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Notes and Comments

Better Know Your Dependent Variable: A Multination Analysis of Government Support Measures in Economic Popularity Models

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Three aggregate measures of government support are commonly used in the study of the impact of economic conditions on that support: survey measures of vote intention and approval of the government/president, and electoral outcomes. The appeal of monthly time-series data over long periods has attracted many analysts to the first two of these measures, collectively known as popularity measures. Whether approval or vote intention is used, it is usually the same vote-based theories that are being tested. Some academics argue that measures of vote intention and approval capture different phenomena.[1] And contextual factors, suggested by Bingham Powell and Guy Whitten, and Torsten Persson and Guido Tabellini, that have been theorized to mitigate the effect of economic conditions on vote intuitively will not have the equivalent effect on approval.[2] Moreover, leading scholarship in the United States points towards the fact that the economic considerations that matter for vote intention are different from those for approval.[3] In order to understand the consequences of using one measure versus another in a model, this Note asks: what is the difference (if any) between government approval and vote intention, why is there a difference, and when will it matter?

Many, if not most, studies of economic popularity motivate their analysis in such a way as to suggest that the variable of interest in economic popularity research is vote outcome, just as it is for

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[1] Richard Nadeau, Richard Niemi and Timothy Amato, 'Prospective and Comparative or Retrospective and Individual? Party Leaders and Party Support in Great Britain', *British Journal of Political Science*, 26 (1996), 245–58; Harold Clarke, William Mishler and Paul Whiteley, 'Recapturing the Falklands: Models of Conservative Popularity, 1979–1983', *British Journal of Political Science*, 20 (1990), 63–81; and Irving Crespi, 'The Case of Presidential Popularity', in A. Cantril, eds, *Polling on the Issues* (Washington, D.C.: Seven Locks Press, 1980).

[2] G. Bingham Powell and Guy Whitten, 'A Cross-National Analysis of Economic Voting: Taking Account of the Political Context', *American Journal of Political Science*, 37 (1993), 391–414; and Torsten Persson and Guido Tabellini, *Political Economics: Explaining Economic Policy* (Cambridge, Mass.: MIT Press, 2000).

[3] For example, compare vote choice studies, such as Morris P. Fiorina, 'Economic Retrospective Voting in American National Elections: A Micro-Analysis', *American Journal of Political Science*, 22 (1978), 426–43; Morris P. Fiorina, *Retrospective Voting in American National Elections* (New Haven, Conn.: Yale University Press, 1981); and D. R. Kiewiet, *Macroeconomics and Micropolitics: The Electoral Effects of Economic Issues* (Chicago: University of Chicago Press, 1983), to presidential approval studies, such as Michael B. MacKuen, Robert S. Erikson and James A. Stimson, 'Peasants or Bankers? The American Electorate and the US Economy', *American Political Science Review*, 86 (1992), 597–611.

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economic voting research.[4] Reference is commonly made to particular works of V. O. Key and Anthony Downs.[5] The empirical work of Key that is commonly referenced is specifically on elections. His often cited reward/punishment hypothesis is based on the principle of democratic accountability and the proposal that governments are held responsible through the electoral process.[6] References to future-oriented Downsian voters are usually to the voting calculus determining their electoral choice of party.[7]

It is also not unusual for economic popularity studies to be motivated by direct reference to economic voting studies.[8] Others have made the connection explicitly. Nathaniel Beck, for one, has suggested that there is no real dichotomy between the study of elections and the study of presidential approval because, thinking of elections as a principal–agent situation, popularity polls are a measure of whether the principals (voters) wish to retain their agent to run the country at any given time.[9]

It is this use of approval, rather than a more vote-oriented measure such as vote intention, to test vote-based theories that I question in this study. This is not to say that modelling the impact of economic conditions on presidential or government approval for its own purposes is not a useful exercise. However, it is not clear that modelling approval is appropriate for testing vote-based theories such as the reward–punishment hypothesis, as proposed by Key, or the rational voting calculus, as proposed by Downs.

In order to understand the consequences of using approval to test economic vote theories it is important, then, to understand how approval does or does not differ from vote intention and how approval and vote intention translate into actual voting behaviour. In this study, I propose to examine the first of these relationships – the difference between approval and vote intention and its implications for testing economic vote theories. The ubiquity of the economic popularity model – a function of its ability to capture dynamics in public opinion unobservable in vote studies – makes this an important question in itself. Examination of the second relationship and its complications is limited to a few words on the strength of vote intention and approval as proxies for actual vote.

Finding that approval and vote intention differ is, of course, not surprising. Nor is it the end of the examination. What is the difference, and why do they differ? Most importantly, when will the

[4] Martin Paldam, 'How Robust Is the Vote Function? A Study of 17 Nations over Four Decades', in Helmut Norpoth, Michael S. Lewis-Beck and Jean-Dominique LaFay, eds, *Economics and Politics: The Calculus of Support* (Ann Arbor: The University of Michigan Press, 1991).

[5] V. O. Key Jr, *The Responsible Electorate: Rationality in Presidential Voting: 1936–1960* (Cambridge, Mass.: The Belknap Press of Harvard University Press, 1966); V. O. Key Jr, *Politics, Parties, and Pressure Groups*, 5th edn (New York: Thomas Y. Crowell, 1964); and Anthony Downs, *An Economic Theory of Democracy* (New York: Harper and Row, 1957). Important works that are motivated in this way include: Helmut Norpoth, 'Presidents and the Prospective Voter', *Journal of Politics*, 58 (1996), 776–92; MacKuen, Erikson and Stimson, 'Peasants or Bankers?'; Henry W. Chappell and William R. Keech, 'A New View of Political Accountability for Economic Performance', *American Political Science Review*, 79 (1985), 10–27; and Nathaniel Beck, 'The Economy and Presidential Approval: An Information Theoretical Perspective', in Norpoth, Lewis-Beck and LaFay, eds, *Economics and Politics*. There are also, of course, well-known examples of US economic popularity studies that are explicitly concerned with presidential approval and are motivated as such. For example: Douglas A. Hibbs Jr, 'On the Domain for Economic Outcomes: Macroeconomic Performance and Mass Political Support in the United States, Great Britain, and Germany', *Journal of Politics*, 44 (1982), 426–62; and Samuel Kernell, 'Explaining Presidential Popularity', *American Political Science Review*, 72 (1978), 506–22.

[6] For example, Key, *The Responsible Electorate*, pp. 58–62.

[7] For example, Helmut Norpoth, 'Presidents and the Prospective Voter', and Morris Fiorina, *Retrospective Voting in American National Elections* (New Haven, Conn.: Yale University Press, 1981).

[8] For example, Bruno Frey and Friedrich Schneider, 'An Empirical Study of Political-Economic Interaction in the United States', *Review of Economics and Statistics*, 60 (1978), 174–83; MacKuen, Erikson and Stimson, 'Peasants or Bankers?'; and John E. Mueller, 'Presidential Popularity from Truman to Johnson', *American Political Science Review*, 64 (1970), 18–34.

[9] Beck, 'The Economy and Presidential Approval'.

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difference matter for the testing of economic vote theories? Despite their differences, no one would dispute that the two measures of government support are related. But does this mean they respond to the same forces (such as the economy) in the same way? There are compelling reasons to believe not. Analysts know that approval is more volatile than vote intention. Intuitively, the dampening of vote intention volatility – long argued to be produced by partisan identification – does not apply to approval. At least, it does not apply to the same degree.[10] Some contextual factors, such as the 'clarity of responsibility' by government institutions, may affect both vote intention and approval equally, but the effect of institutional structures that induce strategic voting applies to vote but not approval. Within the US context, leading scholarship shows that vote choice is largely driven by retrospective economic conditions while the effect on presidential approval is predominantly prospective.[11]

These possibilities all have implications for the testing of economic vote theories using approval instead of vote intention. And while the existing literature strongly suggests that approval and vote intention respond differently to the same forces, the explanation for the difference and its implications is not well understood. Therefore, this study develops a critical threshold model of vote intention as a function of approval with party identification (PID)-dependent thresholds. This model suggests that the difference between approval and vote intention is a function of the strength of party identification and the electoral institutions in a given case. It also suggests empirical implications for the observed relationship between approval and vote intention, and how and when the use of one rather than the other will produce different conclusions regarding the impact of economic conditions on government support.

As will be demonstrated, the implications of this study's findings are of the most relevance to the US case or any other case with a presidential form of government. However, in order to explore the questions posed above adequately, it is necessary to examine measurements of government support in nations with a greater breadth of data. Accordingly, this study examines vote intention and government approval measures in Britain and Germany, in addition to the United States. Britain and Germany have been selected as the next two most studied nations within the economic vote literature, with consistent overtime measures of both approval and vote intention. The cross-national comparison also demonstrates that the expected observed relationship between approval and vote intention persists in very different settings.

In examining measures of government support, I find similar dynamics in each of these three cases. I find: (1) approval is causally prior to vote intention; (2) vote intention is less volatile and harder to move than approval; (3) as would be expected from these dynamics, economically driven changes in approval are not guaranteed to translate into changes in vote intention; and (4) the last two findings are the consequence of partisan identification and therefore are strongest when it is the most fixed.

The lesson to take away is that there are important differences between approval and vote intention and the use of one in an economic popularity model will very likely produce substantively different results from the other in cases where PID is relatively rigid. At the very least, the magnitude of economic effects is smaller for vote intention than for approval. It is, therefore, necessary to be cautious about using economic popularity models that utilize approval as the dependent variable to support economic voting theories.

THEORY

The focus of this study is the relationship between approval and vote intention, but first a few words need to be said about how they both relate to actual vote. A large number of studies have

[10] On the dampening of vote intention volatility produced by partisan identification see: Philip E. Converse and Georges Dupeux, 'Politicization of the Electorate in France and the United States', *Public Opinion Quarterly*, 26 (1962), 1–23; and Mark Kayser and Christopher Wlezien, 'Performance Pressure: Patterns of Partisanship and the Economic Vote' (unpublished manuscript, 2007).

[11] On vote choice: Fiorina, 'Economic Retrospective Voting in American National Elections'; Fiorina, *Retrospective Voting in American National Elections*; and Kiewiet, *Macroeconomics and Micropolitics*. On presidential approval: MacKuen, Erikson and Stimson, 'Peasants or Bankers?'

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demonstrated that vote intention does generally converge on the electoral outcome – save for some degree of bias[12] – and that it is a strong predictor of the electoral outcome.[13] It has been demonstrated that this is true for elections in most North American and West European countries. All evidence suggests that vote intention is a good proxy for the actual vote.

In the US context, there is strong evidence that approval can also be a useful predictor of vote.[14] The evidence regarding the power of approval relative to vote intention is somewhat more limited. Intuitively, vote intention is more directly related to vote than approval. The evidence to date from the United States comports with this intuition.[15] A simple test of this fact can be conducted by regressing the outcome of each presidential election from 1952 to 2004 on the presidential approval rating just preceding the election and determining how much of the remaining variance can be explained by vote intention.[16] The answer is that vote intention can explain 17 per cent of the variance in the electoral outcome that approval cannot. The opposite procedure of regressing the electoral outcome on vote intention and determining how much of the remaining variance can be explained by approval reveals that approval cannot provide any additional explanatory power beyond that provided by vote intention.

Vote intention is, as we would expect, a more direct proxy for vote than approval in US presidential elections. This suggests that an economic popularity study using approval data must demonstrate that the influence of the economy on approval also translates into an effect on vote intention; otherwise, the result is irrelevant to theories of voting. This, of course, depends upon the relationship between approval and vote intention – the focus of this study.

To understand the relationship between approval and vote intention, we must develop a theoretical model of both. The following models build upon the critical threshold model of presidential approval as developed by Samuel Kernell and Douglas Hibbs.[17] To begin, let a^*_{ijt} be the unobserved continuously valued government approval rating for individual i of PID j at time t.

$$a^*_{ijt} = \alpha_j + f(Z_t) + \mu_i, \tag{1}$$

where: $f(Z_t)$ represents a function of substantive terms, such as the economy and other relevant political events, and associated coefficients; α_j is a PID-specific intercept, where the intercept for opposition identifiers is less than that for government identifiers ($\alpha_o < \alpha_g$); and μ_i is an independent normally distributed random disturbance.

Note that the PID-specific intercepts are not a function of time. This is based on the long-held theoretical expectation that partisan identification is a relatively fixed aspect of an individual's character, which predisposes them to support one major party over another.[18] The consequence

[12] Robert S. Erikson and Christopher Wlezien, 'Presidential Polls as a Timeseries: The Case of 1996', *Public Opinion Quarterly,* 63 (1999), 163–77; Simon Jackman, 'Pooling the Polls over an Election Campaign', *Australian Journal of Political Science*, 40 (2005), 499–517; Mark Pickup and Richard Johnston, 'Campaign Trial Heats as Election Forecasts: Measurement Error and Bias in 2004 Presidential Campaign Polls', *International Journal of Forecasting*, 24 (2008), 272–84; and Mark Pickup and Richard Johnston, 'Campaign Trial Heats as Election Forecasts: Evidence from the 2004 and 2006 Canadian Elections', *Electoral Studies*, 26 (2007), 460–76.

[13] James E. Campbell, 'Forecasting the Presidential Vote in 2004: Placing Preference Polls in Context', *PS: Political Science & Politics*, 37 (2004), 763–67; James E. Campbell, 'Evaluating the Trial-Heat and Economy Forecast of the 2004 Presidential Vote: All's Well that Ends Well', *PS: Political Science & Politics*, 38 (2006), 763–67; Paul Whiteley, 'Electoral Forecasting from Poll Data: The British Case', *British Journal of Political Science*, 9 (1979), 219–36; and Kayser and Wlezien, 'Performance Pressure: Patterns of Partisanship and the Economic Vote'.

[14] Robert S. Erikson, Joseph Bafumi and Bret Wilson, 'Could the Close 2000 Elections Have Been Predicted?', *PS: Political Science and Politics*, 34 (2001), 815–19.

[15] Christopher Wlezien and Robert S. Erikson, 'Temporal Horizons and Presidential Election Forecasts', *American Politics Quarterly*, 24 (1996), 492–505.

[16] Christopher Wlezien graciously provided the necessary data.

[17] Samuel Kernell and Douglas Hibbs Jr, 'A Critical Threshold Model of Presidential Popularity', in D. A. Hibbs, Jr and H. Fassbender, eds, *Contemporary Political Economy* (Amsterdam: North-Holland, 1981).

[18] Angus Campbell, Philip Converse, Warren Miller and Donald Stokes, *The American Voter* (New York: Wiley, 1960); Warren E. Miller and Donald E. Stokes, 'Constituency Influence in Congress', *American Political*

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of relaxing this assumption is discussed shortly. The disturbance term μ_i captures the effects of individual-level characteristics – not captured by PID – that influence government approval.

Let the observed measure of approval be designated by the binary variable A_{ijt}, which equals 1 for individuals approving of the government's performance and 0 otherwise. A critical threshold model represents the relationship between the unobserved continuous valued approval and the observed binary approval as:

$$A_{ijt} = \begin{cases} 1 \text{ if } a^*_{ijt} > c^a \\ 0 \text{ if } a^*_{ijt} \leq c^a \end{cases} \tag{2}$$

where c^a is a critical threshold for indicating approval. It then follows that the probability of an individual with PID j indicating that they approve of the government at time t is:

$$\Pr(A_{ijt} = 1) = \Pr(f(Z_t) + \mu_i > c^a - \alpha_j) \tag{3}$$

The probability of an individual indicating that they approve of the government at time t is a function of Z_t and an independently distributed random disturbance, μ_i. This function is equivalent for individuals of all PIDs, but the critical threshold is PID dependent – lower for government identifiers than for opposition identifiers.

Figure 1a presents a hypothetical but realistic relationship between economic and political conditions Z_t and (i) the probability of an individual who identifies with the opposition party indicating approval of the government $\Pr(A_o = 1)$, and (ii) the probability of an individual who identifies with the government party indicating approval of the government $\Pr(A_g = 1)$. The probability is equal to the proportion of the normal curve above the threshold. As t increases from 1 to 2, Z increases from Z_1 to Z_2 indicating improvement in some covariate such as the state of the economy. The consequence of the improvement in conditions is that the probability of a government party identifier indicating approval approaches 1.0 and the probability of an opposition party identifier indicating approval of the government increases to well over 0.5.

Let v^*_{ijt} be the unobserved continuously valued voting preference for individual i of PID j at time t.

$$v^*_{ijt} = \upsilon_j + a^*_{ijt} + \gamma_i + \varepsilon_i, \tag{4}$$

where v^*_{ijt} is a function of: the unobserved continuously valued government approval rating for individual i of PID j at time t; a PID-specific intercept (υ_j), where $\upsilon_o \leq 0$ & $\upsilon_g \geq 0$;[19] an individual strategic consideration (γ_i); and an independently distributed random disturbance (ε_i). This equation contains an important assumption that will be empirically tested:

ASSUMPTION 1: *The causal direction between approval and vote intention is from the first to the latter.*

The value of γ_i is a function of electoral institutions introducing strategic considerations into the vote function that do not appear in the approval function. The disturbance term ε_i will capture individual-level characteristics not related to PID or institutionally induced considerations that may influence vote preference but not approval. It is assumed that ε_i is small relative to μ_i (from Equation 1). This is the second assumption that will be empirically tested:

ASSUMPTION 2: *The individual characteristics (other than PID) that influence vote preference but not approval (ε_i) are small relative to those characteristics (other than PID) that influence approval (μ_i).*

(Fnote continued)
Science Review, 57 (1963), 45–56; David Butler and Donald Stokes, *Political Change in Britain: The Evolution of Electoral Choice* (London: Macmillan, 1974); and Ian Budge, Ivor Crewe and Dennis Farlie, *Party Identification and beyond: Representations of Voting in the Party Competition* (London: John Wiley, 1976).

[19] The two inequalities simply require that a government identifier is not going to vote for an opposition party/candidate while still approving of the government and an opposition identifier is not going to vote for the government while they disapprove of it.

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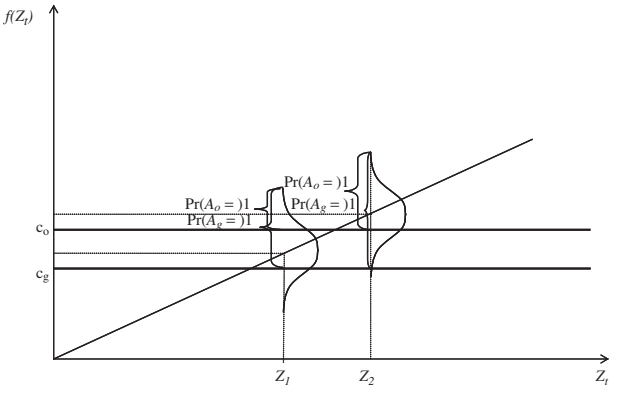


Fig 1a. Approval
Note: $c_o = c^a - \alpha_o$ and $c_g = c^a - \alpha_g$.

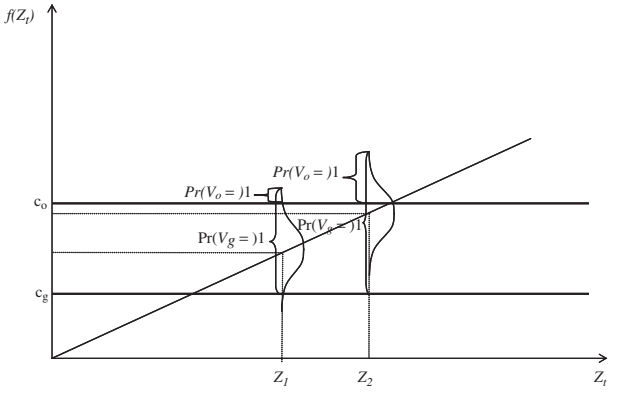


Fig 1b. Vote
Note: $c_o = c^a - \alpha_o - v_o$ and $c_g = c^a - \alpha_g - v_o$ (see the Appendix, Note 1, in the Supplementary Materials on the website ⟨journals.cambridge.org/jps⟩ for details).

Let the observed measure of vote intention be designated by the binary variable V_{ijt}, which equals 1 for individuals indicating a vote for the government and 0 otherwise. As before, a critical threshold model represents the relationship between the unobserved continuous valued vote intention and the observed binary vote intention as:

$$V_{ijt} = \begin{cases} 1 \text{ if } v^*_{ijt} > c^v \\ 0 \text{ if } v^*_{ijt} \leq c^v \end{cases} \tag{5}$$

where c^v is a critical threshold for indicating a vote for the government. It then follows that the probability of an individual with PID j indicating that they would vote for the government at time t is:

$$\Pr(V_{ijt} = 1) = \Pr(a^*_{ijt} + \gamma_i + \varepsilon_i > c^v - \upsilon_j). \tag{6}$$

The probability of an individual indicating that they would vote for the government at time t is a function of the government approval rating (which includes the effect of PID on approval), an individual strategic term γ_i and an independently distributed random disturbance ε_i. From this, it can be demonstrated that the difference in the critical thresholds of government and opposition

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identifiers is greater for vote intention than it is for government approval.[20] Moreover, the difference is equal to the difference in the PID-specific vote preference intercepts ($v_g - v_o$).

Figure 1b represents the relationship between Z_t and (i) $\Pr(V_o = 1)$ and (ii) $\Pr(V_g = 1)$. This is done for the same set of economic and political conditions as in Figure 1a, and assumes that there are no electoral institutions that introduce strategic considerations. The consequence of the improvement in conditions from $t = 1$ to $t = 2$ is that the probability of a government party identifier indicating a vote for the government again approaches 1.0 and the probability of an opposition party identifier indicating a vote for the government increases but remains well under 0.5.

The difference between Figure 1a and Figure 1b is clear. While the movement in the probability distributions of vote and approval relative to their thresholds are of the same magnitude, the change in the probability will be lower for vote relative to approval. This is because the movement of the probability distribution relative to the thresholds occurs further out in the tail of the vote distribution compared to the approval distribution – a consequence of the greater partisan difference in the thresholds for vote intention compared to approval. Therefore, for the same change in economic conditions, there is a greater probability of an observed change in approval than in vote intention. When vote intention and approval are aggregated, this individual level dynamic has important, testable implications:

IMPLICATION 1: Vote intention will be more stable than approval ratings over time.
IMPLICATION 2: For a given change in economic or political conditions, the effects will be larger on approval than vote intention.

This suggests a model of vote intention in which short-term considerations that are reflected in movements within approval would have to reach a certain magnitude before they could overcome the long-term PID considerations that hold voting intention rigid. These aggregate-level implications require that the PID-specific intercepts are time invariant and different for government and opposition identifiers. However, there will at times be individuals, and possibly entire electorates, when these conditions will not be met. Therefore:

IMPLICATION 3: The differences between approval and vote intention implied by Implications 1 and 2 will be smaller or non-existent:
(a) in countries where PID is unstable and/or endogenous to vote intention;
(b) when partisan dealignment occurs; and
(c) amongst individuals without a PID (Independents).

The theoretical vote model can also consider the impact of electoral institutions. This is done by interpreting the strategic term γ_i as an individual-level disturbance that is not necessarily randomly distributed. A systematic relationship could exist between being a government or opposition identifier and experiencing strategic considerations that encourage/discourage a particular vote. This could mitigate the differences in the thresholds for vote and approval. Whatever the distribution of strategic considerations, the aggregate-level implication is:

IMPLICATION 4: When electoral institutions provide incentives for strategic voting, the causal relationship between approval and vote intention will be weaker.

Having established the aggregate-level implications of the theoretical model, I now turn to testing them in each of the cases under consideration – Britain, Germany and the United States. The following analysis examines each case in turn. The general approach is: (1) a comparison of the dynamics of approval and vote intention; (2) the use of vector autoregression modelling to determine causality between these measures of government support; and (3) economic popularity modelling to demonstrate the consequences of using one measure rather than another. As will be seen, data availability will allow for additional analysis in some cases, while data limitations will restrict analysis in other cases.

[20] See Appendix, Note 1, in the Supplementary Materials on the website ⟨journals.cambridge.org/jps⟩ for a demonstration of why this is always true.

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BRITISH MEASURES OF GOVERNMENT SUPPORT

Empirical Implication 3a suggests that the differences between approval and vote will be smaller in a country where PID is unstable and/or endogenous to vote intention. When asked in a survey, the vast majority of British voters will indicate a party identification.[21] However, it has been demonstrated that this identification is flexible and rather endogenous with vote. So much so that it has been suggested that talking about PID as a predictor of vote is (partially) tautological.[22] This may be overstating the case, but it does capture the commonly held sentiment that party identification in Britain does not constitute a rigid psychological phenomenon. As will be argued in the next two sections, PID in Britain is less rigid than that in the United States or pre-unification Germany but more so than in post-reunification Germany. Britain, then, represents the middle ground in terms of the strength of the difference between approval and vote intention.

According to Implication 4, when electoral institutions provide incentives for strategic voting, the causal relationship between approval and vote intention will be weaker. It has been suggested that the single-member plurality electoral system in Britain combined with third-party politics produces incentives for strategic voting.[23] It has been proposed that voters may vote for their second preference when they perceive that their first choice has little chance of winning. There is compelling evidence that strategic voting does occur, but the overall magnitude of the effect (particularly at the aggregate level) is moderate, never exceeding 10 per cent.[24] This suggests that the causal relationship between approval and vote should be reduced by strategic considerations but not eliminated.

For the purposes of this study, approval of the British government and voting intention since Tony Blair's electoral victory in May 1997 is examined.[25] The data come from Ipsos-MORI's monthly survey asking respondents: 'Are you satisfied or dissatisfied with the way the Government is running the country?' and 'How would you vote if there were a General Election tomorrow?' The British case also provides data for prime ministerial approval. The analysis of prime ministerial approval can be found in the Web Appendix.[26] The theorized difference between approval and vote intention should apply to both prime ministerial and government approval. The bottom line is that the results mimic those of government approval.

Calculating the mean squared perturbation (MSP), as expected, approval is more volatile than vote intention.[27] The MSP of government approval is 15.8 percentage points and vote intention approximately 11.4. Vote intention has only 72 per cent of the month-to-month movement of government approval. This is consistent with the theoretical implication (Implication 1) that PID produces greater stability in vote intention relative to approval.

[21] David Butler and Donald Stokes, *Political Change in Britain* (New York: St Martin's, 1969); and Budge, Crewe and Farlie, *Party Identification and Beyond*.

[22] Malcolm Brynin and David Sanders, 'Party Identification, Political Preferences and Material Conditions', *Party Politics*, 3 (1997), 53–77.

[23] D. J. Lanoue and S. Bowler, 'The Sources of Tactical Voting in British Parliamentary Elections, 1983-1987', *Political Behaviour*, 14 (1992), 141–57.

[24] Bruce E. Cain, 'Strategic Voting in Britain', *American Journal of Political Science*, 22 (1978), 639–55; Geoffrey Evans, 'Tactical Voting and Labour's Prospects', in Anthony Heath, Roger Jowell and John Curtis, eds, *Labour's Last Chance? The 1992 Election and Beyond* (Aldershot, Hants.: Dartmouth, 1994); and Stephen Fisher and John Curtis, 'Tactical Unwind? Changes in Party Preference Structure and Tactical Voting in Britain between 2001 and 2005', *Journal of Elections, Public Opinion and Parties*, 16 (2006), 55–76.

[25] Plots of the data and the rationale for the time period studied for each case are provided in the Appendix, Note 2, in the Supplementary Materials on the website ⟨journals.cambridge.org/jps⟩.

[26] Note 8, in the Supplementary Materials on the website ⟨journals.cambridge.org/jps⟩.

[27] The mean squared perturbation is similar to the variance but squares the difference between a month's value and the previous month's rather than the series mean. This is more appropriate in this context, as it is the month-to-month stability that is of greatest interest and the variance will overstate the month-to-month instability in a series that trends.

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TABLE 1 *Vote Intention and Government Approval in Britain and Germany: Vector Autoregression Estimates for Britain and Germany Government Support Measures*

		Britain		Germany	
		Coefficient	S.E.	Coefficient	S.E.
Vote Intention	$Vote_{t-1}$	0.23**	0.10	0.19	0.16
	$Approval_{t-1}$	0.26**	0.06	0.01	0.13
	Constant	0.24	0.23	0.01	0.28
Approval	$Vote_{t-1}$	0.17	0.16	0.03	0.20
	$Approval_{t-1}$	0.66**	0.10	0.13	0.16
	Constant	0.22	0.39	0.01	0.36
Lagrange multiplier test		χ^2	P-value	χ^2	P-value
	Lag 1	3.37	0.50	1.22	0.88
	Lag 2	1.06	0.90	1.77	0.78
Granger causality test		χ^2	P-value	χ^2	P-value
	Approval → Vote	16.4**	0.00	0.01	0.91
	Vote → Approval	1.06	0.30	0.02	0.88

**Significant at a 95% confidence level.

In order to examine the relationship between vote intention and approval, we can use a vector autoregression (VAR). A standard VAR models approval and vote intention as linear functions of their own lags and of each other's lags.[28] Lag-order selection statistics FPE, AIC, SBIC and HQIC all indicate that a model with only a single lag is required for either prime ministerial or government approval.[29] The results of the VAR estimation are presented in Table 1. As can be seen from the Lagrange-multiplier tests for autocorrelation in the residuals of the models, the null hypothesis of no remaining autocorrelation at lags of one or two cannot be rejected in either case. This suggests that models with only a first-order lag are appropriate.

The statistically significant coefficients for the impact of government approval (lagged one month) on vote intention suggest that approval Granger-causes vote intention. This is confirmed by the Granger causality test. The statistically insignificant coefficients for the impact of vote intention (lagged one month) on government approval and the Granger causality test suggest that vote intention does not Granger-cause approval. This is confirmation of the stated assumption that the causal direction between approval and vote intention is from the first to the latter (Assumption 1).

However, while the VAR tells us that approval Granger-causes vote but vote does not Granger-cause approval, this does not rule out contemporaneous causation from vote to approval. The contemporaneous causation between vote and approval is captured in the error terms of the standard VAR model and is indeterminate in terms of direction. A structural VAR, as expressed below, explicitly models the contemporaneous causation. However, restrictions on the coefficients are required in order to identify the model.

$$\begin{aligned} Approval_t &= b_{10} + b_{12}Vote_t + \gamma_{11}Approval_{t-1} + \gamma_{12}Vote_{t-1} + \varepsilon_t^A \\ Vote_t &= b_{20} + b_{21}Approval_t + \gamma_{21}Approval_{t-1} + \gamma_{22}Vote_{t-1} + \varepsilon_t^V \end{aligned} \qquad \text{(Structural VAR)}$$

[28] Further details are provided in the Appendix, Note 3, in the Supplementary Materials on the website ⟨journals.cambridge.org/jps⟩.

[29] FPE = final prediction error, AIC = Akaike's information criterion, SBIC = Schwarz's Bayesian information criterion and HQIC = Hannan and Quinn information criterion.

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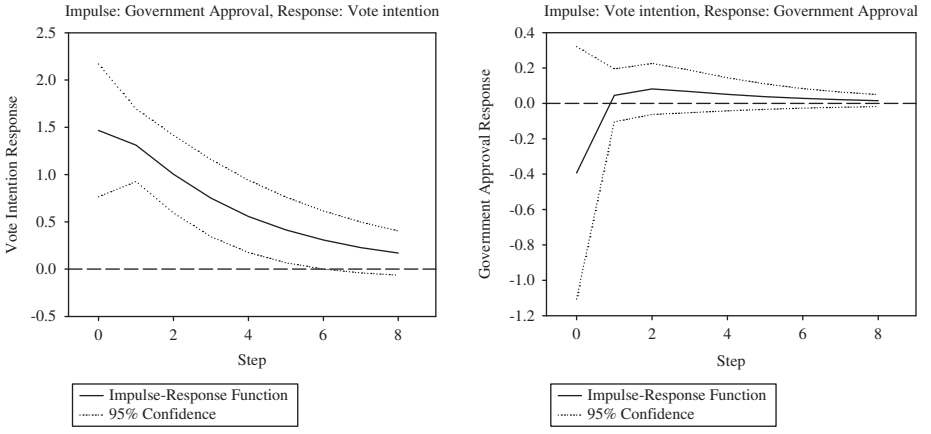


Fig. 2. Support for the British government: impulse response functions
Note: The impulse-response function graphs the response of one variable to a one-unit change in the other over time. Since the structural VAR used to produce these impulse-response function graphs does not assume a direction of causation, it allows for contemporaneous correlations in the innovations to approval and vote intention. This correlation is likely to be positive. Consequently, the magnitude of the response suggested by the impulse-response functions may be larger than would be determined by a recursive (causal) structure.

Based on the previous analysis, a structural VAR is estimated with the restriction that vote intention does not have a long-run effect on approval. The impulse-response functions from this analysis are presented in Figure 2. The impulse-response functions clearly indicate that vote intention has no impact on approval, contemporaneous or otherwise. Approval, by contrast, does have a clear impact on vote intention both contemporaneously and in the long run. This further confirms Assumption 1 that the direction of causation is, in fact, from approval to vote intention and not vice versa.

Based on this analysis, a further structural VAR can be estimated; now with the restriction that approval is not contemporaneously affected by vote intention.[30] Furthermore, a Cholesky forecast-error variance decomposition can be used to estimate the proportion of movement in vote intention that can be attributed to movements in approval. The estimated percentage of movement in vote intention explained by shocks to government approval is 65.7%. This decomposition indicates that much of the dynamics in vote intention is due to the dynamics of approval. Only about one-third of the movement in vote intention occurs due to considerations that do not affect approval. This is due in part to shifting strategic considerations and in part to movement represented by ε_i in the theoretical model – individual-level characteristics or considerations that may influence vote preference but not approval. Although these two sources of movement cannot be separated, it is clear that ε_i is small relative to μ_i which represents the movement in approval produced by individual-level characteristics. This confirms the second stated assumption that the individual characteristics (other than PID) that influence vote preference but not approval are small relative to those characteristics (other than PID) that influence approval (Assumption 2).

We are now in a position to test Implication 2 – for a given change in economic or political conditions, the effects will be larger on approval than vote intention. In order to explore this implication, I developed economic popularity functions for the Blair government using each of the measures of popularity. The economic variables included in the models were growth in GDP, inflation and employment.[31]

[30] This produces a structural VAR that has a recursive structure and so a causal interpretation can be applied.

[31] For a description of the economic data used in these models, see Appendix, Note 4, in the Supplementary Materials on the website ⟨journals.cambridge.org/jps⟩.

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The impact of these economic variables on popularity was modelled using a general Error Correction Model (ECM). The ECM is a useful approach to examining both the short- and long-run effects of economic and political forces on public opinion. ECMs are equally valid when a linear combination of the dependent and independent variables are cointegrated or when the dependent variable is a stationary process. The latter is the case for both measures of support for the British government after accounting for post-election trending.[32]

British models of economic popularity typically include political variables.[33] In addition to their substantive interest, it is necessary to include controls for any political event that might move popularity out of equilibrium in order to satisfy the assumption of covariance stationarity. For the purposes of testing Implication 2, it is necessary to include only those political variables that ensure covariance stationarity. This is satisfied by including in the model three post-election trends and controls for the impact of terrorist attacks on 11 September 2001 (9/11) and the Iraq war.[34]

The form of the ECM used is a fairly standard set-up and is a basic transformation of the dead-start autoregressive distributive-lag model also commonly used for economic popularity models in Britain and elsewhere.[35] The Error Correction Model is:

$$\begin{aligned}\Delta Popularity_t &= \lambda_1 \Delta GDP_{t-1} + \lambda_3 \Delta INF_{t-1} + \lambda_3 \Delta EMP_{t-1} + \lambda_4 \Delta trend1 + \lambda_5 \Delta trend2 \\ &+ \lambda_6 \Delta trend3 + \lambda_7 \Delta controls_t - \gamma(Popularity - GDP_{t-2} - INF_{t-2} - EMP_{t-2} - trend1_{t-1} \\ &- trend2_{t-1} - trend3_{t-1} - controls_{t-1}) + \pi_1 GDP_{t-2} + \pi_3 INF_{t-2} + \pi_3 EMP_{t-2} \\ &+ \pi_4 trend1_{t-1} + \pi_5 trend2_{t-1} + \pi_6 trend3_{t-1} + \pi_7 controls_{t-1} + \eta_t\end{aligned}$$

where $Popularity_t$ is either vote intention or approval at month t; GDP_t is the year over year change in gross domestic product (GDP) at month t; INF_t is the year over year change in the consumer price index (CPI) at month t; EMP_t is the level of employment at month t; γ is the error correction rate; λ_j captures the short-run dynamics in popularity produced by each of the j economic and control/trending variables; $1 - \pi_j/\gamma$ captures the long-run shift in equilibrium produced by each of the j economic and control/trending variables; and η_t is assumed to be *i.i.d.* It should be noted that $\Delta trend1$, $\Delta trend2$ and $\Delta trend3$ actually become dummy variables so that λ_4, λ_5 and λ_6 represent different intercepts for each inter-election period.

The estimated economic popularity functions for government approval and vote intention are presented in Table 2.[36] The Portmanteau Q-test suggests that for each model the residuals (η_t) are a white noise process, as we would expect if the model has been properly specified. Comparing deviance information criterion (DIC) values for the models including economic variables to those without suggests that including economic variables produces models that fit the data better.

The first thing to note is that inflation and employment levels have positive and short-term effects on government approval.[37] These do not carry over at all to vote. As for long-term effects, inflation

[32] The post-election trending is modelled using three count variables that begin the month after each election.

[33] Harold Clarke and Matthew Lebo, 'Fractional (Co)integration and Governing Party Support in Britain', *British Journal of Political Science*, 33 (2003), 283–301.

[34] The impact of 9/11 is estimated using a dummy that equals one for the month of the event and the four months following. The impact of the Iraq war is estimated by a variable that equals the cumulative number of British casualties in Iraq.

[35] The Appendix, Note 5, in the Supplementary Materials on the website ⟨journals.cambridge.org/jps⟩, describes the transformation for this particular ECM. For further details, see Anindya Banerjee, Juan Dolado, John W. Galbraith and David F. Hendry, *Co-integration, Error-Correction, and the Econometric Analysis of Non-Stationary Data* (Oxford: Oxford University Press, 1993); and David F. Hendry, *Dynamic Econometrics* (Oxford: Oxford University Press, 1995). For an example of the use of the dead-start autoregressive distributive-lag model in the British context, see David Sanders, 'The Real Economy and the Perceived Economy in Popularity Functions: How Much Do Voters Need to Know? A Study of British Data, 1974–97', *Electoral Studies*, 19 (2000), 275–94.

[36] The ECMs were estimated in WinBUGS. See the Appendix, Note 6, in the Supplementary Materials on the website ⟨journals.cambridge.org/jps⟩ for further estimation details.

[37] The direction of the effect is as we would expect for unemployment but a little peculiar for inflation.

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TABLE 2 *ECM Economic Popularity Functions for Britain and the United States*

	Britain 1997–2006				United States 2002–04			
	Approval		Vote Intention		Approval		Vote Intention	
	Coef.	95% CI	Coef.	95% CI	Coef.	95% CI	Coef.	95% CI
Short-run dynamics								
ΔGrowth$_{t-1}$	1.81	−1.3, 4.9	2.34	−0.2, 4.9	0.81	−3.5, 5.1	0.77	−2.7, 4.3
ΔInflation$_{t-1}$	4.79**	1.3, 8.3	1.88	1.0, 4.8	0.84	−3.7, 5.5	−2.53	−5.8, 0.8
ΔEmployment$_{t-1}$	9.59**	0.9, 18.3	2.44	5.0, 9.9	3.98	−1.5, 9.5	2.17	−1.9, 6.3
ΔTrend1/Constant	−0.08	−0.2, 0.1	0.09	−0.04, 0.2	42.69**	5.6, 79.1	39.76*	−5.8, 84.4
ΔTrend2	−0.42**	−0.8, −0.1	−0.17	−0.4, 0.09	–	–	–	–
ΔTrend3	−12.37**	−24.7, −0.1	−6.15	16.1, 3.8	–	–	–	–
Iraq	0.11	−0.1, 0.4	0.02	−0.2, 0.2	0.06**	0.01, 0.1	0.01	−0.03, 0.1
9/11	9.21**	4.2, 14.3	0.36	−3.7, 4.5	–	–	–	–
Error Correction Rate	−0.35**	−.05, −0.2	−0.60**	−0.8, −0.4	−0.89**	−1.4, −0.4	−0.72**	−1.3, −0.1
Equilibrium Relationships								
Growth$_{t-1}$	0.09	−6.1, 5.9	1.07	−1.8, 3.7	−0.87	−4.5, 3.9	−4.15	−5.4, 6.3
Inflation$_{t-1}$	12.06**	2.0, 23.9	3.11	−1.6, 8.2	4.01	−1.3, 11.7	−0.90	−3.4, 17.6
Employment$_{t-1}$	0.37**	0.04, 0.7	0.64**	0.5, 0.8	9.13**	0.8, 20.1	3.34	−7.8, 14.8
Trend1	−0.06	−0.4, 0.3	−0.09	−0.2, 0.1	–	–	–	–
Trend2	−0.71	−1.4, 0.1	−0.50**	−0.9, −0.2	–	–	–	–
Trend3	0.09	−4.1, 4.9	−2.02**	−4.6, −0.02	–	–	–	–
Iraq	0.14	−0.2, 0.5	0.03	−0.1, 0.2	−0.02**	−0.4, −0.01	0.00	−0.04, 0.01
σ^2 (η_t)	0.08**	0.06, 0.1	0.12**	0.1, 0.2	0.14**	0.1, 0.3	0.25**	0.10, 0.5
	Q-stat	P-value	Q-stat	P-value	Q-stat	P-value	Q-stat	P-value
Portmanteau Q-test (η_t)	44.03	0.31	40.93	0.43	15.93	0.07	5.04	0.83
DIC w/o economic variables	574.17		530.28		123.49		110.35	
DIC w/ economic variables	560.05		507.72		119.50		106.92	

*Significant at a 90% confidence level. **Significant at a 95% confidence level.

again has a positive and significant impact on government approval. Again, this effect disappears for vote. Employment levels also have a positive and significant long-term effect on government approval. This effect does not disappear for vote.

To compare the magnitudes of the impact of employment levels, long-term and short-term effects must be considered together. For approval, a 0.1 percentage point increase in employment levels, in a given month, will produce an initial 0.96 percentage point increase and an additional long-term increase in approval of 0.04 percentage points, for a cumulative 1.0 percentage point increase.[38] For vote intention, the total cumulative effect is only 0.064 percentage points.

Clearly, for a given change in economic or political conditions, the effects will be larger on approval than vote intention – confirming Implication 2. Some of the impact of economic conditions on approval does translate into an impact on vote intention, but not much. The effect of some economic conditions on approval does not translate into a movement in vote intention at all. This is the story told by the impact of inflation. Further, immediate short-term dynamics only exist within approval.

To extend even further our understanding of the difference and the relationship between approval and vote intention measures, it is useful to consider a case with very different electoral institutions. Germany uses a mixed member proportional system to elect representatives to the Bundestag. This has consistently produced coalition governments.

GERMAN MEASURES OF GOVERNMENT SUPPORT

The strength in the stability of partisan ties in Germany has undergone a sizeable change over the past forty years. During the 1970s and 1980s, the evidence suggested that PID was as stable in Germany as in countries such as the United States.[39] Following reunification in 1990 (and possibly beginning before that), the number of partisan identifiers in the states of the former Federal Republic of Germany has fallen off precipitously.[40] For the purposes of testing the effects of PID strength on the relationship between approval and vote intention, this is fortuitous. The differences between approval and vote intention should be as strong as that in the United States prior to reunification and notably weaker following it (Implication 3b).

For the German case, unlike the US and British cases, individual-level data are available. This allows for the testing of Implication 3c: The differences between approval and vote intention suggested by Implications 1 and 2 should be relatively weak amongst individuals with weak PIDs (Independents). This should hold even during the period of strong partisan alignment.

Germany also presents a useful case to test Implication 4: When electoral institutions provide incentives for strategic voting (and/or split-ticket voting), the causal relationship between approval and vote intention will be weaker. In Germany, a voter dissatisfied with the government has a greater number of options than voting for the opposition – the primary response option in the United States or Britain. For example, a German voter may move their support from the major government coalition partner to the minor coalition partner. Alternatively, a German voter may use the structure of the mixed member proportional electoral system to split their support between a government party and a non-government party. These alternatives can be expected to blur the lines of causality between approval and vote intention much more than in the British or US case.

The following analysis utilizes monthly measures of government approval and vote intention for the Kohl government from October 1982 till September 1998. The data were collected as part of the

[38] Note that the largest one-month increase during this period is 0.2 percentage points.

[39] Helmut Norpoth, 'Party Identification in West Germany: Tracing an Elusive Concept', *Comparative Political Studies*, 11 (1978), 36–61.

[40] Kai Arzheimer, '"Dead Men Walking?" Party Identification in Germany, 1977–2002', *Electoral Studies*, 25 (2006), 791–807; and Carsten Zelle, 'A Third Face of Dealignment? An Update on Party Identification in Germany, 1971–94', in Christopher Anderson and Carsten Zelle, eds, *Stability and a Change in German Elections: How Electorates Merge, Converge, or Collide* (London: Praeger, 1998), pp. 55–70.

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monthly Politbarometer conducted by Forschunsgruppe Wahlen. Vote intention is calculated as the sum of individuals indicating one of the members of the coalition government in response to the question: 'Welche Partei würden Sie dann wählen?' – after the first being asked: 'Wenn am nächsten Sonntag Bundestagswahl wäre, würden Sie dann zur Wahl gehen?' Government approval is calculated as the sum of individuals who gave a satisfaction rating of 1 or higher on a scale from −5 to +5, in response to the question: 'Sind Sie mit dem was die jetzige CDU/CSU/FDP-Regierung in Bonn bisher geleistet hat eher zufrieden oder eher unzufrieden?'[41]

Prior to reunification (1982–90), vote intention in West Germany only contained 33 per cent of the month-to-month movement exhibited by government approval. This is a notably larger effect compared to that in Britain, where vote intention contained 72 per cent of the month-to-month movement contained in government approval. This is consistent with what Implication 3a would lead us to expect from the stronger PID in Germany during this time, relative to Britain.

After reunification (1991–98), the volatility of both vote intention and approval in the old states of the Federal Republic of Germany declined. However, the difference between the two also clearly declined. During this period, vote intention contained 90 per cent of the movement in government approval. As expected, this is a smaller difference than that found in Britain. Looking at independents throughout the entire period under consideration (1982–98), the relative difference in the volatility of vote intention and approval essentially disappears. These results are consistent with Implications 3b and 3c, respectively: the greater stability of vote intention relative to approval is smaller or non-existent once partisan dealignment occurs and/or amongst individuals without a PID.

As the dynamics in government support are likely to be different before and after reunification, the following analysis is restricted to the former – the period up to the last election held before reunification – 25 January 1987. This has the advantage of avoiding the complications of the divide between East and West Germany.[42]

German government popularity contains a clear inter-election cycle.[43] The cycle has its nadir between elections and appears to peak just after each election: March 1983; January 1987; December 1990; October 1994; and September 1998. Testing for this cycle and a potential trend can be done by regressing the popularity time series on cycling and trending variables.[44] A statistically significant trend is found for approval but not vote intention. However, the approval trend is substantively very small (0.06 percentage points per month) and positive. A statistically significant inter-election cycle exists for both German government approval and vote intention. The phase difference between the two inter-election cycles is such that the approval peaks and troughs precede the vote intention peaks and troughs by one to two months. This is consistent with the assumption that changes in approval temporally precede changes in vote intention.

To test this assertion further, a standard VAR model was fitted to the detrended/decycled approval and vote intention data. Lag-order selection statistics again all indicate that models with only a single lag are required. The results of this estimation are presented in Table 1. As with the British case, the Lagrange-multiplier test for autocorrelation in the residuals of the model suggests that a model with only a first-order lag is appropriate.

[41] The Appendix, Note 3, in the Supplementary Materials on the website ⟨journals.cambridge.org/jps⟩, provides a translation of these questions.

[42] These complications include the fact that the New Federal States (former East Germany) are substantively different, both economically and politically, from the Old Federal States (Lars P. Feld and Gebhard Kirchgässner, 'Official and Hidden Unemployment in the Popularity of the Government: An Econometric Analysis for the Kohl Government', *Electoral Studies*, 19 (2000), 333–47).

[43] See the Appendix, Note 2, in the Supplementary Materials on the website ⟨journals.cambridge.org/jps⟩, for the relevant figure.

[44] The cycling is captured by including two terms in the regression: $[\Theta_1(\sin(\lambda\Theta)]$ and $[\Theta_2(\cos(\lambda\Theta)]$, where Θ_1 and Θ_2 are the parameters to be estimated and λ is the frequency (1/wavelength) of the popularity cycle, which is defined by the length of the inter-election period. Estimated parameters Θ_1 and Θ_2 can be used to calculate the phase$= cos^{-1}\left(\frac{\Theta_1}{amplitude}\right)$ for the inter-election cycle.

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TABLE 3A *ECM Economic Popularity Functions for Germany, 1982–87*

	Germany 1982–87 (all respondents)			
	Government Approval		Vote Intention	
	Coef.	95% CI	Coef.	95% CI
Short-run dynamics				
ΔGrowth$_{t-1}$	0.16	−0.9, 1.2	−0.11	−1.1, 0.8
ΔInflation$_{t-1}$	−2.81	−5.8, 0.2	−2.22	−4.9, 0.4
ΔUnemployment$_{t-1}$	−2.25	−15.2, 10.9	3.81	−7.9, 15.6
ΔTrend	72.11**	18.7, 124	50.51**	6.3, 94.3
Error Correction Rate	−0.56**	−0.8, −0.3	−0.66**	−1.0, −0.4
Equilibrium Relationships				
Growth$_{t-1}$	−0.61	−2.4, 1.2	−0.20	−1.5, 1.2
Inflation$_{t-1}$	−4.80**	−8.4, −0.9	−3.19**	−6.1, −0.5
Unemployment$_{t-1}$	−6.66	−20.0, 4.8	−1.54	−11.0, 7.2
Trend	−0.44**	−0.8, −0.1	−0.37**	−0.6, −0.1
σ^2 (η_t)	0.15**	0.1, 0.2	0.18**	0.1, 0.3
	Q-stat	P-value	Q-stat	P-value
Portmanteau Q-test (η_t)	27.11	0.21	15.79	0.83
DIC w/o economic variables	251.85		246.71	
DIC w/ economic variables	244.19		237.74	

**Significant at a 95% confidence level.

Despite the suggestive evidence from the cycle phase difference, the VAR results suggest that neither vote intention nor government approval Granger causes the other. The Granger causality tests confirm this. It would seem that in the context of a more complicated mixed member proportional electoral system and coalition governments, the causal relationship between vote intention and government approval is less straightforward than in Britain with its first-past-the-post electoral system and single party (often majority) governments. The blurred causal relationship is predicted by Implication 4 and is not unexpected from an institutional perspective.

Although the causal relationship between approval and vote intention in Germany is not as evident as in Britain, the common dynamics strongly suggest that approval and vote intention are responding to similar stimuli. The correlation between the two measures is a highly significant 0.70.[45] One of these mutual stimuli could certainly be the economy. Therefore, once again, ECM economic popularity functions were developed using each of the measures of popularity in order to test the differential effect of the economy on approval and vote – Implication 2.[46]

The economic variables included in the models were growth in gross domestic product (GDP), inflation and unemployment.[47] As with the estimated British ECMs, the Portmanteau Q-tests indicate that each of the model residuals (η_t) is a white noise process, as we would expect if the model has been properly specified, and the Deviance Information Criterion (DIC) values indicate that including economic variables produces models that fit the data better (see Table 3a).

[45] The correlation is also relatively large at the individual level, ranging in any given month from 0.6 to 0.7.

[46] As before, the assumption of covariance stationarity requires that non-stationary dynamics be accounted for in the models. As it turns out though, once economic variables are included in the following models, the inter-election cycle is statistically insignificant. Therefore, for the sake of efficiency, the ECMs only include the trending term.

[47] For a description of the economic data used in these models, see the Appendix, Note 4, in the Supplementary Materials on the website ⟨journals.cambridge.org/jps⟩.

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TABLE 3B *ECM Economic Popularity Functions for Germany, 1982–87*

	Germany 1982–87 (Partisans)				Germany 1982–87 (Independents)			
	Government Approval		Vote Intention		Government Approval		Vote Intention	
	Coef.	95% CI	Coef.	95% CI	Coef.	95% CI	Coef.	95% CI
Short-run dynamics								
ΔGrowth$_{t-1}$	0.07	−1.2, 1.4	0.03	−1.1, 1.1	0.43	−0.9, 1.7	−1.47	−3.2, 0.3
ΔInflation$_{t-1}$	−2.30	−6.0, 1.4	−1.89	−5.0, 1.2	−4.07**	−7.7, −0.4	−4.88**	−9.5, −0.2
ΔUnemployment$_{t-1}$	−1.18	−17, 15	−0.23	−14.0, 13.8	−1.39	−17.4, 14.8	17.38	−2.7, 37.7
ΔTrend	76.80**	13.9, 139	69.75**	14.4, 124	95.19**	35.0, 154	50.10**	17.3, 116
Error Correction Rate	−0.57**	−0.9, −0.3	−0.72**	−1.0, −0.4	−0.89**	−1.2, 0.6	−1.30**	−1.6, −1.0
Equilibrium Relationships								
Growth$_{t-1}$	−0.64	−2.8, 1.5	−0.19	−1.6, 1.2	−0.08	−1.3, 1.2	−0.87	−1.9, 0.2
Inflation$_{t-1}$	−5.68**	−10.2, −1.2	−2.93**	−6.0, −0.1	−4.20**	−6.8, −1.5	−3.31**	−5.5, −1.1
Unemployment$_{t-1}$	−6.58	−22.0, 7.3	−4.34	−13.3, 5.6	−4.34	−14.1, 3.2	3.25	−3.9, 10.2
Trend	−0.50**	−0.9, −0.1	−0.35**	−0.6, −0.1	2.39**	−0.6, −0.2	−0.40**	−0.6, −0.2
σ^2 (η_t)	0.10**	0.06, 0.1	0.13**	0.1, 0.2	0.10**	0.06, 0.1	0.06**	0.04, 0.1
	Q-stat	P-value	Q-stat	P-value	Q-stat	P-value	Q-stat	P-value
Portmanteau Q-test (η_t)	27.11	0.21	15.79	0.83	28.09	0.17	24.43	0.33

**Significant at a 95% confidence level.

During the pre-unification period, inflation is found to have a significant, long-term and negative effect on both approval and vote intention. As theory predicts, this effect is smaller for vote intention than approval. The effect of inflation on vote intention is only 66 per cent of that on approval. It is also possible to compare economic models for partisans and independents (see Table 3b). Starting with the latter, short-run as well as long-run inflation effects are found for both government approval and vote intention. As Implication 3c predicts, the overall effect of inflation on vote intention is essentially equivalent to that for approval.

No short-run economic effects are found amongst partisans. Long-run effects are found for inflation, with larger effects found for approval compared to vote intention. The effect of inflation on vote intention is only 52 per cent of that on approval, a greater difference than that found for all respondents. Overall, it is clear that the difference in economic effects between approval and vote intention as suggested by Implication 2 is strong amongst partisans and non-existent amongst independents – this is as predicted by Implication 3c.

MEASURES OF GOVERNMENT SUPPORT IN THE UNITED STATES

The long-standing depiction of American party identification is of a psychological identification which, once established, is an attachment not easily changed.[48] From this perspective, voting against one's party identification is viewed as a rare exception.[49] The PID literature of the 1960s and 1970s commonly describes a decline in PID and a more flexible partisanship.[50] The literature of the 1980s and 1990s describes a PID resurgence, some arguing that partisan voting is stronger now than during the 1970s.[51] Arguments have been made against both the initial decline and the resurgence.[52] Upswing or downswing, the overwhelming majority of the literature from the past forty years, suggests that even if party identification does change, it only does so slowly, at least in terms of direction.[53]

As for political institutions, the two-party presidential system of the United States provides few incentives for strategic voting among supporters of the two major parties. The primary strategic considerations are for those in the minority who might consider voting for a third party.[54] The indirectness of the vote through the Electoral College may produce strategic considerations for the

[48] Campbell, Converse, Miller and Stokes, *The American Voter*.

[49] Miller and Stokes, 'Constituency Influence in Congress'.

[50] Benjamin I. Page and Calvin C. Jones, 'Reciprocal Effects of Policy Preferences, Party Loyalties, and the Vote', *American Political Science Review*, 73 (1979), 1071–89; Gregory B. Markus and Philip E. Converse, 'A Dynamic Simultaneous Equation Model of Electoral Choice', *American Political Science Review*, 73 (1979), 1055–70; Fiorina, *Retrospective Voting in American National Elections*.

[51] Warren E. Miller, 'Party Identification, Realignment, and Party Voting: Back to the Basics', *American Political Science Review*, 85 (1991), 557–68; Larry M. Bartels, 'Partisanship and Voting Behaviour, 1952–96', *American Journal of Political Science*, 44 (2000), 35–50; and Larry M. Bartels, 'The Impact of Electioneering in the United States', in David Butler and Austin Ranney, eds, *Electioneering: A Comparative Study of Continuity and Change* (Oxford: Clarendon Press, 1992), pp. 244–77.

[52] For arguments against the decline, see: Donald Green and Bradley Palmquist, 'How Stable is Party Identification', *Political Behaviour*, 43 (1994), 437–66; and Donald Green and Bradley Palmquist, 'Of Artefacts and Partisan Instability', *American Journal of Political Science*, 34 (1990), 872–902. For the arguments against the resurgence, see: Morris Fiorina, 'Parties and Partisanship: A 40-Year Retrospective', *Political Behaviour*, 24 (2002), 93–115.

[53] See Richard Johnston, 'Party Identification: Unmoved Mover or Sum of Preferences?', *Annual Review of Political Science*, 9 (2006), 329–51. There is evidence that the strength of partisan attachment can be relatively volatile (Dee Allsop and Herbert Weisberg, 'Measuring Change in Party Identification in an Election Campaign', *American Journal of Political Science*, 32 (1988), 996–1017; and Richard A. Brody and Lawrence S. Rothenberg, 'The Instability of Partisanship: An Analysis of the 1980 Presidential Election', *British Journal of Political Science*, 18 (1988), 445–65), but it is the stability of the individual-level direction that is of relevance here.

[54] Maurice Duverger, *Political Parties* (New York: Wiley, 1964).

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parties during campaigns but not for the individual voter.[55] The combination of such electoral institutions with prevalent, psychologically rigid PID suggests that the United States is a strong case for the first two empirical implications (Implications 1 and 2) of the theoretical model developed above: vote intention will be more stable than approval ratings over time; and for a given change in economic or political conditions, the effects will be larger on approval than vote intention.

To test these implications, US presidential popularity starting three months following George W. Bush's election in 2000 is used. After its upward spike during the events of 9/11, Bush's popularity had, with few exceptions, been on a steady decline. Despite impressions that Bush's presidency had been unusual, the general downward trend in popularity over his term and even the rallying of support around the president during a national crisis are fairly typical of the dynamics in presidential popularity.[56] The approval series has a mean squared perturbation (MSP) of 7.09. This represents the popularity data as collected by Gallup using the question, 'Do you approve or disapprove of the way George W. Bush is handling his job as president?' and are the data commonly used as the dependent variable in US economic popularity models.[57]

The use of presidential popularity, rather than vote intention, in US economic popularity studies is generally necessitated by the lack of consistent vote intention data. This is a consequence of the presidential system. In a parliamentary system, it is straightforward to ask which of the existing parties an individual might vote for if an election were held that day or the next day. Generally, the existing selection of parties is known. In a presidential system, it is rare that both presidential candidates are known in advance.

However, this does not prevent polling companies from speculating. Preceding Bush's re-election in 2004, a number of polling companies, on a monthly basis, posed hypothetical election scenarios to the voting public. In doing so, they suggested likely Democratic candidates and asked individuals if they would vote for Bush or the Democratic candidate if a presidential election were held that day. It seems plausible that these hypothetical vote intention scenarios could be combined to produce a vote intention series.

The difficulty is that the data come from a number of different polling companies and utilize a variety of different Democratic presidential possibilities. Fortunately, polling houses were using John Kerry as a hypothetical Democratic candidate as far back as November 2002. These questions need only be combined with those using the generic 'the Democratic candidate' as the choice in order to produce a monthly vote intention series leading up to the 2004 election. Clearly though, the choice of Democratic candidate – Kerry or an unknown – could produce a different vote intention result. Almost as clear is the fact that each polling house will be likely to have its own methodological biases for or against a given party – known as house bias.[58]

Robert Erikson and Christopher Wlezien provide a straightforward method of removing house bias from estimates of vote intention.[59] The essence of their approach is to regress the vote intention results on a series of dummy variables. Each polling house but one is represented with a dummy variable; the unidentified house serves as the reference category. Similarly, each month is represented by a dummy variable.[60] The coefficient for each month then becomes the basis for a house-controlled estimate of vote-intention readings for the reference firm.

[55] Richard Johnston, Michael G. Hagen and Kathleen Hall Jamieson, *The 2000 Presidential Election and the Foundations of Party Politics* (Cambridge: Cambridge University Press, 2004).

[56] Richard A. Brody, *Assessing the President: The Media, Elite Opinion, and Public Opinion* (Stanford, Calif.: Stanford University Press, 1991).

[57] Data obtained from Polling Report Web Site: www.pollingreport.com/BushJob.htm.

[58] Pickup and Johnston, 'Campaign Trial Heats as Election Forecasts'; Erikson and Wlezien, 'Presidential Polls As a Timeseries'; Philip E. Converse and Michael W. Traugott, 'Assessing the accuracy of polls and surveys', *Science*, No. 234, 28 November 1986, pp. 1094–8; and Richard R. Lau, 'An Analysis of the Accuracy of "Trial Heat" Polls during the 1992 Presidential Election', *Public Opinion Quarterly*, 58 (1994), 2–20.

[59] Erikson and Wlezien, 'Presidential Polls as a Timeseries'.

[60] No constant is included in the model, so no month needs to be excluded as a reference.

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This approach can be extended to control for the fact that Kerry was not always used as the Democratic choice in the vote question by including an additional dummy variable indicating the use of the generic candidate. The reference Democratic candidate is then Kerry, just as is the excluded polling house.[61]

Using this technique to estimate a hypothetical vote intention series from November 2002 until the 2004 election produces a vote intention series containing dynamics similar to approval, including a downward trend that settles out in early 2004. The two series correlate at a highly significant 0.9. The vote intention series ends in November 2004 at an election prediction of 49.4 per cent of the two-party vote, which reflects the dead heat predicted by the last published election poll.

Vote intention only contains 48 per cent of the monthly movement of the approval series. Once again, this is consistent with Implication 1 and the theory that measures of approval are more sensitive to short-term performance-related considerations (including economic performance) than measures of vote intention, which, conversely, are held more rigid by the long-term considerations of partisanship.

The difference in the volatility of presidential approval compared to vote intention is greater than that found in Britain and post-reunification Germany, and smaller than that in pre-reunification Germany. Empirical Implication 3a and the strong PID in the United States relative to Britain, but not pre-reunification Germany, predicts this finding.

The number of time points (25) during this period is too small to allow for a proper VAR analysis but it is possible to run ECM models to estimate economic effects on presidential approval and vote intention. The economic variables included in these models are economic growth, inflation and change in employment levels.[62] Variables controlling for the impact of 9/11 and the Iraq war are included. The latter variable is a cumulative count of US casualties. Once this variable was included, a variable was no longer required to account for the downward trend in presidential support.

The ECM results (Table 2) show that increases in employment levels during this period had a positive and significant impact on presidential approval. Despite the high correlation and similar dynamics between approval and vote intention, this effect completely disappears for vote intention. Unlike the British or German cases, vote intention does not exhibit any economic influence. This confirms Implication 2 and is completely consistent with empirical Implication 3a – the difference in economic effects between approval and vote intention is particularly strong in the high PID environment of US politics. This strongly highlights the need to be cautious when using economic popularity models that utilize approval to support economic voting theories.

THE LESSON

Comparing the analyses across the three cases suggests a series of interesting results and an important lesson for developers of economic popularity functions. The results describe a compelling story of how the political context of partisan identification can dampen the effect of economic conditions on vote intention. The dynamics of vote intention and approval in the United States, Britain and Germany are consistent with a model of vote intention in which short-term considerations that are reflected in the relatively more volatile movements within approval have to reach a certain magnitude before they overcome the long-term partisan considerations that hold vote intention rigid. Predictably, this causes the effects of economic performance to be greater for approval than vote intention.

In the United States where partisanship is rigid, economic effects found for approval disappear for vote intention. In the context of similarly strong partisanship, as in pre-unification Germany, an

[61] As this is a fairly standard technique discussed at length elsewhere, the details of the estimation are relegated to the Appendix, Note 7, in the Supplementary Materials on the website ⟨journals.cambridge.org/jps⟩. For a more lengthy discussion on this technique, see Pickup and Johnston, 'Campaign Trial Heats as Election Forecasts'.

[62] For a description of the economic data, see the Appendix, Note 4, in the Supplementary Materials on the website ⟨journals.cambridge.org/jps⟩.

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approximately 50 per cent reduction in economic effects is found between approval and vote intention for party identifiers. However, amongst non-identifiers in Germany, no reduction between approval and vote intention is found. In the context of relatively weak party identification, as in Britain, economic effects are generally stronger, but even still, short-term economic effects found for approval disappear for vote intention and long-term effects are substantially weakened. Hence, the lesson of this Research Note: at the very least, economic effects are inflated by the use of approval relative to the use of vote intention as a measure of government support in economic popularity models. The use of approval over vote intention may even suggest economic effects that do not translate at all into vote intention.

These findings are of particular importance to US economic popularity models where vote intention series are not readily available. They are also relevant to any economic popularity study that includes a case with a presidential system, such as the much-studied France or the increasing number of Latin American studies.[63] As stated at the outset, modelling the impact of the economy on approval remains an important exercise. After all, it can be argued that high approval levels help a president or government push forward with their agenda and/or affect its policy goals.[64] Moreover, an aspect of voting is signalling policy preferences to policy makers and a poll can also be a means of such signalling, whether it is a poll of vote intention or approval.[65] Finally, nothing in the preceding analysis suggests that approval cannot be effectively used as a predictor in an election forecast model. However, it has been clearly demonstrated that modelling the impact of the economy on approval is not the same as modelling the impact of the economy on vote intention. Therefore, when using presidential approval data, we need to be cautious about the claims that we make about the ability of our models to determine the effect of the economy on vote intention and therefore test theories of electoral accountability, the reward–punishment hypothesis, or the work of Key or Downs.

The worst-case scenario is that these models are inappropriate for these particular purposes, if a realistic vote-intention time series is not available. The good news is that there may be periods in the election cycle of a presidential system in which a reasonable vote-intention series can be constructed, as this study has shown. Moreover, the analyst of economic voting still has at her disposal the economic vote model[66] – which traditionally produces more robust results anyway – as a reliable approach to testing economic vote theories. In fact, this study provides a potential explanation for the uncomfortable inconsistencies between economic vote and economic popularity studies. The difference in the dependent variable really does matter.

[63] France: J.-D. Lafay, 'Political Change and Stability of the Popularity Function: The French General Election of 1981', in H. Eulau and M.S. Lewis-Beck, eds, *Economic Conditions and Electoral Outcomes: The United States and Western Europe* (New York: Agathon, 1985), pp. 78–97; and J.-D. Lafay, 'Political Dyarchy and Popularity Functions: Lessons from the 1986 French Experience', in Norpoth, Lewis-Beck, and Lafay, eds, *Economics and Politics,* pp. 123–39. Latin America: Kurt Weyland, 'Peasants or Bankers in Venezuela? Presidential Popularity and Economic Reform Approval, 1989–1993', *Political Research Quarterly*, 51 (1998), 341–62; and Charles L. Davis and Ronald E. Langley, 'Presidential Popularity in a Context of Economic Crisis and Political Change: The Case of Mexico', *Studies in Comparative International Development*, 30 (1995), 24–48.

[64] George C. Edwards III, 'Riding High in the Polls: George W. Bush and Public Opinion', in Colin Campbell and Bert Rockman, eds, *The George W. Bush Presidency: Appraisals and Prospects* (Washington, D.C.: Congressional Quarterly Press, 2004), pp. 16–45; George C. Edwards III, *Presidential Influence in Congress* (San Francisco: W. H. Freeman, 1980); and Paul Brace and Barbara Hinckley, *Follow the Leader: Opinion Polls and the Modern Presidents* (New York: Basic Books, 1992).

[65] Peter Nannestad and Martin Paldam, 'The VP-function: A Survey of the Literature on Vote and Popularity Functions after 25 Years', *Public Choice*, 79 (1994), 213–45.

[66] Such models use actual electoral outcomes as the dependent variable.

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