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An Econometric Evaluation of Competing Explanations for the Midterm Gap

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ABSTRACT

This paper provides a unified theoretical and empirical analysis of three long-standing explanations for the consistent loss of support for the president's party in midterm Congressional elections: (1) a presidential penalty, defined as a preference for supporting the opposition during midterm years, (2) a surge and decline in voter turnout, and (3) a reversion to the mean in voter partisanship. To quantify the contribution of each of these factors, an econometric model is developed in which voters jointly choose whether or not to participate and which party to support in both house and presidential elections. Estimated using ANES data from both presidential and midterm years, the model can fully explain the observed midterm gaps, and counterfactual simulations demonstrate that each factor makes a sizable contribution towards the midterm gap, with the presidential penalty playing the largest role.

Keywords: Midterm gap; voting behavior; presidential politics; congress

One of the most striking empirical regularities in American politics involves the midterm gap, under which the president's party routinely loses seats in Congressional elections held during midterm years. Since 1876, the president's party has lost seats in all cases except for 1934, 1998, and 2002 (Folke and Snyder, 2012). Recent cases with large swings include 1974, when President

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Ford's party lost 48 out of 435 seats in the house and 4 out of 100 seats in the senate, 1994, when President Clinton's party lost 54 seats in the house and 9 seats in the senate, and 2010, when President Obama's party lost 63 seats in the house and 6 seats in the senate.

A long literature in political science develops and tests hypotheses regarding different mechanisms underlying this midterm gap, and this paper addresses three such long-standing hypothesized mechanisms. First, due to a presidential penalty, midterm voters, conditional on participating, may have a preference for the opposition and express this preference in the voting booth. This preference could reflect, among other factors, a dissatisfaction with the president's performance or a preference for divided government. Second, there may be a surge and decline in voter turnout, with supporters of a strong presidential candidate energized to participate in the presidential year but not turning out to vote in midterm years. Third, there could be a reversion to the mean in voter partisanship, with the president's party advantaged in Congressional races during the presidential year before partisanship returns to its normal state in the midterm year.

To quantify the contribution of each of these factors, a statistical model is developed in which voters jointly choose whether or not to participate and, conditional on participating, which party to support in both house and presidential elections. To accommodate the presidential penalty hypothesis, the model allows for a simple preference to vote against the president's party in midterm years. To accommodate the surge and decline hypothesis, the model allows for differences in quality between presidential candidates, leading to an increase in turnout among supporters of the higher quality candidate and a subsequent decline in turnout during the midterm year. Finally, to accommodate the reversion to the mean hypothesis, the model allows for the distribution of voter partisanship to change between presidential and midterm years. This statistical model is then estimated using survey data from both presidential and midterm years. Finally, counterfactual simulations, in which the three underlying mechanisms are removed from the model, quantify the contribution of each factor.

Related literature

As noted above, the focus here is on evaluating three of the leading explanations for the midterm gap. The first explanation involves voters simply having a preference for voting against the president's party in midterm years, and this is referred to as presidential penalty. Within this category, there are

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several underlying explanations for *why* voters may prefer the opposition party in midterm years. First, the electorate may use the midterm year as a referendum on the president's performance, and if voters have systematically high expectations for presidential performance, then voters may routinely vote against the president's party.[1] Second, as developed by Alesina and Rosenthal (1989, 1996), the presidential penalty may involve a preference among voters for moderate policies, which are more likely to be implemented under a divided government. In presidential years, the outcome of the presidential election is uncertain, and voters thus cannot condition on the party of the president when choosing which party to support in the house election.[2] In the midterm year, by contrast, this uncertainty is eliminated, and voters can choose to vote against the president's party, generating divided government and hence moderate policies.[3]

A second theory, known as surge and decline, involves differences in turnout between presidential and midterm years. Although it is well-known that turnout is lower in midterm years, the idea here is that the electorate may be systematically different between presidential and midterm years. Following Campbell (1987), short-term factors, such as candidate quality, affect preferences over presidential candidates.[4] Based upon this difference, supporters of the advantaged party in the presidential election are more likely to participate, boosting the vote share of house candidates affiliated with the advantaged presidential candidate. Supporters of the disadvantaged party, by contrast, are "cross-pressured" and may choose to abstain, depressing the vote share of house candidates affiliated with the disadvantaged presidential candidate. These differences go away in midterm years, leading to a loss in support for the president's party. As shown in the next section, these theories of voter turnout can be naturally accommodated in a model that includes expressive voting and candidates with differing levels of quality.

[1]Indeed, Tufte (1975) suggests that midterm gaps reflect the dissatisfaction of the electorate with the performance and management of the economy by the president's party.

[2]Of course, voters may have a good sense of the outcome of the presidential election and may thus engage in anticipatory balancing even in presidential years (Erikson, 2010).

[3]Scheve and Tomz (1999) find support for this idea in an analysis of individual survey data from the National Election Studies (NES). In particular, they find that moderate voters are more likely to vote for the opposition in midterm elections when they have been surprised by the outcome of the previous presidential election.

[4]In earlier work on surge and decline, Campbell (1960) defined two types of voters: core voters, who are affiliated with one party and always turn out to vote, and peripheral voters, who are not necessarily tied to a party and turn out to vote only in presidential years. Because peripheral voters are more responsive to short-term political factors, the advantaged party in presidential years benefits in both house and presidential races. These peripheral voters abstain in the midterm elections and these elections are thus decided by core voters, who are less responsive to short-term factors, and the president's party loses seats.

The third theory involves a reversion to the mean in voter partisanship. According to this view, voter partisanship shifts over time in aggregate, with some elections being held with a Democratic-leaning electorate and others being held with a Republican-leaning electorate. If voters are leaning in one direction in a presidential year, this increases support for both the presidential and house candidates from the advantaged party. If this support disappears in the midterm year, then the president's party loses support.[5]

Related work examining these mechanisms underlying the midterm gap can be grouped into two categories, those using aggregate election returns (and, in some cases, aggregate polling data) and those using individual-level survey data. Regarding those using aggregate data, Folke and Snyder (2012) conduct a regression discontinuity design in the context of gubernatorial elections. Their key finding is that the governor's party loses seats in the state legislature in subsequent midterm elections even when the governor narrowly won. They interpret this finding as evidence in favor of the presidential penalty hypothesis because reversion to the mean and surge and decline should not depend upon which party wins close elections. Fair (2009) estimates vote-share equations for presidential elections, house elections held during presidential years, and house elections held during midterm years. He finds that the presidential vote share has a negative effect on the subsequent midterm house vote share, a finding that he attributes to balancing by voters. Levitt (1994), who used district-level data between 1948 and 1990, found a strong role for withdrawn coattails and systematic punishment of the president in midterm elections. Bafumi *et al.* (2010) use polling data at different points during midterm campaigns and find that support for the president's party in midterm years weakens as election day approaches, suggesting that voters are engaged in partisan balancing. Although these studies have the benefit of being able to exploit more variation over time and across Congressional districts, they lack information on voter partisanship and are thus not well-suited to examine reversion to the mean in partisanship. Likewise, they do not investigate voter turnout and are thus not well-suited to examine the surge and decline mechanism.

The most closely related tests of these theories are Mebane (2000) and Mebane and Sekhon (2002), who use individual-level survey data to jointly analyze the choice of candidates by voters and the turnout decision. Although Mebane and Sekhon (2002) find support for the balancing theory, it explains only a small part of the midterm gap. They also show that the policy preferences of voters in midterm years move away from the policy preferences of the president's party's but that there is a similar pattern for non-voters, casting doubt on the surge and decline hypothesis. Finally, they show that the midterm gap can be explained by the policy preferences of midterm voters

[5]See, for example, Hinkley (1967), McDonald and Robin (2006), and Oppenheimer *et al.* (1986).

moving away from the president's party and towards the opposition party. Although Mebane and Sekhon (2002) focus on midterm years, Mebane (2000) has estimated similar models during presidential years.[6] Note that these studies do not examine reversion to the mean in partisanship.

My paper makes several contributions relative to these analyses. First, my paper is the first in this literature to explicitly link the intensity of voter preferences over candidates to turnout, with a focus on how this turnout decision differs between presidential years, when voters have preferences over two sets of candidates, and midterm years, when voters choose between one set of candidates. On the issue of turnout differences, see also Degan and Merlo (2008), who examine selective turnout (roll-off) in presidential elections. More importantly, this paper is the first that unifies all three hypothesized mechanisms, the presidential penalty, surge and decline, and reversion to the mean in voter partisanship, into a single theoretical and statistical framework. As noted above, Folke and Snyder (2012) and other studies using aggregate voting returns tend to examine the presidential penalty mechanism but not surge and decline and reversion to the mean. Likewise, as noted above, Mebane (2000) and Mebane and Sekhon (2002) examine balancing and surge and decline but do not examine reversion to the mean in voter partisanship.

A unified theoretical model

This section develops a simple model that generates a midterm gap according to the three mechanisms that have been prominently featured in the existing literature. Note that the goal is to incorporate these three mechanisms into a single model, and, given this, the model simply assumes for now that each mechanism is operational. To the extent that a mechanism does not exist in practice, the econometric exercise places little weight on the set of parameters supporting that mechanism. For example, to the extent that supporters of the president's party are not less likely to participate in midterm elections, then the econometric exercise places less weight on the surge and decline hypothesis. Given this singular focus on decomposing the midterm gap into the three components identified in the existing literature, the model also abstracts from many prominent theories of voting and turnout, such as the pivotal voter model.

The model considers elections for two offices, house and president, and two scenarios for the ballot. In a presidential year, participating voters choose candidates in both house and presidential elections. In midterm years, participating voters choose candidates only in house elections knowing the party of the president. This analysis first considers how voters, conditional on

[6] See also Born (1990).

participating, choose candidates in presidential and house elections. Taking these choices as given, the analysis then examines the participation decision and how it differs between midterm years and presidential years.

Candidate choice in presidential elections

Consider first the voter's choice, conditional on participation, between presidential candidates. A set of eligible voters, indexed by v, choose between two candidates for president ($p \in \{D, R\}$) Voters differ in terms of their partisanship (i_v), with increases in partisanship associated with a movement to the right on the partisan spectrum (i.e. more conservative voters). Partisanship is assumed to be centered at zero, and these voters are neutral with respect to parties. Voters with partisanship less than zero, all else equal, have a preference for Democratic candidates, and voters with partisanship greater than zero, all else equal, have a preference for Republican candidates.

Candidates differ in terms of their valence or quality (q_p), which is valued equally by voters across the partisan spectrum and can be interpreted as the productivity, integrity, or honesty of the candidate. In addition, candidates differ in terms of their partisanship (i_p), with movements in partisanship away from zero being associated with more extreme candidates. Voters have a preference for like-minded candidates and experience a squared loss as the partisanship of the candidate moves away from the partisanship of the voter. Taken together, voter v receives the following payoff from candidate p winning the election:

$$U_{vp} = q_p - \frac{\omega^P}{2}(i_v - i_p)^2$$

where ω^P captures the importance of partisanship, relative to quality, for voters in the presidential election, indexed by P. Candidate ideologies are normalized such that they are centered around zero. That is, $i_R = -i_D = \kappa_P/2$.[7] Then, defining Δ_v^P as the utility difference between electing the Republican and electing the Democrat for voter v and defining relative quality as $\Delta q^P = q_R - q_D$, it is the case that:

$$\Delta_v^P = U_{vR} - U_{vD} = \Delta q^P + \omega^P \kappa^P i_v$$

As shown, this difference is increasing in the quality difference between the Republican and Democratic candidates and in voter partisanship. Also, voter partisanship plays a stronger role when candidates are polarized (κ^P large) and when voters place more weight on partisan differences (ω^P large). Finally, voters, conditional on participating, support the Republican in the presidential election ($R^P = 1$) if and only if $\Delta_v^P > 0$.

[7] Centering candidate ideologies around zero assumes away the possibility that one candidate may be more moderate than the other. This issue is addressed in the empirical section to follow.

Candidate choice in house elections

Consider next the voter's choice, again conditional on participating, in the house election, indexed by H. Voters again choose between two candidates $h \in \{D,R\}$. To focus on quality in the presidential election, which has been one of key issues in the literature on presidential coattails and the midterm gap, the model abstracts from differences in quality for house candidates. That is, assume that $\Delta q^H = 0$. Note that this assumption is relaxed to some extent in the econometric analysis to follow by allowing for average differences in quality between the Republican and Democratic house candidates. Also, let ω^H denote the importance of partisanship for voters in house elections, and let κ^H represent the degree of polarization between house candidates.

In a house election held during a presidential year, there is no consideration of punishing the party of the sitting president in the model and utilities are thus given by:

$$U_{vh} = -\frac{\omega^H}{2}(i_v - i_h)^2$$
$$\Delta_v^H = \omega^H \kappa^H i_v$$

Again, voters, conditional on participating, support the Republican house candidate ($R^H = 1$) if and only if $\Delta_v^H > 0$, and this is more likely when voters are right-leaning.

During midterm years, allow for the possibility of a penalty against the party of the sitting president. Let $I \in \{0, 1\}$ indicate whether the incumbent president is a Republican during a midterm year, and let ρ, which is hypothesized to be negative, denote a penalty in midterm years imposed by voters on the president's party. Then, it is the case that:

$$\Delta_v^H = \omega^H \kappa^H i_v + \rho(2I - 1)$$

As shown, when the incumbent president is a Republican, the willingness to support Republican house candidates falls. Likewise, when the president is a Democrat, the willingness of voters to support Republican house candidates increases.

Participation decision

Recall that the idea behind the revised theory of surge and decline is that the voters from the advantaged party in presidential elections are energized to vote and that voters from the disadvantaged party are cross-pressured and may choose to abstain. One natural way to formalize this notion is to extend the model of expressive voting, as developed in Fiorina (1976) and interpreted by Mueller (2003), to bundled elections.

In Mueller's formulation, voters participate in a midterm election if $p_v^H B_v^H + B_v^H > c_v$, where p_v^H is the probability that voter v is pivotal in the house election, B_v^H is the preference intensity for voter v, and c_v is the cost of voting, which can be modified to include benefits, such as civic duty motivations, and may thus be negative. The first term $(p_v^H B_v^H)$ on the left-hand side represents the instrumental benefits of voting and captures strategic aspects. The second term (B_v^H) on the left-hand side represents the expressive benefits of voting and captures the desire of voters to express their preferences over the set of candidates by the act of voting, even when they are aware that participating does not alter the outcome of the election. In this model, expressive benefits equal $B_v^H = \beta_H |\Delta_v^H|$, where β_H is a parameter linking preference intensity to the expressive benefits of voting. Given that pivot probabilities are very small in large elections, this voting decision can be approximated by ignoring the first term and positing that voters turn out when the following condition holds:

$$\beta_H |\Delta_v^H| > c_v$$

Thus, voters who are indifferent between the two candidates tend to abstain. These voters tend to have weak partisan ties. Voters with strong partisan ties, by contrast, tend to participate in order to express their strong preference over the set of candidates.

The model is next extended to allow voters to express multiple opinions via participation in presidential years. Voters are assumed to consider the benefits from expressing their opinions over both sets of candidates. In particular, assume that voters place a value β_P of expressing their opinion in the presidential election. Then, voters participate if and only if the total benefits of voting exceed the costs of voting:

$$\beta_H |\Delta_v^H| + \beta_P |\Delta_v^P| > c_v$$

Comparing participation decisions across these two scenarios, it is clear that there are several important differences in turnout between presidential and midterm years. Consistent with well-known facts regarding voter participation, the model predicts that turnout is higher in presidential years so long as $\beta_P > 0$. This is due to the ability of voters to express multiple opinions in presidential years but only a single opinion in midterm years.

Midterm gaps and mechanisms

Figures 1–4 summarize the three mechanisms through which this simple model generates midterm gaps, defined as a loss in support for the president's party during midterm years. In each graph, the left side depicts a presidential year, and the right side depicts a midterm year. To ease the graphical presentation, note several additional assumptions. First, voter partisanship is normally

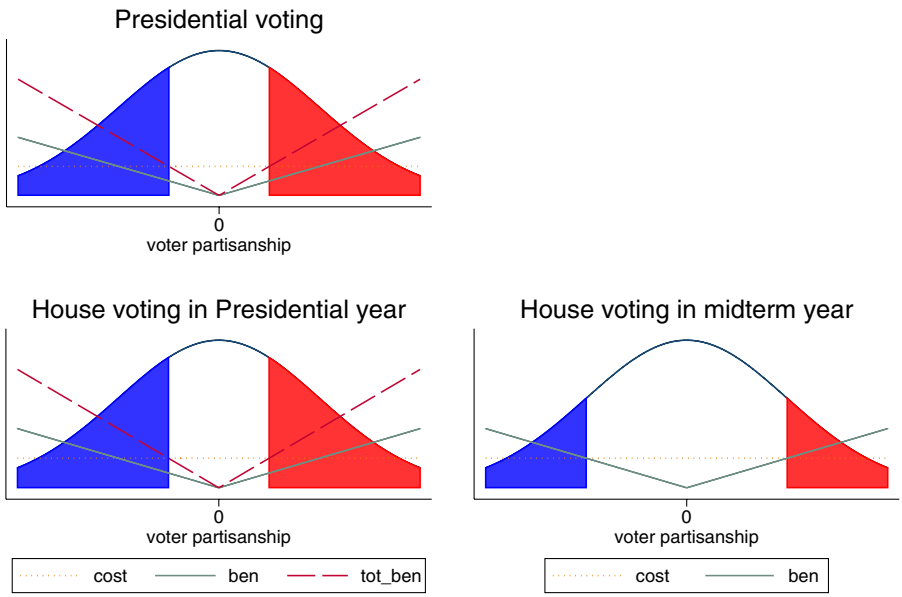

Figure 1: Baseline scenario with no midterm gap.

distributed and symmetric around zero in the baseline case to be described below. Assume also that voters have identical and positive costs of voting ($c_v = c > 0$, for all v). Finally, assume that presidential and house candidates from the same party have the same partisanship and that partisanship is equally valued by voters in house and presidential elections (i.e. $\omega^H \kappa^H = \omega^P \kappa^P$). These assumptions are not critical for the results, and all are relaxed in the empirical analysis to follow.

Figure 1 illustrates the baseline case of no midterm gap. Assume here that (a) there is no presidential penalty in midterm years ($\rho = 0$), (b) there is no difference in quality between the two presidential candidates ($\Delta q^P = 0$), and (c) the distribution of voter partisanship is stable across presidential and midterm years. Then, the indifferent voter in all elections has partisanship zero, and conditional on participating, voters with partisanship above zero support the Republican and voters with partisanship below zero support the Democrat. In terms of the turnout decision, voting costs, which, as noted above, are assumed to be uniform and positive for the purposes of this graph, are represented by the dotted line. Voters receive an expressive benefit (b) from voting in each election, and this is given by the solid line, which is V-shaped because the indifferent voter receives no expressive benefits from voting and benefits increase as voters become more extreme. In presidential years, voters

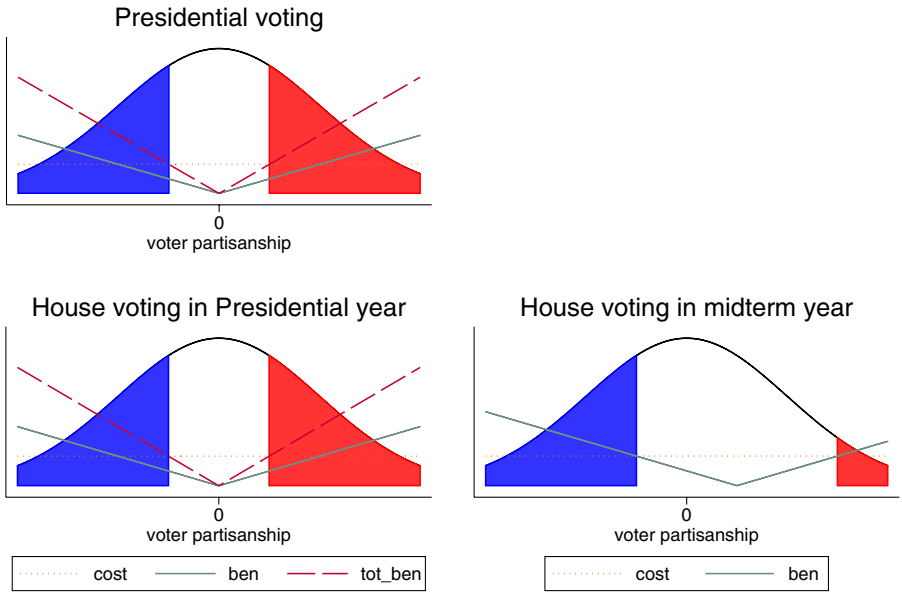

Figure 2: Midterm penalty with a Republican President.

receive two such expressive benefits, and this total benefit is given by the dashed line. Voters then choose to participate in presidential years when these combined expressive benefits exceed the costs of voting. As shown, this leads to higher participation in presidential years. In terms of electoral outcomes, the lighter area then depicts those who participate and support the Republican, and the darker area depicts those who participate and support the Democrat. As shown, Republican candidates receive 50 percent of the vote in all three elections, and there is no midterm gap because the president's party does not lose support in midterm years.

Figure 2 illustrates the case in which a midterm gap is due to a presidential penalty in midterm years ($\rho < 0$) but where the other two mechanisms are not in play. That is, continue to assume that there is no quality difference in the candidates for president and that the distribution of voter partisanship is stable across presidential and midterm years. A presidential penalty is generated in midterm years by simply assuming that a Republican won the presidential election via some tiebreaker, such as the flip of the coin. Voters then respond to a Republican president by punishing the party in the midterm year. In this case, the partisanship of the indifferent voter in the midterm year shifts to the right, expressive benefits of voting shift to the right, turnout increases on the left and falls on the right, and the Republican

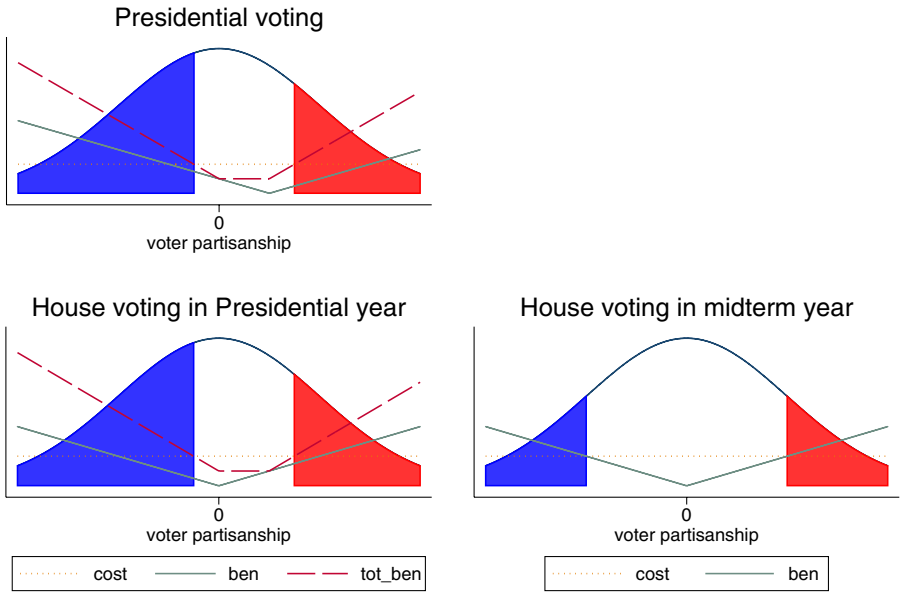

Figure 3: Surge and decline.

vote share falls.[8] To summarize, Figure 2 illustrates that a simple preference for voting against the president's party in midterm years generates a midterm gap.

Figure 3 illustrates the case in which a midterm gap is generated by a surge and decline in voter turnout. That is, assume now that there is no presidential penalty in the midterm year ($\rho = 0$) but that the Democratic candidate is of higher quality ($\Delta q^P < 0$). Continue to assume that the distribution of voter partisanship is stable across the two election years. As shown, an increase in the quality of the Democratic candidate shifts the partisanship of the indifferent voter to the right, and the expressive benefits of voting in the presidential election also shift to the right. This also shifts the total benefits of voting in the presidential year to the right, boosting turnout among core supporters on the left and depressing turnout among cross-pressured voters on the right.[9] As shown, this benefits house Democrats and hurts house Republicans, leading

[8] Although this graph depicts the presidential penalty in midterm years arising from changes in turnout, it could also be due to participants who shift their support to the Democrats in midterm years. To see this, consider the extreme case in which voting costs are zero for all voters and turnout is complete in both presidential and midterm years. In this case, the Republican vote share still falls due to moderate Republican voters shifting their support to the Democrats in the midterm year.

[9] Thus, the effect of a quality differential on aggregate turnout is ambiguous.

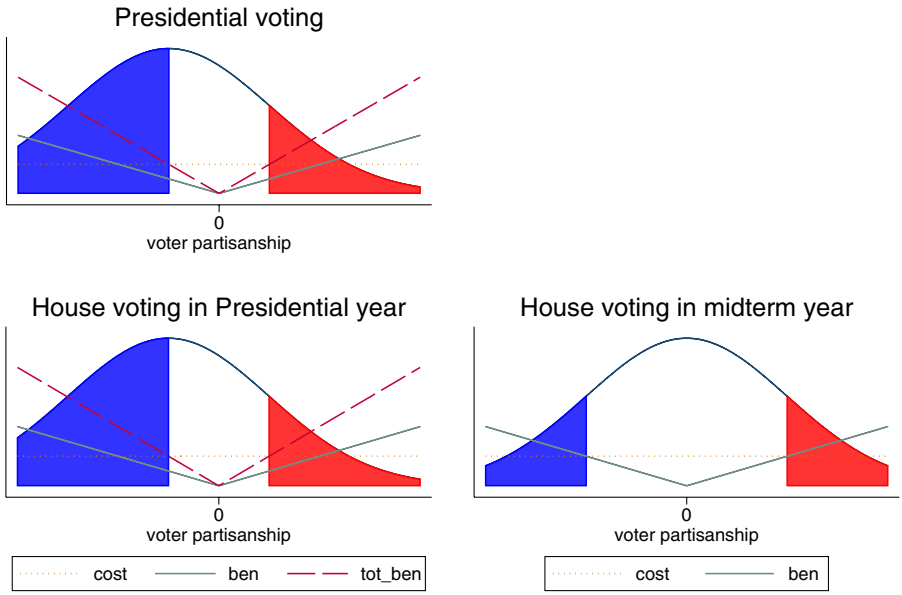

Figure 4: Reversion to the mean in voter partisanship.

to presidential coattails. These coattails are withdrawn in the midterm year as turnout returns to normal, and the president's party loses support in the midterm year. Thus, a quality difference in the presidential election also generates a midterm gap.

Figure 4 illustrates the case in which a midterm gap is generated by reversion to the mean in voter partisanship. That is, assume no presidential penalty in midterm years ($\rho = 0$) and no differences in the quality of presidential candidates ($\Delta q^P = 0$) but now allow for the distribution of voter partisanship to shift between presidential and midterm years. For purposes of illustration, assume that voter partisanship randomly shifts to the left in the presidential year before returning to its original baseline position in the midterm year. As shown, this leads to no changes in turnout, conditional on partisanship, but leads to increased support for Democrats in both the presidential and house elections during the presidential year. As partisanship returns to normal in the midterm year, however, support for Democrats fades, generating a loss in votes for the president's party. Thus, a temporary shift in the distribution of voter partisanship can generate a midterm gap.

To summarize, the model nests three long-standing hypothesized mechanisms underlying the midterm gap: presidential penalty, surge and decline in voter turnout, and reversion to the mean. The analysis next turns to an

empirical evaluation of this model and a decomposition of the midterm gap into these hypothesized mechanisms.

Empirical approach

This section first develops a statistical model analogous to the theoretical model presented above and then provides details on the NES data.

Econometric model

Given this long time span in the NES data, consider next a time dimension (t). Then, support for the Republican candidate, relative to the Democrat, for voter v at time t in a midterm year is given by:

$$\Delta_{vt}^{H} = \Delta q^{H} + \theta^{H} i_{vt} + \rho(2I_t - 1)$$

where Δq^{H} is a constant and, although set to zero in the theoretical model, is included here to capture average differences in quality between Republican and Democrat candidates. The parameter θ^{H} can be interpreted, in the context of the model, as reflecting the product of voter preferences for like-minded candidates (ω^{H}) as well as the degree of polarization in house elections (κ^{H}). That is, $\theta^{H} = \omega^{H}\kappa^{H}$. In addition, allow for unobserved voter characteristics (ε_{vt}^{H}) to influence voting decisions in house elections.

During midterm years, voters can abstain ($A = 1$), participate and support the Republican ($R^{H} = 1$), or participate and support the Democrat ($R^{H} = 0$). These three outcomes occur under the following conditions:

$$\begin{aligned}
\Pr(A = 1) &= \Pr(\beta^{H}|\Delta_{vt}^{H}| < c_{vt}) \\
\Pr(R^{H} = 1) &= \Pr(\beta^{H}|\Delta_{vt}^{H}| > c_{vt}, \Delta_{vt}^{H} + \varepsilon_{vt}^{H} > 0) \\
\Pr(R^{H} = 0) &= \Pr(\beta^{H}|\Delta_{vt}^{H}| > c_{vt}, \Delta_{vt}^{H} + \varepsilon_{vt}^{H} < 0)
\end{aligned}$$

In presidential years, utility differences between Republican and Democratic candidates in the two elections for a voter with partisanship i_{vt} are given by:

$$\begin{aligned}
\Delta_{vt}^{H} &= \Delta q^{H} + \theta^{H} i_{vt} \\
\Delta_{vt}^{P} &= \Delta q_{t}^{P} + \theta^{P} i_{vt}
\end{aligned}$$

where Δq_{t}^{P} is a series of time dummy variables that are estimated and capture the quality of the Republican candidate, relative to the Democratic candidate, in each presidential election. These dummy variables are identified by the degree to which moderate voters support the Republican. If moderate voters

strongly support the Republican, the Republican is inferred to be of higher quality ($\Delta q_t^P > 0$). If moderate voters support the Democrat, by contrast, then the Republican is inferred to be of lower quality ($\Delta q_t^P < 0$).

Defining unobserved voter preferences in the presidential election as ε_{vt}^P, the behavior of eligible voters in a presidential year can be summarized by:

$$\begin{aligned}
\Pr(A = 1) &= \Pr(\beta^H|\Delta_{vt}^H| + \beta^P|\Delta_{vt}^P| < c_{vt}) \\
\Pr(R^H = 1, R^P = 1) &= \Pr(\beta^H|\Delta_{vt}^H| + \beta^P|\Delta_{vt}^P| > c_{vt}, \\
&\qquad \Delta_{vt}^H + \varepsilon_{vt}^H > 0, \Delta_{vt}^P + \varepsilon_{vt}^P > 0) \\
\Pr(R^H = 0, R^P = 0) &= \Pr(\beta^H|\Delta_{vt}^H| + \beta^P|\Delta_{vt}^P| > c_{vt}, \\
&\qquad \Delta_{vt}^H + \varepsilon_{vt}^H < 0, \Delta_{vt}^P + \varepsilon_{vt}^P < 0) \\
\Pr(R^H = 1, R^P = 0) &= \Pr(\beta^H|\Delta_{vt}^H| + \beta^P|\Delta_{vt}^P| > c_{vt}, \\
&\qquad \Delta_{vt}^H + \varepsilon_{vt}^H > 0, \Delta_{vt}^P + \varepsilon_{vt}^P < 0) \\
\Pr(R^H = 0, R^P = 1) &= \Pr(\beta^H|\Delta_{vt}^H| + \beta^P|\Delta_{vt}^P| > c_{vt}, \\
&\qquad \Delta_{vt}^H + \varepsilon_{vt}^H < 0, \Delta_{vt}^P + \varepsilon_{vt}^P > 0)
\end{aligned}$$

To generate an analytic expression for these probabilities, assume that voting costs are both unobserved and normally distributed. Given that there is no constant in the participation/abstention equation, allow for voting costs to have a non-zero mean, and following discrete choice modeling, normalize the variance to equal one. More formally, $c_{vt} \sim N(\mu, 1)$. Likewise, unobserved preferences for Republican candidates in the two elections are assumed to be distributed bivariate normal with a non-zero correlation σ. More formally, $(\varepsilon_{vt}^H, \varepsilon_{vt}^P) \sim N(0, 0, 1, 1, \sigma)$. For tractability reasons, assume that voting costs are independent of these unobserved preferences for candidates in the two elections.

Estimation proceeds in two steps. In the first step, the set of parameters governing the voting decisions are identified based upon the set of voters participating in the election. These parameters include the presidential penalty in midterm years (ρ), parameters linking voter partisanship to vote choices in house and presidential elections (θ^H and θ^P), and measures of presidential quality (Δq_t^P) for each presidential election. The contribution to the likelihood function in presidential years is the likelihood for a bivariate probit model, and the contribution to the likelihood in midterm years is a univariate Probit model, with constraints imposed on parameters across the presidential and midterm years.

Given these estimated parameters from the first step, the expressive benefits of voting in house ($|\Delta_{vt}^H|$) and presidential ($|\Delta_{vt}^P|$) elections can be calculated, where the latter is simply set to zero during midterm years, for both participants

and non-participants. Then, these calculated expressive benefits are included as generated regressors in a second stage univariate Probit equation examining whether or not eligible voters choose to participate. This second stage employs information from the entire sample and identifies the parameters linking expressive benefits to participation decisions (β^H and β^P). Finally, bootstrap standard errors, using 1,000 replications, are calculated in order to account for the uncertainty associated with using generated regressors in the second stage.

Given this setup, identification of the three key mechanisms underlying the midterm gap can be summarized as follows. The presidential penalty is identified by examining the degree to which respondents, holding partisanship fixed and conditional on participation, report voting against the president's party in midterm years. The surge and decline in voter turnout is identified by the degree to which the participation margin is influenced by the intensity of preferences over the presidential candidates. Finally, mean reversion in partisanship is identified by the degree to which partisanship shifts from year to year in aggregate and also by the degree to which partisanship is linked to choice of candidates.

Data

Data come from the American National Election Survey, which has been conducted in every year with federal elections since 1948 except for the midterm years of 1950, 1954, 2006, and 2010. Given that the key measure of voter partisanship was not collected in 1948, the sample begins in 1952 and thus includes information from 15 presidential years and from 12 midterm years, seven held with a sitting Republican president and five with a sitting Democratic president.

Implementation of this empirical approach requires information on voter turnout decisions, choice of house candidate, choice of presidential candidate, and voter partisanship. Measures of turnout and voting decisions are based upon standard questions included in all years of the ANES. The more complex issue involves the measurement of voter partisanship. In order to capture the possibility of mean reversion in explaining the midterm gap, the measure should be both comparable across years and time-varying.[10] Given this, the analysis uses two measures of self-reported partisanship that are both comparable across years and time-varying.

The first measure is included in all survey years since 1952 and is based upon self-reported party affiliation. Possible responses to this question include: (1) Strong Democrat, (2) Weak Democrat, (3) Independent-leaning Democrat,

[10]One option would be to parameterize partisanship as a function of demographics, exploiting the fact, for example, that women tend to be more supportive of Democrats than men. The problem here is that this measure is not time-varying, absent dramatic changes in demographics, and thus does not capture high frequency change in partisanship underlying the reversion to the mean hypothesis.

(4) Independent-Independent, (5) Independent-leaning Republican, (6) Weak Republican, and (7) Strong Republican. For consistency with the theoretical model, this measure is converted to a $[-1, 1]$ interval, with Strong Democrat scoring -1, Weak Democrat scoring -0.67, Independent-leaning Democrat scoring -0.33, Independent-Independent scoring 0, Independent-leaning Republican scoring 0.33, Weak Republican scoring 0.67 and, finally, Strong Republican scoring 1. Note that these assumptions are relaxed in an alternative specification that allows for a flexible measure of partisanship via the inclusion of indicator variables for each of the seven categories.

One limitation of this measure of partisanship is that attachment to parties may not respond to short-term forces, and this stability of party identification may lead to an understatement of the contribution of the reversion to the mean mechanism. An alternative measure uses voter thermometer scores of conservatives and liberals. In particular, respondents were asked to rate conservatives on a 0 to 100 scale and were asked to rate liberals on a 0 to 100 scale. I take the difference between these scores (conservative score minus liberal score), which covers the interval $[-100, 100]$, and then convert this measure to the $[-1, 1]$ interval by dividing by 100. Those providing the same thermometer score to Democrats and Republicans receive a score of 0, those that provide a higher score to liberals have a negative score, and those providing a higher score to conservatives have a positive score. One drawback of this measure is that it is not available until 1964 and was also not included in the 1978 midterm year survey. Given this more limited availability over time, this measure can be interpreted as providing a robustness check on the baseline measure of party affiliation.

Table 1a reports summary statistics for two samples.[11] The party affiliation sample includes all respondents with a valid partisanship measure based upon self-reported partisan affiliation. Likewise, the conservative/liberal thermometer sample includes all respondents with a valid partisanship measure based upon thermometer scores.

As shown, roughly 70 percent of respondents in both samples report having participated in presidential years, with turnout falling to 52 percent and 54 percent in the two samples during midterm years. Both samples also report a tendency for voters to support Democrats in house elections, with support for Republicans between 43 percent and 45 percent in the different samples.

[11] The analysis excludes voters who reported voting for a third-party candidate in either house or presidential elections because the model is designed for two-party elections. The analysis also excludes voters who reported voting for only one of the two elections during presidential years (i.e. cases of roll-off). In terms of defining the sample, the analysis excludes voters who reported voting for a third-party candidate in either house or presidential elections because the model is designed for two-party elections. The analysis also excludes voters who reported voting for only one of the two elections during presidential years (i.e. cases of roll-off). Finally, the analysis also excludes voters for whom the partisanship measures were not collected.

Table 1a: Basic Summary Statistics (means with standard deviations in parentheses).

Partisanship measure	Party affiliation sample	Thermometer score sample
Panel A: Presidential years		
Participation	0.6993	0.7149
	(0.4586)	(0.4515)
Voted for Republican for House	0.4509	0.4508
	(0.4976)	(0.4976)
Voted for Republican for President	0.5118	0.5065
	(0.4999)	(0.5000)
Partisanship	−0.1110	0.0625
	(0.7004)	(0.3076)
Panel B: Midterm years		
Participation	0.5198	0.5351
	(0.4996)	(0.4988)
Voted for Republican for House	0.4300	0.4466
	(0.4951)	(0.4972)
Partisanship	−0.1403	0.0668
	(0.6818)	(0.3175)

Support for parties in the presidential election, by contrast, is roughly evenly split, with a slight advantage for Republican candidates on average.

In terms of the partisanship measures, the party affiliation measure has a negative sample mean in both presidential and midterm years, with more voters identifying as Democrats than Republicans. This suggests that voters tend to be left-of-center on average. The thermometer scores, by contrast, have positive sample means, with voters giving higher scores on average to conservatives than to liberals. This suggests that voters tend to be right-of-center on average.

In order to assess the validity of these data in terms of replicating midterm gaps over time, Figure 5 plots the midterm gap, the change in vote share for the president's party between presidential and midterm years, using actual returns in house elections, aggregated to a national vote. This is compared with the midterm gap using self-reported voting in the ANES data.[12] As

[12]One caveat is that this analysis is based upon national votes rather than seats. The focus on national votes is driven by the small sample sizes in the ANES data, making it difficult to conduct analysis at the level of the Congressional district. During the sample period covered by Figure 5, the loss of the national vote for the president's party loss and the corresponding loss of seats are correlated at roughly 0.9, suggesting the results would be similar when analyzing the change in seats.

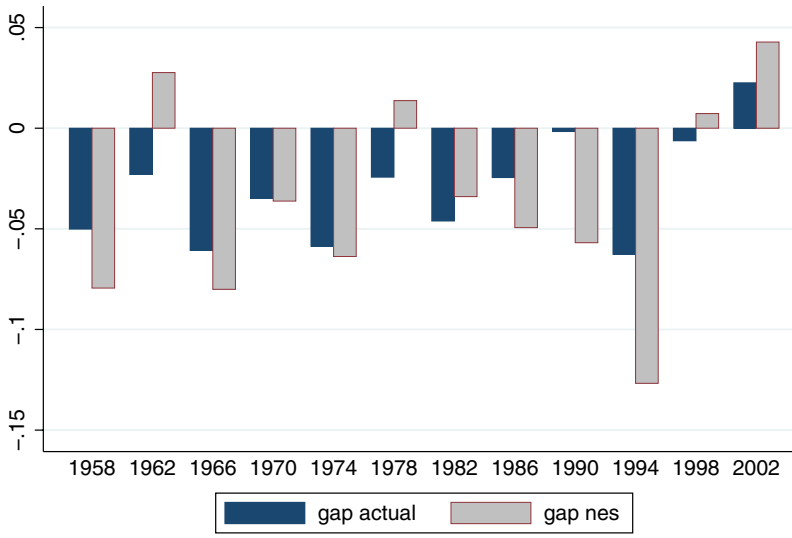

Figure 5: Actual MT gap versus NES MT gap.

shown, the two measures coincide in most instances. Noticeable differences include the ANES significantly over-predicting the midterm gap in 1994 and reflecting a gain in votes for the president's party in 1962, 1978, and 1998. Nonetheless, the correlation between the ANES midterm gap and the actual midterm gap across the years of Figure 5 is 0.76, and the average midterm gaps are similar, with the actual midterm gap averaging 3.0 percentage points and the ANES midterm gap averaging 3.6 percentage points.

Before turning to the empirical analysis, the analysis first uses the raw ANES data to examine whether or not two key assumptions of the model are satisfied. First, the approach assumes expressive voting and thus the benefits of voting are high for extreme voters and low for moderate voters. Given this, the model predicts that, across many elections, extreme voters should be more likely to participate than moderate voters. As shown in Table 1b, this is indeed the case, with the lowest turnout rates among self-declared Independents (36 percent) and the highest turnout rates among Strong Democrats (73 percent) and Strong Republicans (82 percent), with intermediate turnout rates for weak partisans and independents who lean towards one of the two parties. Second, the approach assumes a monotonic relationship between party affiliation and support for candidates. As shown in third column, this is indeed the case for the fraction supporting house Republicans, which increases monotonically across the seven categories from

Table 1b: Voter behavior according to party affiliation.

Party affiliation	Participating	Support House Republicans	Support Presidential Republicans
Strong Democrat	73.00%	9.12%	8.48%
Weak Democrat	56.21%	20.99%	27.33%
Independent-leaning Democrat	53.96%	24.20%	19.53%
Independent-Independent	35.88%	47.02%	59.94%
Independent-leaning Republican	61.52%	70.66%	87.59%
Weak Republican	64.52%	75.56%	85.98%
Strong Republican	82.39%	88.42%	97.56%

Strong Democrats (9 percent) to Strong Republicans (88 percent). The relationship is also generally monotonic when examining presidential voting with the exception of moving from the movement from Weak Democrat (27 percent) to Independent-Leaning Democrat (20 percent) and likewise for the movement from Independent-leaning Republican (88 percent) to Weak Republican (86 percent). On the whole, the additional summary statistics in Table 1b support these two key assumptions of the theoretical model.

Results

Descriptive evidence

Before turning to the econometric evidence, the analysis first provides a comparison (presidential versus midterm years) of the three key mechanisms in the model. Motivated by the key prediction that voters with partisanship favoring the president's party should be less likely to participate in midterm years, when compared to previous presidential election, the analysis first examines how turnout changes for voters of differing partisanship between presidential and midterm years. To make partisanship comparable across Republican and Democratic presidents, define president's partisanship equal to i_{vt} when the president is a Republican and equal to $-i_{vt}$ when the president is Democrat.[13]

As shown in Figure 6 and consistent with Table 1b, turnout rates exhibit the V-shaped pattern predicted by the model in both presidential and midterm

[13]For example, president's party partisanship equals +1 when the president is a Republican and the voter is classified as strong Republican or when the president is a Democrat and the voter is classified as strong Democrat.

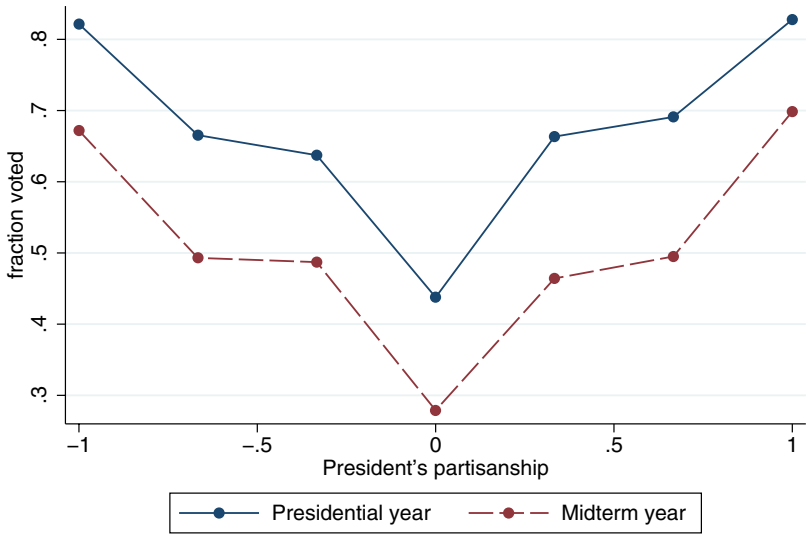

Figure 6: Turnout in presidential and midterm years.

years. That is, the evidence is consistent with expressive voting, whereby voters at the extremes of the partisan spectrum are more likely to participate in both midterm and presidential elections. Also, consistent with the model predictions, turnout is higher for all groups in presidential years when compared to midterm years. Figure 6 also provides some evidence favoring the surge and decline hypothesis. In particular, for the three groups with president's partisanship greater than zero, the drop off in turnout when moving from presidential to midterm years averages 17.5 percentage points, and the drop off averages a smaller 15.7 percentage points for the groups with president's partisanship less than zero. Thus, supporters of the president's party are less likely to turn out at midterm than their counterparts at the other end of the partisan spectrum. This is consistent with the idea of negative voting put forward by Kernell (1977), who finds that those who disapprove of the president's performance were more likely to participate in midterm elections than those who support the president.

Figure 7 provides descriptive evidence on the presidential penalty hypothesis by focusing on electoral support for the president's party, conditional on participation, during presidential and midterm years and separately by president's partisanship, as defined above. As shown, four of the seven partisan groups do exhibit noticeable drops in support for the president's party when moving from presidential to midterm years, and none of the seven groups exhibit an increase in support for the president's party. Averaged across the

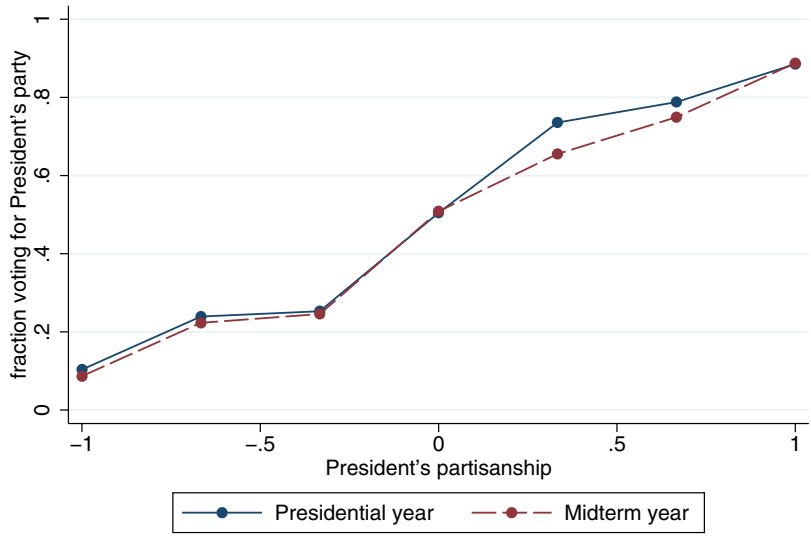

Figure 7: Support for president's party.

seven groups, the loss in support for the president's party is equal to 2.2 percentage points.

Finally, Figure 8 provides preliminary evidence on the reversion to the mean hypothesis, which predicts that the partisan composition of the electorate should move against the president's party when moving from presidential to midterm years. To examine this hypothesis, Figure 8 plots the partisan composition of the electorate, defined as including both participants and non-participants, during both presidential and midterm years. As shown, the three groups with president's partisanship greater than zero tend to represent a smaller share of the electorate during midterm years, with an average drop off of 1.1 percentage points. The three groups with president's partisanship less than zero, by contrast, tend to represent a larger share of the electorate during midterm years, with an average increase of 0.7 percentage points. Thus, the relative shift in the distribution of partisanship against the president's party is consistent with the reversion to the mean hypothesis.

Econometric evidence

Having provided descriptive evidence in favor of all three hypotheses, consider next the results from the econometric exercise, which formally quantify the contribution of each of these hypothesized mechanisms towards the measured midterm gap.

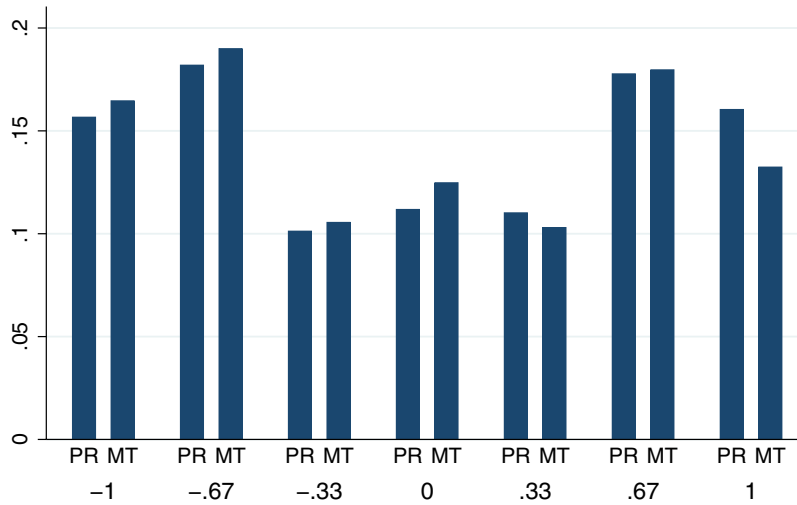

Figure 8: Ideological composition of the electorate by president's party ideology and PR vs. MT.

Table 2 provides the statistical results from the first-stage estimation of preference parameters from participants in presidential and midterm years. As shown in the first column in Panel A, there is a strong but unsurprising link between self-reported party affiliation and vote choice, with right-leaning voters more likely to support Republican house candidates. Conditional on voter partisanship, there is a statistically significant presidential penalty in midterm years, with voters going against the sitting president's party in house elections held during midterm years. Thus, reversion to the mean in partisanship does not fully explain the midterm gap, and, holding partisanship fixed, voters are less likely to support the president's party in midterm elections. Finally, the constant term is negative, suggesting that voters view Democratic house candidates as higher quality on average, when compared to Republican house candidates.

Panel B reports the results for presidential elections. Similar to house elections, there is a strong link between voter partisanship and the choice of candidates. In addition, as shown in the final row, the estimated correlation in preferences for house and presidential Republican candidates is 0.5404.

In terms of the estimates of presidential quality, which are captured by the year dummy variables, voters perceived Republicans to be of higher quality in all years between 1952 and 1988 with the exception of 1964. Democrats were perceived to be of higher quality during 1964 and 1996, with no statistically significant differences in 1992, 2000, 2004, 2008. This finding that Republicans

Table 2: Candidate choice among voters in presidential and house elections.

Partisanship measure	Party affiliation	Thermometer scores	Party affiliation
Panel A: House equation			
Voter partisanship	1.2481***	1.5891***	
	(0.0147)	(0.0355)	
Strong Democrat			−1.2563***
			(0.0417)
Weak Democrat			−0.7302***
			(0.0391)
Independent-leaning Democrat			−0.6250***
			(0.0429)
Independent-leaning Republican			0.6187***
			(0.0435)
Weak Republican			0.7692***
			(0.0412)
Strong Republican			1.2726***
			(0.0428)
Presidential penalty	−0.0586***	−0.0865***	−0.0577***
	(0.0162)	(0.0187)	(0.0164)
Constant	−0.0582***	−0.2592***	−0.0711 ∗ ∗
	(0.0099)	(0.0111)	(0.0328)
Panel B: Presidential Equation			
Voter partisanship	1.6335***	2.6746***	
	(0.0233)	(0.0632)	
Strong Democrat			−1.6433***
			(0.0529)
Weak Democrat			−0.8788***
			(0.0481)
Independent-leaning Democrat			−1.0782***
			(0.0564)
Independent-leaning Republican			0.9477***
			(0.0635)
Weak Republican			0.8969***
			(0.0547)
Strong Republican			1.8328***
			(0.0737)

(*Continued*)

Table 2: (*Continued*)

Partisanship measure	Party affiliation	Thermometer scores	Party affiliation
Year 1952	0.5861***		0.5835***
	(0.0501)		(0.0626)
Year 1956	0.6186***		0.5931***
	(0.0481)		(0.0604)
Year 1960	0.2616***		0.2198***
	(0.0665)		(0.0740)
Year 1964	−0.2774***	−0.5748***	−0.3002***
	(0.0566)	(0.0403)	(0.0694)
Year 1968	0.3331***	−0.1234***	0.3297***
	(0.0528)	(0.0440)	(0.0670)
Year 1972	0.7633***	0.2926***	0.7496***
	(0.0476)	(0.0390)	(0.0623)
Year 1976	0.1867***	−0.1794***	0.1806***
	(0.0465)	(0.0423)	(0.0636)
Year 1980	0.4896***	−0.0498	0.4820***
	(0.0543)	(0.0505)	(0.0681)
Year 1984	0.4956***	0.1471***	0.4821***
	(0.0407)	(0.0397)	(0.0563)
Year 1988	0.2383***	−0.1136***	0.2286***
	(0.0474)	(0.0414)	(0.0639)
Year 1992	−0.0535	−0.3049***	−0.0627
	(0.0439)	(0.0381)	(0.0612)
Year 1996	−0.2906***	−0.5662***	−0.3092***
	(0.0544)	(0.0449)	(0.0679)
Year 2000	−0.0235	−0.2551***	−0.0261
	(0.0548)	(0.0503)	(0.0702)
Year 2004	−0.0225	−0.1472***	−0.0119
	(0.0603)	(0.0523)	(0.0747)
Year 2008	−0.0648	−0.3307***	−0.0570
	(0.0546)	(0.0440)	(0.0698)
House/Presidential correlation	0.5404	0.7124	0.5267

Notes: Bootstrap standard errors (in parentheses). Stars denote statistical significance, with *** denoting $p < 0.01$, ** denoting $p < 0.05$, and * denoting $p < 0.1$. 38,121 observations in second column, 26,781 observations in third column. ANES weight VCF0009a.

tend to be of higher quality on average is consistent with the facts, as previously documented, that support in presidential elections was roughly split evenly between the two parties but that voters were more likely to identify as Democrats. The coexistence of these two facts requires that Democratic-identifying voters are more likely to support Republican candidates, when compared to the rate of crossing party lines in presidential elections for Republican-identifying voters.

Note that the variation in quality across presidential years is identified via a revealed preference approach. That is, candidates receiving more support among voters, holding fixed participation and voter partisanship, are inferred to be of higher quality. One important alternative interpretation of these quality measures involves candidate partisanship. In particular, it is possible that candidates receiving more support among voters are more moderate, rather than of higher quality. For example, the finding that Nixon was of much higher quality than McGovern in 1972 may instead reflect McGovern being viewed as too liberal by voters. To address this concern, the analysis has incorporated measures of voter perceptions of the ideology of presidential candidates, measured in the ANES starting in 1972 on a seven-point scale, ranging from extremely liberal to extremely conservative. After scaling this variable to be centered at zero and ranging from -1 to $+1$, define the partisan preference for the Republican (partisanship i_R) over the Democrat (partisanship i_D) for voter v as follows:

$$-(i_v - i_R)^2 + (i_v - i_D)^2$$

Consistent with the theoretical model, this measure captures the quadratic distance between voter partisanship and the partisanship of the Republican candidate, relative to the Democratic candidate. Under the baseline assumption that $i_R = -i_D = \kappa_P/2$, this partisan preference collapses to $2\kappa_P i_v$. More generally, however, voters have a preference for moderate candidates, and, in this more general case, quality can then be inferred conditional on measures of voter perceptions of the ideology of the two candidates.

This extended model is estimated using the years starting in 1972 and, for comparison purposes, is also estimated the baseline model for the same sample of survey respondents. Figure 9 compares the adjusted quality measures, which account for candidate ideology, with the baseline quality measures. As shown, there are important differences, and the adjusted quality of Nixon in 1972, relative to McGovern, is indeed lower than expected when compared to the baseline quality measure. This reflects McGovern being perceived as more extreme than Nixon by voters. In general, however, the adjusted measures are quite similar to the baseline measures, with a correlation over 0.97. This high correlation between the baseline measures of quality and these measures that account for candidate ideology suggests that the quality measures are not primarily capturing differences in candidate ideology.

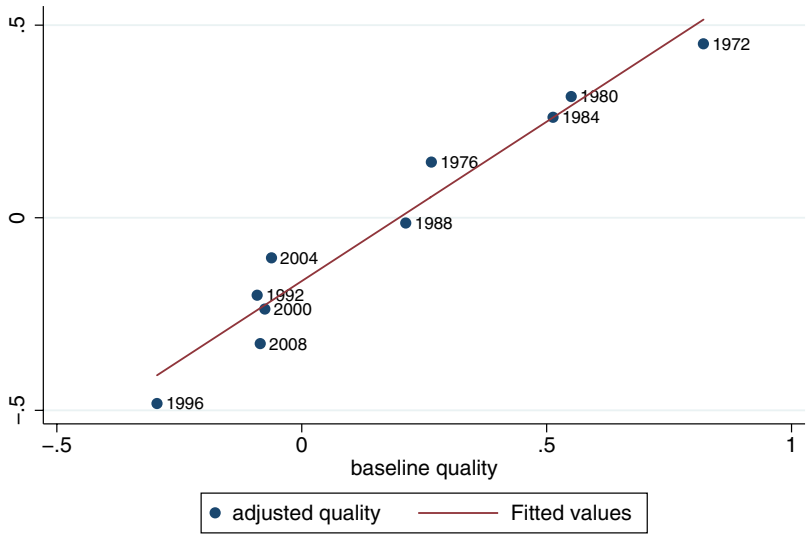

Figure 9: Moderate versus high quality.

Returning to the baseline estimates in Table 2, the analysis then computes the expressive benefits to voting in both presidential and midterm years for both participants and non-participants. In presidential years, the analysis separately computes the benefits to voting in the house elections and the benefits to voting in presidential elections. In the midterm year, by contrast, the benefits to voting in the presidential election are set to zero.

The analysis then examines how these constructed measures of the expressive benefits of voting impact turnout decisions. As shown in the first column of Table 3, the positive coefficients for both house and presidential elections make clear that the expressive benefits of voting in both types of elections increase voter turnout, with the benefits from expressing support in the house election playing a somewhat stronger role.

Because the expressive benefits from voting in the presidential election are by construction zero during midterm years, one alternative explanation for the positive coefficient on the expressive benefits of voting in presidential elections is that turnout is higher in presidential years for reasons that are not captured in the model. Although there is no reason to believe that the economic costs of voting should be different between presidential and midterm years, one could imagine that civic duty considerations are stronger in presidential years. That is, there may be non-expressive benefits of voting in presidential years, boosting turnout. I recognize this alternative explanation and attempt to address this

Table 3: Turnout decision with party affiliation measure.

Absolute preference difference	0.5136***	0.6063***		
House	(0.0207)	(0.0246)		
Absolute preference difference	0.3972***	0.2195***		
President	(0.0145)	(0.0231)		
Squared preference difference			0.3124***	0.3918***
House			(0.0171)	(0.0200)
Squared preference difference			0.2115***	0.1018***
President			(0.0113)	(0.0114)
Presidential year		0.2650***		0.3508***
		(0.0265)		(0.0198)
Constant	−0.3080***	−0.4268***	−0.0880***	−0.2573***
	(0.0156)	(0.0208)	(0.0121)	(0.0166)

Notes: Bootstrap standard errors (in parentheses). Stars denote statistical significance, with *** denoting $p < 0.01$, ** denoting $p < 0.05$, and * denoting $p < 0.1$. 38,121 observations. Preference difference measures for President set to zero during midterm election years. Preference difference measures inferred from column 2 of Table 2. ANES weight VCF0009a.

in column (2) of Table 3 by including an indicator for presidential years. In this case, the coefficient on the expressive benefits of voting in the presidential election is identified by variation in the quality of presidential candidates across different presidential elections. As shown, although this key coefficient does fall in magnitude, it remains positive and statistically significant.

As a robustness check, the analysis next runs the second stage regressions using an alternative measure of the expressive benefits of voting based upon the squared, rather than absolute, difference in preferences over the candidates. That is, instead of calculating absolute differences in house elections, $|\Delta_{vt}^{H}|$, the analysis calculates $(\Delta_{vt}^{H})^2$, with analogous measures in presidential elections. In this case, expressive benefits are convex, rather than linear, in the difference in preferences over candidates. As shown in column (3) of Table 3, the results are similar in sign to the baseline results in column (1). Finally, as shown in column (4), these results are also robust to using this squared measure of expressive benefits and the inclusion of an indicator for presidential years.

Returning to Table 2, the analysis uses the conservative–liberal thermometer measure of voter partisanship. As shown in column (2), the coefficients on voter partisanship remain positive and statistically significant.[14] As shown in the final row, the estimated correlation in preferences for house and presidential Republican candidates in this case is 0.7214. Finally, the quality measures, with the exception of 1984, are strongly negative, suggesting that Democrats are more appealing to swing voters, defined as those close to zero in this

[14]Note that the coefficients in column 2 are not directly comparable to those in column 1 because the variance of the unobserved components may differ across these specifications.

Table 4: Turnout decision with conservative-liberal thermometer measure.

Absolute preference difference	−0.0394	0.1438***		
House	(0.0327)	(0.0381)		
Absolute preference difference	0.5347***	0.2940***		
President	(0.0231)	(0.0286)		
Squared preference difference			−0.0382	0.1250***
House			(0.0243)	(0.0276)
Squared preference difference			0.2385***	0.1079***
President			(0.0173)	(0.0148)
Presidential year		0.3056***		0.4132***
		(0.0244)		(0.0195)
Constant	0.1875***	0.0272	0.2715***	0.0513***
	(0.0145)	(0.0204)	(0.0102)	(0.0151)

Notes: bootstrap standard errors (in parentheses). Stars denote statistical significance, with *** denoting $p < 0.01$, ** denoting $p < 0.05$, and * denoting $p < 0.1$. 29,671 observations. Preference difference measures for President set to zero during midterm election years. Preference difference measures inferred from column 3 of Table 2. ANES weight VCF0009a.

partisanship measure. As noted above, this is consistent with voters having more right-leaning partisanship using this measure and votes being roughly split between the two parties in presidential elections.

Table 4 provides the turnout results using this alternative partisanship measure. As shown, the coefficient on the expressive benefits of voting in house elections is statistically insignificant in the first column. After controlling for presidential years, however, the coefficient rises and becomes statistically significant. Similar to Table 3, the coefficient on the expressive benefits from voting in presidential elections is positive and statistically significant in both columns (1) and (2). Finally, as shown in the final two columns, the results are similar when using a measure of the squared preference difference.

Additional specifications

Consider next two additional specifications. First, as noted above, the baseline specification assumes a linear relationship between voter partisanship and the seven-point self-reported party identification measure in the NES. This assumption is next relaxed by allowing for a flexible relationship via the inclusion of dummy variables for six categories of self-reported partisan affiliation, with Independent-Independent the omitted category. As shown in the final column of Table 2 and consistent with the evidence in the summary statistics (Table 1), there is a monotonic relationship in the house equation, with strong Democrat and strong Republican at the extremes, followed by weak Democrat and weak Republican, followed by Independent-leaning Democrat and Independent-leaning Republican. In the presidential equation, there is

Table 5: Turnout decision robustness checks.

Specification	Flexible	Flexible	Other elections	Other elections
Absolute preference difference House	0.6183***	0.6987***	0.5232***	0.6093***
	(0.0295)	(0.0335)	(0.0215)	(0.0246)
Absolute preference difference President	0.3837***	0.2259***	0.3838***	0.2172***
	(0.0135)	(0.0231)	(0.0168)	(0.0232)
Senate election year			0.0407***	0.0395***
			(0.0152)	(0.0152)
Governor election year			−0.0304*	0.0661***
			(0.0178)	(0.0199)
Presidential year		0.2448***		0.3109***
		(0.0281)		(0.0294)
Constant	−0.4064***	−0.5130***	−0.3205***	−0.5053***
	(0.0242)	(0.0288)	(0.0203)	(0.0278)

Notes: bootstrap standard errors (in parentheses). Stars denote statistical significance, with ***denoting $p < 0.01$, **denoting $p < 0.05$, and *denoting $p < 0.1$. 38,121 observations. Preference difference measures for President set to zero during midterm election years. Preference difference measures inferred from column 2 of Table 2. ANES weight VCF0009a.

also a monotonic relationship except when comparing weak Democrat and Independent-leaning Democrat and weak Republican and Independent-leaning Republican. Although the difference in coefficients between weak Democrat and Independent-leaning Democrat is statistically significant at conventional levels, the second difference is not. Note also that allowing for the flexible measure of partisanship does not substantially change the quality measures, which are quite similar to those in the baseline specification using party affiliation. Likewise, as shown in the first two columns of Table 5, the second stage results when using the flexible measure are quite similar to those in the baseline results.

Second, although the analysis so far has focused exclusively on presidential and house elections, voter turnout may also be driven by other concurrent elections. To address this, the analysis next considers a specification with controls for senate and governor elections, arguably the two other most important elections from the perspective of voters.[15] To account for these other concurrent elections, the analysis separately controls for the presence of other elections on a state-by-state basis in the final two columns of Table 5 (the

[15]Each state has two senators, each with six-year terms, and thus a regular senate election is held in two out of every three even-year elections. Regarding governor election cycles, there are four relevant cases. First, two states (New Hampshire and Vermont) have governors elected in even years and to two-year terms. Second, 34 states have governors elected in midterm years and to four-year terms. Third, nine states have governors elected in presidential election years and to four-year terms. Finally, five states elect governors in odd years.

first stage is unchanged from the baseline specification reported in the first column of Table 2). As shown, when also controlling for whether or not a presidential election is being held, the presence of an election for governor or senator does indeed boost voter turnout. After controlling for these factors, however, the coefficients on preference differences for house and presidential elections continue to be positive and statistically significant. Thus, the baseline finding of expressive voting is robust to the inclusion of other concurrent races.

Midterm gap simulations

Using these parameter estimates, the midterm gap is next decomposed into the three channels discussed previously. The first step in this exercise is to calculate the midterm gap as predicted by the estimated model in each year. Figure 10 compares the midterm gap in the ANES raw data with the midterm gap as predicted by the baseline model. Noticeable cases in which the model fit is poor include the later years of 1994, 1998, and 2002. Across all midterm years, however, the model fits the data quite well, with a correlation of 0.84 between the two series.[16] Averaging across years, the model predicted midterm gap is 4.5 percent, a bit higher than the ANES midterm gap of 3.6 percent.

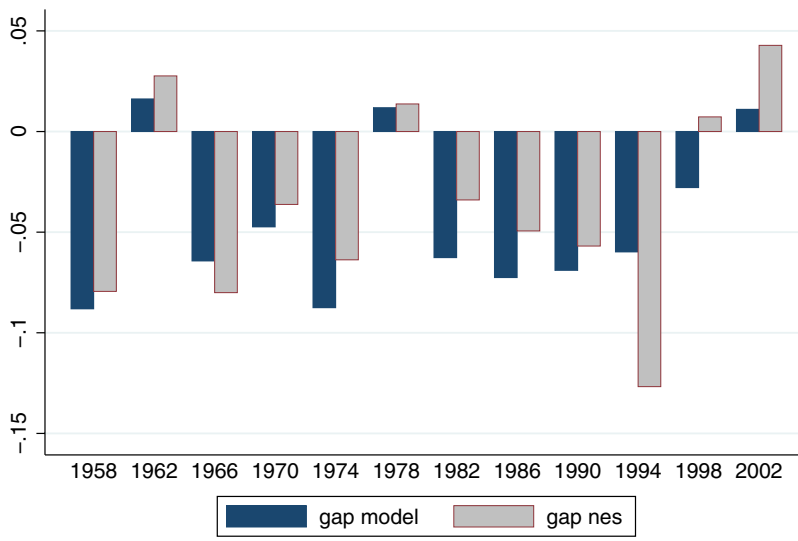

Figure 10: NES MT gap versus model predicted MT gap.

[16]The correlation between the model midterm gap and the actual midterm gap, as shown in Figure 5, is 0.60.

The model predicted midterm gap is next decomposed into its three components by removing the mechanisms one at a time. Removing the presidential penalty mechanism is achieved quite simply by setting the penalty in midterm years to zero ($\rho = 0$). This requires that voting probabilities in house elections, conditional on partisanship and participation, are identical in midterm and presidential years and also are independent of the presidential party in power in midterm years.

Likewise, removing the surge and decline mechanism can be achieved by setting the coefficient on the expressive benefits to voting in presidential elections to zero ($\beta^P = 0$). This requires that turnout in presidential and midterm years is identical and thus changes in the composition of the electorate when moving from presidential to midterm years cannot lead to a reduction in support for the president's party.

Finally, removing reversion to the mean in voter partisanship is achieved by holding fixed the distribution of voter partisanship when moving from a presidential year to the subsequent midterm year. Operationally, this is implemented by using only the sample of voters in presidential years and then, holding only their partisanship constant, predicting both their choice over candidates and their participation decision in the subsequent midterm year environment.

To provide a sense of the contribution of these factors on average, Figure 11 presents the results from these counterfactual experiments, averaged across

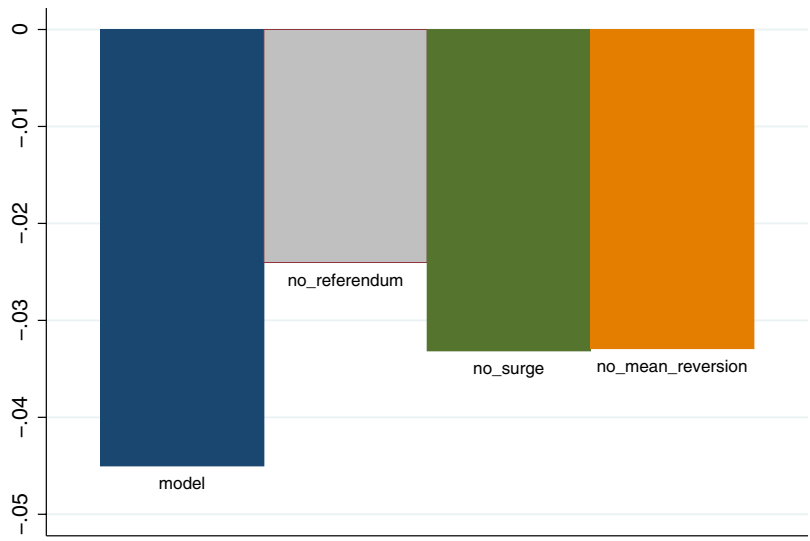

Figure 11: MT gap decomposition.

all midterm years. According to these calculations, the presidential penalty mechanism plays the largest role, with the midterm gap falling from 4.5 percent on average to 2.4 percent in the absence of this mechanism. The fact that the midterm gap falls significantly when removing the presidential penalty mechanism implies that this mechanism is important in explaining the midterm gap. In particular, this mechanism explains 47 percent of the midterm gap when averaged across years. In the absence of either of the other two mechanisms, by contrast, the midterm gap falls to roughly 3.3 percent. Thus, surge and decline and mean reversion in voter partisanship each explain 27 percent of the midterm gap.

These decompositions are next repeated based upon the analysis using the conservative/liberal thermometer measure underlying the results in column (2) of Tables 2 and 4. The presidential penalty hypothesis again plays the largest role here. Eliminating this mechanism leads the midterm gap to fall from its predicted value of 4.2 percent to just 1.2 percent. Thus, the presidential penalty mechanism here explains a large fraction, 72 percent, of the midterm gap predicted by the model. The surge and decline mechanism explains 17 percent, and mean reversion in voter partisanship explains 11 percent. Thus, this analysis using an alternative measure voter partisanship places a larger emphasis on the presidential penalty hypothesis.

Limitations

It is important to note several limitations of this analysis. First, this analysis does not address some explanations for the midterm gap, such as the withdrawal of preference-based presidential coattails. Note that the approach does allow for turnout-based presidential coattails, via the surge-and-decline mechanism. In particular, a high quality presidential candidate increases support, via increased turnout, for his party in house elections held during presidential years. These coattails are withdrawn in the subsequent midterm election, leading to a midterm gap. Likewise, the approach allows for partisanship-based coattails, under which shifts in partisanship that benefit one party in the presidential election also benefit affiliated candidates in the house election, via the reversion to the mean mechanism. The approach, however, does not allow for preference-based presidential coattails under which high quality presidential candidates increase support for affiliated house candidates, conditional on turnout and partisanship. Incorporating this mechanism into the model could be accomplished by allowing the quality of presidential candidates to enter the expression for the preferences of voters over house candidates.[17] This would complicate estimation of the parameters in the house

[17]See, for example, the informational spillovers hypothesis put forward by Halberstam and Montagnes (2015).

and presidential equations, as the presidential equation currently depends only upon factors in the presidential election (i.e. $U_{vp} = q_p - \frac{\omega^P}{2}(i_v - i_p)^2$) and the house equation currently depends only upon factors in the house election (i.e. $U_{vh} = -\frac{\omega^H}{2}(i_v - i_h)^2$). Note that, by not including preference-based presidential coattails, the approach tends to overstate the presidential penalty mechanism as it captures all factors unrelated to turnout and shifts in the distribution of voter partisanship. That is, in this case, the estimate of the presidential penalty mechanism should be considered an upper bound.

Second, the approach assumes that voter partisanship is exogenous and, in particular, is not shaped by the president. This assumption would be violated, for example, if voters express their displeasure for the sitting president by shifting their self-reported partisan identity towards the opposition party or by adjusting their thermometer scores in a similar manner.[18] This type of behavior should naturally be categorized as a presidential penalty but instead would mimic the reversion to the mean hypothesis. Thus, in this case, the estimate of the reversion to the mean hypothesis should be considered an upper bound and the estimate of the presidential penalty should be considered a lower bound.

Third, the analysis cannot distinguish between competing explanations underlying the presidential penalty in midterm years. These include voters using midterm years as a referendum on the president's performance and voter preferences for divided government.

Fourth, the approach does not allow for candidate behavior. It could be, for example, that house candidates affiliated with the opposition, relative to the president's party, are more successful in fund raising in midterm elections, relative to presidential elections. Likewise, it could be that high quality house candidates from the opposition party are more likely to run in midterm elections than high quality house candidates from the president's party. Both of these factors, which are unrelated to turnout and voter partisanship, would be incorporated into the presidential penalty measure.

Finally, the analysis does not incorporate the possibility of selective abstention or roll-off, under which voters may choose to participate in the presidential election but not the house election during presidential years (Degan and Antonio, 2011). This may tend to weaken the surge-and-decline mechanism, which highlights the impact of changing incentives for turnout in the presidential election on house elections during presidential years. That is, some voters who turn out in presidential years but not house years selectively abstain from the house election during presidential years. Thus, these voters do not cast votes for house elections in either year and thus cannot play a role in the midterm gap.

[18] Note that similar issues may arise if respondents improve their evaluation of conservatives and are more likely to identify as a Republican in the face of a high quality Republican presidential candidate.

Conclusion

In summary, this paper has provided an investigation of three long-standing explanations for the midterm gap. These hypothesized explanations include the presidential penalty in midterm years, a surge and decline in voter turnout, and mean reversion in voter partisanship. These mechanisms are developed in the context of a model in which voters decide both whether or not to participate in midterm and presidential years and, conditional on participating, which candidates to support. The parameters of this model are then estimated, and counterfactual simulations allow for the decomposition of the midterm gap into the contributions from these three hypothesized mechanisms.

Although the quantitative results vary across specifications, there are a few general lessons to be taken away from the analysis. First, the estimated model matches well with the observed midterm gap over time and can fully explain the midterm gap when averaged across midterm years. Second, each of the three mechanisms, as formalized in the theoretical model and estimated in the empirical analysis, plays a substantive role in explaining the midterm gap. Finally, although this lesson is more sensitive to the specification, the bulk of the evidence points towards the presidential penalty hypothesis playing a stronger role than surge and decline and a reversion to the mean in voter partisanship.

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