsibility control variables as well as the lagged dependent variable.

is negative and significant at the 5% level, and the unconditional effect implied is sizable.[28] An increase in *reldist* of one standard deviation (e.g. a move by the incumbent away from the center, where the opposition is located) is estimated to result in a vote loss of 3.5%. However, this impact has to be qualified by the interaction terms, both of which in column (1) are estimated to be statistically significant. The estimated coefficient for $\beta_{I\widetilde{y}}$ is positive and significant at the 10% level, hence there is support for conditionality in the median voter theorem as hypothesized. The vote loss to the incumbent of polarizing is reduced when the economy is booming, and closer to the ideal point, k. Thus for example, assuming again zero inflation and a one standard deviation increase in *reldist*, the vote loss from polarizing in a one standard deviation recession ($\widetilde{y} = -1.503$) is estimated to be 5.8%, whilst the vote loss in a one standard deviation boom is only estimated at 1.2%. The median voter theorem bites hardest in hard times.

Table 5 also shows that when ideological distance from the median is interacted with inflation the estimated coefficient is estimated to be positive and significant. Polarizing is estimated to yield electoral reward in times of high inflation, rather than being punished. This finding suggests that voters prefer more drastic measures, proposed either by left or right, during times of high inflation. It is likely that the policy choices characterized in the short-run trade-off between inflation and output specified in the Phillips curve are not the full story. Voters may for example demand a shift in the Phillips curve rather than a movement along it. The UK (1979) and US (1980) general elections represent two cases in point. Reaganomics and Thatcherism were not the politics of the middle ground, yet delivered electoral success at times of high inflation. Conversely in elections in the mid 1970s

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[28] That is, the estimated effect ignoring the interaction terms, or more precisely considering the case where $\widetilde{y} = \pi = 0$.

(notably the first 1974 election in the UK and Australia 1974) voters responded positively to polarization, again in a time of high inflation, this time by the parties of the left (the British and Australian Labour Parties). At this point in time direct interventionist controls may have been perceived to have been a more effective agenda than the proposed policies of the right.[29]

These results are verified in a regression including fixed effects and time effects (column 2 of Table 5). The impact of trend growth is once again found to be significant and positive, with the size of the effect increasing sizeably. In the two-party system sample of elections, incumbents enjoy a 4.55% vote bonus for a one standard deviation improvement in trend growth. Similarly the unconditional impact of *reldist* doubles in terms of effect and significance. When $\widetilde{y} = \pi = 0$ a one standard deviation gain in territory is estimated to yield an extra 6.8% of the vote. The parameter estimate for $\beta_{I\widetilde{y}}$ remains positive though the statistical significance is reduced slightly. It is possible that the introduction of fixed and time effects knock out some of the variation in $\widetilde{y}$ (some countries might be more prone to recession, and perhaps more likely some years are worse at a global level). This would amount to losing information, which would explain the slight deterioration in significance. On the other hand the estimate for the interaction of inflation and *reldist* remains positive and significant. For high levels of inflation this interactive effect is strong enough to knock out the unconditional effect. For example, assuming $\widetilde{y} = 0$, an inflation rate of 10% reduces the vote loss from a one standard deviation increase in *reldist* from 6.8% to zero. At inflation levels greater than 10% the data are suggestive of a positive vote response to polarizing -

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[29]The finding of a positive and significant interactive effect of inflation and *reldist* is not an artefact of outliers. The results are robust in regressions eliminating observations with the highest Cook's distance measures.

indicating perhaps that in desperate times, desperate measures are called for.

We acknowledge that these findings for this sub-section are only as good as the dataset and 60 observations is not as many as we would have liked. Nonetheless, the data are still indicative and consistently support the hypothesis of forward-looking voters responding to declared policy platforms, and also that these responses are conditional on the state of the economy. Notably we find that the vote response to trend growth is bigger than in the full sample, which is reassuring as responsibility is in some ways clearest in two-party systems. We also find an unconditional positive effect to centralizing ideologically, consistent with the median voter theorem. We also find that the voting response to ideological platforms taken by the two parties is highly conditional on the state of the economy. In recessions, the median voter argument is sharpened, and the reward to centralizing is increased. Conversely in times of high inflation, to an extent the data support the idea of 'desperate times calling for desperate measures'. There are a number of high inflation elections where moving to the extremes have rewarded parties of both left and right, tempering the general finding of a vote premium to centralizing.

4 Conclusion

The reports of the death of economic voting have been exaggerated. Basic macroeconomic theory points to good reasons for believing that the rational voter will react differently to changes in trend output as opposed to cyclical movements, and previous empirical studies have failed to make this distinction. Improvements in trend output, once global effects are controlled for, are plausibly indicative of incumbent competence. Trend growth may occur

through increases in factors of production brought about through sustainable investment from either the private or public sector, or alternatively through better deployment of existing factors of production (i.e. efficiency improvements). Such improvements indicate competence and the rational voter rewards incumbents that deliver this. On the other hand cyclical movements typically are induced by exogenous shocks, and whilst op-ed column-writers with the luxury of hindsight may lament the incapacity of politicians to foresee these events, rational voters will make a more qualified assessment. When cycles are induced by oil shocks, or global financial crises, the responsibility of national governments should be called into question, and it should not be taken as a done deal that incumbents will be punished for these events.

Nonetheless, where parties differ from one another along ideological lines, the proposals that they make at election time for dealing with the inherited economic position will be of interest to voters. In line with much of the political economics literature, on two-party competition at least, we find a premium for ideological centralization. However this premium is contingent on economic circumstances. During recession, the premium is predicted to increase.

The principal empirical finding of this paper is that when GDP is decomposed into trend and cycle there is a robust statistical relationship between trend growth and the incumbent vote share in general elections in OECD countries. We have argued that it is necessary in cross-country empirical studies of voting to control for both fixed effects and time effects, and under this more stringent test of the data, trend-growth remains statistically significant whilst raw growth data does not. In contrast with current mainstream thinking we contest that, measured this way, the economic vote exists and is a robust fact about elections.

In a smaller sample of elections characterized by two-party competition we also find support for the median voter hypothesis, and the novel hypothesis that the reward to centralizing is conditional on the state of the economy. In line with our model the reward is sharpened in recession. When output is below trend parties closer to the median do especially well, whilst the data suggest that in times of high inflation voters have historically rewarded parties for moving to the extremes. Future theoretical work will consider mechanisms underpinning this; it seems likely that when inflation is very high voters demand shifts in the Phillips curve rather than movements along it.

Figure 1: Trend Growth and Absolute Growth
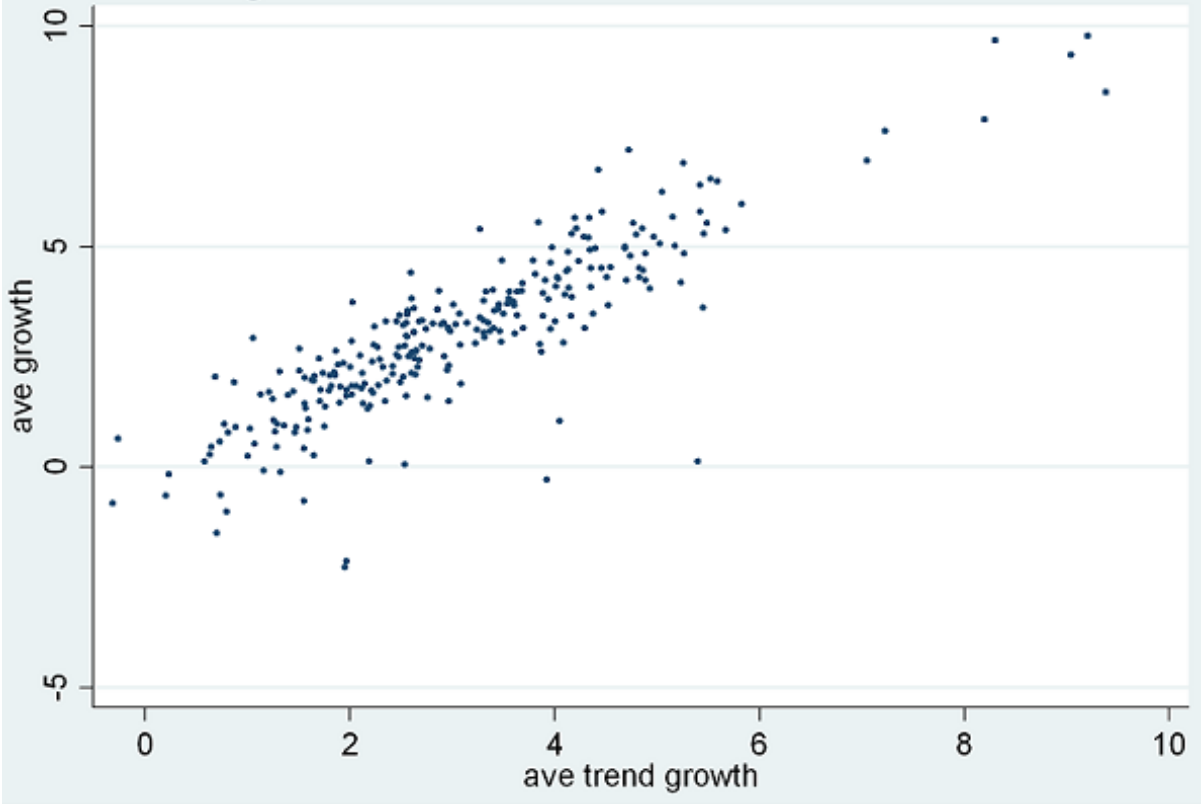
Variable	no. obs.	mean	std. dev.
$Vote$	243	46.8	12.83
$bicamopp$	243	0.136	0.343
$weakpty$	243	0.185	0.389
$oppchair$	243	0.407	0.492
$minority$	243	0.263	0.441
$mindur$	243	8.14	15.56
$ngovptys$	243	1.95	1.25
$g_{\bar{y}}$	238	3.13	1.59
$\widetilde{y}$	238	0.018	1.503
π	230	5.28	4.21
$reldist$	64	-1.75	19.9

Table 1: Descriptive Statistics. Variables are defined in the text.

	(1)		(2)	(3)	(4)
$Vote_{t-1}$	0.889 (0.045)***	(including			
$bicamopp$	1.571 (0.903)*	column 1			
$weakpty$	2.663 (0.807)***	controls)	✓	✓	✓
$oppchair$	1.911 (0.777)**	g_y		0.559 (0.217)**	−0.215 (0.516)
$minority$	3.128 (1.460)**	$g_{\bar{y}}$	0.683 (0.239)***		0.892 (0.571)
$mindur$	−0.093 (0.047)**	$\widetilde{y}$	0.183 (0.243)	−0.052 (0.282)	0.280 (0.295)
$ngovpty$	1.571 (0.903)*	π	0.178 (0.080)**	0.176 (0.081)**	0.181 (0.080)**
		Sample	full	full	full
Observations	243		226	226	226
R^2	0.84		0.84	0.84	0.84

Table 2: Regression results

Robustly estimated standard errors reported in parentheses. *** denotes significance at the 1% level, ** denotes significance at the 5% level and * denotes significance at the 10% level.

	(1)	(2)	(3)	(4)
(incl. CoR controls)	✓	✓	✓	✓
$g_{\bar{y}}$	0.838 (0.255)***	0.785 (0.413)*	0.586 (0.261)**	0.952 (0.550)*
$\widetilde{y}$	0.277 (0.298)	0.052 (0.345)	0.186 (0.284)	0.192 (0.506)
π	0.219 (0.088)**	0.139 (0.178)	0.213 (0.096)**	0.087 (0.155)
Sample	$oppchair$	$oppchair$	$minority$	$minority$
	×	✓	×	✓
	133	93	162	64
	0.69	0.90	0.84	0.72

Table 3: Regression results

Notes as for Table 2. All regressions include the clarity of responsibility (CoR) controls used in Table 2 as well as the lagged dependent variable.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(incl. CoR controls)	✓	✓	✓	✓	✓	✓	✓
g_y		0.553 (0.390)	−0.640 (0.569)				
$g_{\bar{y}}$	1.09 (0.439)**		1.720 (0.676)**	1.021 (0.600)*	−0.324 (1.261)	1.27 (0.557)**	3.11 (1.712)
$\widetilde{y}$	0.179 (0.300)	−0.033 (0.391)	0.491 (0.442)	0.162 (0.439)	−0.025 (0.666)	0.155 (0.388)	−0.258 (1.013)
π	0.030 (0.184)	0.041 (0.187)	0.029 (0.183)	0.299 (0.313)	−0.356 (0.504)	0.120 (0.237)	0.748 (1.088)
fixed effects	✓	✓	✓	✓	✓	✓	✓
time effects	✓	✓	✓	✓	✓	✓	✓
Sample	full	full	full	*oppchair*	*oppchair*	*minority*	*minority*
				×	✓	×	✓
Observations	226	226	226	133	93	162	64
R^2	0.90	0.89	0.90	0.83	0.96	0.90	0.97

Table 4: Regression results

Notes as for Table 2. All regressions include the clarity of responsibility (CoR) controls used in Table 2 as well as the lagged dependent variable.

	(1)	(2)
$g_{\bar{y}}$	1.270 (0.636)**	2.861 (1.265)**
$reldist$	-0.174 (0.088)**	-0.342 (0.080)***
$\widetilde{y}$	0.104 (0.407)	0.358 (1.018)
$\widetilde{y} * reldist$	0.077 (0.040)*	0.088 (0.058)
π	0.499 (0.165)***	0.363 (0.768)
$\pi * reldist$	0.021 (0.008)**	0.033 (0.008)***
fixed effects	$\times$	✓
time effects	$\times$	✓
Observations	60	60
R^2	0.61	0.92

Table 5: Regression results

Notes as for Table 2. All regressions include the clarity of responsibility (CoR) controls used in Table 2 as well as the lagged dependent variable.

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