

The Endogenous Relationship of Campaign Expenditures, Expected Vote, and Media Coverage

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Abstract

Campaigns are central events in the democratic life of the nation, periods when elites compete actively for citizens' support, the media emphasize political coverage and become both reporters and interpreters, and citizens evaluate candidates in response to changing events and information. As such, political campaigns have much to teach us about how political influence operates in the United States, and where and how it resides. Recognizing this, scholars have been keenly interested in understanding campaign dynamics. Scholars have been particularly interested in determining the causal relationship between campaign expenditures and voter support. Despite some excellent work, results have proven largely inconclusive, plagued by an inherent simultaneity problem – just as campaign expenditures may increase voter support, so also may voter support increase campaign donations, and by extension, campaign expenditures. Determining which way the causal arrow points – and with it, whether political influence resides with elites or citizens – has proven elusive.

We argue that the key to unlocking this puzzle lies in examining the dynamics that are at its core. Where previous studies have been largely static in nature – examining the relationship between campaign expenditures and voter support at the end of the campaign – we adopt a dynamic approach and examine how expenditures and voter support impact each other over the course of the campaign. We also break with previous studies in arguing that the media are key players in the dynamics of campaigns, both mediating the relationship between elites and citizens and carrying the potential for independent impacts of their own.

We test our dynamic perspective by employing methods and data that are particularly suited for analyzing campaign dynamics. We apply a Vector Autoregression (VAR) approach that allows us to simultaneously test for exogeneity and endogeneity in the relationships between expenditures, voter support, and media coverage. We examine these relationships on a daily basis over the course of the 2000 presidential campaign. We do so by using the 2000 presidential election data from the National Annenberg Election Study to track voting intentions, which we term the expected vote, over the course of the campaign. We match this series with corresponding daily series on campaign expenditures by the Bush and Gore campaigns and coverage of the two campaigns by the *New York Times*.

We find that campaign expenditures, media coverage, and the expected vote all impacted the dynamics of the 2000 presidential campaign. Contrary to previous static studies, our dynamic analysis finds no direct independent effect of voter support on campaign expenditures in the 2000 presidential election. We do, however, find significant effects of Bush campaign expenditures on voter support. The expected vote instead impacted campaign expenditures indirectly, by influencing media coverage which, in turn, impacted expenditures. Our results identify, for the first time, the direct effects of campaign expenditures on voter support independent of any potential simultaneity bias. At the same time, they highlight the critical role that media coverage plays in shaping campaign dynamics.

1. Introduction

Campaigns are central events in the democratic life of the nation, periods when elites compete actively for citizens' support and media attention, the media increase political coverage with an eye to influencing citizens' decision processes, and citizens evaluate candidates in response to changing events and information. Campaigns are, in short, the central moments in which the three principal actors in the polity – partisan elites, the media, and citizens – interact with each other. As such, political campaigns have much to teach us about how political influence operates in the United States.

Recognizing this, scholars have been keenly interested in understanding the nature and impact of political campaigns (Holbrook 1996; Shaw 1999a; Jacobson 1978; Green and Krasno 1988; Mutz, Sniderman, and Brody 1996). Here, two questions predominate, with the particular line of inquiry dependent upon whether scholars are examining presidential or congressional contests. Presidential election scholars have been concerned with examining whether campaigns matter. That is, do campaigns actually influence citizens' voting preferences? Or, are candidates merely strutting the stage, full of sound and fury, but signifying nothing. In the past decade, the received wisdom that campaigns have only minimal effects on voting behaviors has been replaced with a revised view that campaigns can have significant impacts on voter preferences (Holbrook 1996; Mendelberg 1997; Mutz, Sniderman, and Brody 1996; Petrocik 1996; Shaw 1999a and 1999b).

In contrast to their presidential election counterparts, scholars of congressional elections have been less concerned with documenting whether campaigns matter than with teasing out the nature of these impacts. Congressional election scholars have been particularly interested in determining the causal relationship between campaign expenditures and voter support. Despite

some excellent work, results have proven largely inconclusive, plagued by an inherent simultaneity problem – just as campaign expenditures may increase voter support, so also may voter support increase campaign donations, and by extension, campaign expenditures (Green and Krasno 1988, 1990; Jacobson 1978, 1980, 1983, 1990; Erikson and Palfrey 1998; Gerber 1998). Determining which way the causal arrow points has proven elusive.

Much of the literature on money and votes in congressional campaigns has been understandably concerned with the implications of this debate for campaign finance reform proposals.¹ These implications are significant and merit considerable attention from scholars and practitioners alike. We argue, however, that the implications of campaign dynamics are both deeper and more extensive than campaign finance concerns. Understanding the nature of campaign dynamics, we argue, can shed considerable light on our understanding of how political influence and popular sovereignty operate in the United States.

Consider for example, the possibility that partisan elites are in the driver's seat, impacting voting preferences and media coverage through their expenditures of campaign resources, but uninfluenced in turn by either citizens or the media. If so, politics is largely an elite affair and most citizens are at best semi-sovereign people who exert little independent political influence in campaigns or elections (Schattschneider 1960). Conversely, if citizens are the unmoved mover, impacting campaign expenditures and media coverage but not the reverse, then their impact on politics extends well beyond casting a ballot on election day. Citizens are, in a manner, de facto campaign managers and newsroom editors, as partisan and media elites react throughout campaigns to shifting public opinion. If, finally, the media independently drive campaign expenditures and voting preferences, then democratic accountability is compromised. An

¹ For example, Jacobson (1978) finds that congressional challengers' spending increases their support among voters, while incumbents' spending does not. This leads him to recommend public financing of campaigns as a means for increasing the competitiveness of elections (but see Green and Krasno 1988).

unelected media elite shapes campaigns and election outcomes while partisan elites and citizens are mere bystanders who respond to the exercise of political influence.

Between these three ideal types, of course, reside several alternative possibilities of reciprocal influence between partisan elites, media elites, and citizens. Each carries its own implications for how and where political influence is exerted in the American polity. In this paper we examine and identify these reciprocal linkages, and in the process bring new evidence to bear on the questions of whether campaigns matter and, if so, how they matter.

We argue that the key to unlocking these puzzles lies in examining the dynamics that are at their core. Where previous studies of money and votes have been largely static in nature – examining the relationship between campaign expenditures and voter support at the end of the campaign – we adopt a dynamic approach and examine how expenditures and voter support impact each other over the course of the campaign. We also break with previous studies in arguing that the media are key players in the dynamics of campaigns, both mediating the relationship between elites and citizens and carrying the potential for independent impacts of their own.

We test our dynamic perspective by employing methods and data that are particularly suited for analyzing campaign dynamics. We apply a Vector Autoregression (VAR) approach that allows us to simultaneously test for exogeneity and endogeneity in the relationships between expenditures, voter support, and media coverage. We examine these relationships on a daily basis over the course of the 2000 presidential campaign. We do so by using the 2000 presidential election data from the National Annenberg Election Study to track voting intentions, which we term the expected vote, over the course of the campaign. We match this series with

corresponding daily series on campaign expenditures by the Bush and Gore campaigns and coverage of the two campaigns by the *New York Times*.

We find that campaign expenditures, media coverage, and the expected vote all impacted the dynamics of the 2000 presidential campaign. Contrary to previous static studies, our dynamic analysis finds no direct independent effect of voter support on campaign expenditures. We do, however, find significant effects of Bush campaign expenditures on voter support. The expected vote instead impacted campaign expenditures indirectly, by influencing media coverage, which, in turn, impacted expenditures. Our results identify, for the first time, the direct effects of campaign expenditures on voter support independent of any potential simultaneity bias. At the same time, they highlight the critical role that media coverage plays in shaping campaign dynamics.

II. Untangling Expected Vote, Money, and Media

The study of campaigns has long been one of the most important and fruitful lines of research in American politics. A critical question in the study of campaigns is what the effects of campaigns actually are. How scholars have approached this question depends in part on what level of campaigns they look at—congressional or presidential. These two sides to the literature have moved in different directions over time, but could learn much from each other. We generalize to both by examining longitudinal campaign dynamics.

Scholars of congressional elections have long wringed their hands over the endogeneity of the expected vote outcome and campaign contributions and expenditures (Green and Krasno 1988, 1990; Jacobson 1978, 1980, 1983, 1990; Erikson and Palfrey 1998; Gerber 1998). That is, increased money may lead to an increase in the expected vote outcome, while a higher expected

vote outcome for a candidate may lead to increased money donated to (and subsequently spent by) that candidate. Thus, the critical role of money in campaigns, while a clear focus of research and public attention, has remained unresolved in the congressional elections literature. Jacobson (1990) concludes that work on the relationship between expenditures and vote share is still inconclusive precisely because no one has been able to solve the simultaneity problem.²

The potential endogeneity of media coverage should not be ignored either and further adds to the complication of teasing out the relationships and directions among these key variables. Increased media attention may lead to an increase in expected vote and in the availability of monetary resources. Similarly, an increase in the expected vote or in monetary funds may lead to additional media coverage. This is especially true in nomination campaigns, where candidates who are doing well in the polls or in fundraising are more likely to garner larger amounts of media coverage, due to the media's tendency to cover the frontrunners (Patterson 1980; Graber 1984; Hagen 1996).

The presidential campaign literature, meanwhile, has also been concerned with these same variables, but in different ways. The presidential literature has focused more on the controversy of whether or not campaigns actually matter. The minimal effects literature held that campaigns, especially media coverage of the campaigns, mattered little, and voters in presidential elections relied more on long-standing attitudes and characteristics to determine their

² Scholars have proposed various solutions to this problem of simultaneity bias. Arguing that Jacobson's estimate that congressional incumbents' expenditures have minimal effects on voter support was biased due to expenditures being endogenous to his models, Green and Krasno estimated a two stage least squares regression with lagged expenditures as an instrument to identify the model. Jacobson (1990) and Erikson and Palfrey (1998) remained unconvinced, arguing that there are no good instruments for expenditures because there are no variables that explain expenditures without also explaining vote outcomes. Bartels (1991) countered that mildly correlated instruments are still useful in teasing out the relationship and Gerber (1998) continued the search for additional instruments. Scholars have also sought to address the simultaneity problem via three stage least squares and other multiequation models (Goidel and Gross 1994; Kenny and McBurnett 1994), panel studies (Jacobson 1990), and temporally disaggregated analysis (Box-Steffensmeier and Lin 1996).

vote (e.g. Lazarsfeld, Berelson, and Gaudet 1944; Berelson, Lazarsfeld, and McPhee 1954). This view of campaigns has been the subject of much criticism, however, as more recent studies have shown that various aspects of a campaign, such as specific issues, campaign events, and advertisements, can impact the expected outcomes of elections (Holbrook 1996; Mendelberg 1997; Mutz, Sniderman, and Brody 1996; Petrocik 1996; Shaw 1999a and 1999b).

What these two parallel literatures have failed to do is to bring together the controversies in each field into one coherent framework to study the overall impact of campaign effects. The congressional literature assumes that there are effects, but they might be endogenous. The presidential literature is concerned with whether or not there are effects, but does not worry about the potential for endogeneity. The concerns of each literature are important to the other. Media coverage and campaign finance are just as likely to be endogenous to expected vote in presidential elections as they are to congressional elections. And the controversy over whether or not there are effects has been at times subsumed by the endogeneity problem in congressional elections.

III. Data and Methods

The 2000 National Annenberg Election Survey (NAES) offers, for the first time, expected vote data over a relatively long campaign period at regular intervals.³ We use the NAES expected vote for president and add to this a measure of media coverage of the candidates from the *New York Times* and daily campaign expenditures from Federal Election Commission reports.

³ National Annenberg Election Survey 2000, produced by the Annenberg Public Policy Center and the University of Pennsylvania and available on CD-ROM with Romer, et. al. 2004.

We measure the expected vote outcome at a daily level using the 2000 National Annenberg Election Study. The study consisted of a rolling cross-section design, in which new national cross-sectional samples were drawn each day during the 2000 campaign, starting in December of 1999. In all, 58,373 respondents were interviewed over the course of the year. The study continued through early 2001, though we use only the data up to, and including, the day before the general election, giving us a total of 329 days.⁴ The study was funded by the Annenberg School for Communication and the Annenberg Public Policy Center of the University of Pennsylvania (Romer et al. 2004).

The design of the study lends itself well to studying the effects of a campaign. With new samples every day of the campaign, researchers can get new data points following every major campaign event. Campaign dynamics occur quickly and so a daily measure is important (see Freeman 1990 for a discussion of time aggregation bias). Trends over time can be studied by comparing the responses from day to day. This allows us to test theories regarding campaign dynamics that have previously been untestable due to a simple lack of available data over the course of campaigns.

We can look at the expected vote over the course of the campaign by looking at Al Gore's share of the two-party vote (Figure 1). In the early nomination period, Gore grew his share of the vote, as the Democratic race was still competitive, and Gore was receiving a chance to show himself as a candidate. When the Democratic race fell off the national radar due to Bill Bradley's lackluster numbers and John McCain's insurgency in the Republican race, Gore's increase in support began to level off, with the average falling just below 50% of the vote.

⁴ The NAES did not conduct surveys on days surrounding certain holidays, including Christmas, New Years, and the 4th of July. For these missing data points in the expected vote series, we interpolated values for those days based on the surrounding data points. The study began December 14th, 1999, which was used as the starting point for our data collection of all three sets of variables.

During the summer months, the expected vote share stayed relatively stable, barring day-to-day fluctuations from sample error. Once the Republican convention hit, Gore's support began dropping, and did not begin to pick back up until his own convention, after which his levels of support went up slowly in September and began dropping off again in October, with a late gain in the last few days of the campaign. Gore's support over the post-convention general election period generally stayed above 50% on average, with some daily variation.⁵

For media coverage, we use a content analysis of daily front-page stories on the campaign in the *New York Times*. These front-page stories are a proxy measure for the type and extent of media coverage during the campaign. Front-page stories are more likely to be accessible to the public, who look for quick sources of information, and these are often the stories that contain messages that are most emphasized by the candidates (Haynes and Rhine 1998). The approach of using front-page stories is not a new one, with research by Haynes and Gurian (1993) and Haynes and Rhine (1998) both using front-page stories of presidential nomination campaigns as measures of media coverage.

The use of the *New York Times* for media coverage is also a proxy measure of overall media coverage, as the national newspapers are considered the prestige press, and their coverage serves as a guide for what is important to other media outlets (Graber 1997). Additionally, the national newspapers and major television networks generally agree in their assessments of candidate performance and future chances (Marshall 1983). For these reasons, Mutz (1995) argues that newspaper readers and television viewers will receive approximately the same account of the nomination campaign.

⁵ A three-day moving average representation of the expected vote series shows a similar pattern, while reducing the amount of daily variation. However, due to our use of the daily series in our multivariate models, we do not show the moving average graph here.

The *New York Times* stories are coded on a negative-positive-neutral scheme for each candidate.⁶ Each word of the story is coded, and the number of words of each type of coverage is aggregated into a daily time series. Thus each candidate has three basic daily time series of media coverage: positive, negative, and neutral. From these three series, we recode the data into a simple difference for each candidate—their positive coverage minus their negative coverage. This gives us a measure of the type and amount of coverage that each candidate is afforded in the media each day.

Figures 2 and 3 display the positive and negative coverage of each candidate during the time period under study. Media coverage for both candidates saw two major periods: during the nomination campaigns, both of which wrapped up by early March, and the general election campaign, which began to attract coverage just before the conventions began, in late July and early August. There was a large drop-off in media attention during the summer months that are traditionally the more quiet periods of the presidential election year. Coverage was relatively similar for both candidates during both the nomination and general election periods, although Bush received more attention during the late part of the nomination campaign, as the Republican race was more closely contested than the Democratic race. Both candidates saw spikes in positive coverage surrounding their party conventions, but after Labor Day, the coverage of the candidates became very similar in amount and type.

The third source of data is Federal Election Commission data on candidate expenditures starting with their expenditures from their nomination committee and then switching over to expenditures from their general election committee after they began receiving funds after their

⁶ The coverage is about each candidate or their campaign. Information about Bill Clinton would not be counted, unless it was in direct relation to his effect on the Gore campaign.

party's nominating convention.⁷ The data is again aggregated for each candidate into a daily time series, recording how much each candidate spent on any given day of the campaign. The use of expenditures instead of receipts is important because candidates can only seek to influence the campaign and their voters by spending money. Information is transmitted when a candidate *spends* money. Candidates spend money to buy campaign ads, send out mailings, and engage in other activities that provide information directly to voters. Fund-raising is well covered by the media, so any positive effects that may result from a candidate being successful in *raising* money should be picked up in our data via the media measure. During the general election campaign, presidential candidates receive one lump sum payment from the Federal Election Commission at the start, and then do not have any other receipts to their campaign committee the rest of the campaign.

Figure 4 shows campaign expenditures throughout the 2000 campaign. These spending patterns followed similar paths to media coverage, with both campaigns spending a great deal of money in the nomination campaign and then going relatively quiet in the summer months until the conventions began. During the nomination period, the Bush campaign had larger amounts of money to spend than any other candidate, and the campaign spent the money they had. Since the Republican convention was held first, Bush had a slightly longer period of time in which to spend his federal funding for the general election.⁸ Bush began spending his money early, and actually spent a great deal of money in the days surrounding the Democratic National Convention. This may have helped to lessen the impact of the free media coverage that Gore received during his convention, but also left Bush behind in terms of cash on hand in the early

⁷ Many thanks go to Bob Biersack of the FEC for providing these data.

⁸ The lump sum payments are received by the campaigns following their acceptance of the party nomination, meaning that the Bush campaign received their federal funds before the Democratic National Convention was held.

parts of the campaign. As a result, Gore spent more during parts of September than Bush did, and both candidates began spending in large spikes as the campaign grew to a close.

Taken as a whole, the campaign literature reflects the promise of progress with a model that captures campaign dynamics. Our work builds on the substantive literature that is concerned with the varying effect of money and media coverage over the course of a campaign. The time series data allows us to use Granger causality methods, which are ideal for addressing concerns about endogeneity.

We use the well-known Vector Autoregression (VAR) framework for our analysis.⁹ No exogeneity restrictions are made in VAR. In reduced form VAR, the values on each series are modeled as functions of lagged values of the series, and lagged values on the remaining series. In this way, a VAR framework allows each series to be endogenous to the other series (Freeman, Williams, and Lin 1989).¹⁰ Freeman (1983) states that “The notion of Granger causality is based on a criterion of incremental forecasting value. A variable x is said to ‘Granger cause’ another variable y , if y can be better predicted from the past of x and y together than the past of y alone, other relevant information being used in the prediction” (1983, 328). Statistically, the idea is to see whether all coefficients of the right-hand side variables are jointly zero. Inference proceeds via Granger causality tests, in which Wald tests (F tests depending on the sample size) are computed on the difference between a restricted model (excluding a particular lagged value) and an unrestricted model (including this particular lagged value). A significant Wald or F test indicates that the inclusion of the lagged term adds explanatory power in accounting for the

⁹ For additional discussions of vector autoregression models, see Sims 1980, Lutkepohl 1993, Hamilton 1994, Amisano and Giannini 1997, and Enders 2004.

¹⁰ Moreover, a VAR approach imposes fewer and weaker assumptions than the modeling approaches used thus far in the campaign finance literature.

value of the dependent variable. If a statistically significant effect is found, the lagged term is said to Granger cause the dependent variable, which is thus endogenous to the lagged term.

As an example, consider a seven equation reduced form VAR in which campaign expenditures, media coverage (measured in terms of both positive and negative NYT coverage of George W. Bush and Al Gore), and the expected vote are modeled as functions of their own lagged values and the lagged values on the remaining series. For ease of exposition, consider only the first-order VAR case (in which only immediate, i.e., the previous day's lagged values, are included in the model). In subsequent analyses, we consider more complex lag specifications, which can easily be tested. In such a first-order seven equation reduced form VAR, the expected vote is modeled as follows, with each of the remaining series modeled analogously:

$$\begin{aligned} \text{Expected Vote}_t = & \gamma_0 + \gamma_1 \text{Expected Vote}_{t-1} + \gamma_2 \text{PositiveBushCoverage}_{t-1} + \gamma_3 \text{NegativeBushCoverage}_{t-1} \\ & + \gamma_4 \text{PositiveGoreCoverage}_{t-1} + \gamma_5 \text{NegativeGoreCoverage}_{t-1} + \gamma_6 \text{BushCampaignExpenditures}_{t-1} + \\ & \gamma_7 \text{GoreCampaignExpenditures}_{t-1} + e_{1t} \end{aligned}$$

This standard VAR framework serves as a helpful baseline model for the examination of endogeneity in campaign expenditures, media coverage, and the expected vote. However, to accurately capture endogeneity during campaigns we must modify the standard VAR approach to incorporate the degree of persistence in the series. Thus far we have considered the VAR approach by incorporating the series in their original, or levels form. Implicit in this approach is the assumption that the series are stationary I(0) processes and have short memories as stochastic shocks are quickly forgotten and the series revert to constant means following these innovations. Contrast this with an alternative possibility, that the series are nonstationary, unit-root I(1) processes with perfect memory, that exhibit long swings in response to stochastic shocks and do not revert to constant means.

The implications of modeling a nonstationary process as a stationary process can be severe, producing a bias toward Type I errors. Recognizing this, scholars long contemplated a decision of either modeling series in their levels or first-differencing series in response to evidence of nonstationarity. Such a knife-edge approach, however, often does not accurately reflect the underlying dynamics of political processes and carries its own problematic methodological implications.

As Lebo, Walker, and Clarke's (2000) important work demonstrates, political time series are usually fractionally integrated. The order of integration is neither zero nor one, but rather is a non-integer value between the two (see also Box-Steffensmeier and Smith 1996; Box-Steffensmeier and Smith 1998). Moreover, as their Monte Carlo studies show, failure to account for the fractional dynamics of a series results in a high likelihood of spurious regression. It is essential, therefore, to examine series for fractional integration, and, where this is found, include the series in their fractionally differenced form in the VAR model (Box-Steffensmeier and Tomlinson 2000; Box-Steffensmeier and DeBoef 2005; Davidson, Peel, and Byers 2005; Park and Lee 2003).

We use the fractional integration framework in our VAR analysis to draw conclusions about the relationship of votes, money, and the media. What is the long-run relationship between expected vote outcome, candidate expenditures, and media coverage of the candidates? Our work examines the relationships between aggregate processes. That is, the hypotheses studied here include whether one series Granger-causes another, whether they are interdependent, or independent (Davidson, Peel, and Byers 2005).

IV. Analysis and Findings

Table 1 presents Robinson's estimates of d for each of our time series.¹¹ The results confirm that it is indeed important for us to allow for fractional integration in our series. Four of the variables have d estimates that are between 0 and 1: positive coverage of Bush, positive coverage of Gore, negative coverage of Gore, and the expected vote. Negative coverage of Bush, and expenditures by each candidate tested as stationary series.

Table 2 presents the Wald statistics for the VAR model of campaign dynamics. The hypothesis is that all of the coefficients on the lags of variable x are jointly zero in the equation for y . Seven lags are selected for the VAR according to Akaike's Information Criterion (AIC) and the Final Prediction Error (FPE), which gives us up to a week for the dynamics.¹² Substantively, the seven lags are a good representation of how campaign effects can filter out to the public. News coverage of an event can often take a few days to reach all media outlets, and weekly newsmagazines can deliver information about a campaign event a week after the event actually occurs. Having a shorter number of lags in the model would prevent us from being able to capture those potential dynamics, while a longer lag length may include too much time to be able to accurately predict the effects of any given change in the dynamics of a race.

The first set of results shows that the expected vote depended on negative, but not positive, media coverage of Gore. (Neither positive nor negative coverage of Bush had a significant effect on the expected vote at the .05 level). This fits with our understanding of the asymmetric impacts of negative and positive information on decision making. Citizens weight negative information and potential losses more heavily than positive information or prospective

¹¹ We used STATA's `roblpr` module to estimate d . Using this form of Robinson's estimator does not require that the user first difference the data prior to estimation (personal communication with Christopher Baum, co-author of `roblpr` module, 7/5/05).

¹² We want to minimize the final prediction error as well as the discrepancy between the given and true model as measured by the AIC.

gains when forming decisions (Lau 1985, Kahneman and Tversky 1979). And thus, as we would expect, negative media coverage has a much more significant effect on voting preferences than does positive media coverage. Candidates, our results argue, gain little in the expected vote from positive media coverage of strong campaign performance, but may suffer considerably in response to negative media coverage of policy proposals, campaign gaffes, and attacks from opponents.

We can further examine the effects of negative Gore coverage on the expected vote by examining a cumulative orthogonalized impulse response function. Such a function plots the cumulative effect in a response series produced by a one standard deviation positive shock to an impulse series. Thus, in this case, the cumulative orthogonalized impulse response function plots the effects of a one standard deviation increase in negative Gore media coverage on the fractionally differenced expected vote series.

Figure 5 presents this impulse response function. As the figure shows, negative Gore coverage initially depresses support for Gore among voters. This initial negative reaction is followed, however, by a period of a few days in which Gore's support is actually higher than prior to the negative coverage. This may well reflect a backlash among voters to negative coverage. Unfortunately for the Gore campaign, this backlash effect is brief and is followed by a period of persistently depressed support for the candidate.

By applying a dynamic perspective we are also able to disentangle the potential endogeneity between campaign expenditures and the expected vote. It is significant to note, therefore, that we find that expenditures by the Bush campaign influenced the expected vote while the expected vote did not influence either Gore or Bush expenditures. The reciprocal influence of citizens' public support on campaign expenditures hypothesized in the congressional

elections literature did not occur in the 2000 presidential contest. Direct influence in campaigns thus appears to flow from candidates to citizens rather than the reverse.¹³

We can gauge the relative magnitudes of negative media coverage and Bush campaign expenditures on the expected vote via a plot of the forecast error variance decomposition. Figure 6 presents such a plot. The figure presents the proportion of the error variance in the fractionally differenced expected vote for the two weeks following innovations in negative Gore media coverage and logged Bush expenditures. As we can see, the effects of innovations in both series on the expected vote build over several days until they plateau. Overall, negative Gore media coverage accounts for more of the error variance in expected vote than do Bush expenditures. This highlights the importance of the media as a critical actor in campaign dynamics.

We consider media coverage as dependent variables next. Bush's media coverage, both positive and negative, is Granger caused by the expected vote. There is little evidence of expenditures Granger causing media coverage, with only Bush's positive media coverage affected by expenditures. Media coverage of Gore, both positive and negative, is affected by all of the other media variables. This may indicate a desire on the part of the media to balance their coverage, and not offer too great an advantage to one candidate over the other. In turn, the decision to have balanced coverage may have been influenced somewhat by the expected vote, which hovered near 50% most of the campaign, indicating that voters were split as to who they preferred. The media, seeing this balance in the electorate, may then have moved to make sure that their coverage mirrored the preferences of the electorate (and their readership).

The results of our model show that the presidential candidates are responding to the expenditures of the other candidate. That is, Bush's expenditures are Granger caused by Gore's

¹³ The last row of each set of results, which is labeled "all", is simply a test of the null that the coefficients on all the lagged values of all the series are jointly zero for that dependent variable.

expenditures and vice versa. This finding fits with long standing expectations in both the campaign finance literature and campaign strategy realm of practical politics.

We can gauge the impacts of opposition expenditures on each campaign via impulse response functions. Figure 7 plots the effects of Gore campaign expenditures on Bush expenditures, while Figure 8 plots the effects of Bush campaign expenditures on Gore expenditures. Although both candidates increased spending in response to their opponent's increases, the Bush response was more consistent than the Gore response. In contrast to the Bush campaign's nearly monotonically increasing response to Gore expenditures, the Gore campaign first increased expenditures in response to Bush expenditures, then reduced expenditures for several days, then dramatically increased expenditures roughly a week after the Bush expenditures, then again reduced expenditures only to subsequently increase expenditures.

Bush expenditures were also impacted by the negative media coverage of Gore, suggesting that the Bush campaign was trying to build upon negative coverage of their opponent by emphasizing Gore's weaknesses when they were made apparent by the media. Finally, Bush expenditures were Granger caused by the expected vote. Since the general direction in the expected vote series was a gradual increase in Gore's share of the two-party vote, Bush clearly was trying for much of the campaign to combat this trend, and he had ample resources to do so prior to the fall campaign and its federal funding. However, it is not clear what these expenditures bought his campaign. The expected vote generally trended upward for Gore, though not by large amounts, even as Bush was spending record amounts of money. What is likely is that Bush's expenditures prevented Gore from creating an even greater advantage in levels of support, as his expenditures also Granger caused the expected vote.

The overall picture of the campaign process uncovered by our model shows that campaign dynamics are complex and not uni-directional. Campaign expenditures impact the expected vote, while media coverage is driven in part by both campaign expenditures and the expected vote, while both are in turn affected by media coverage. Some of these relationships may be explained to some degree by events during the campaign. Debates generally draw more media coverage than normal, and campaigns will work hard to play up any perceived weaknesses shown by their opponents in the debates, such as Gore sighing in the first debate and appearing dismissive of Bush, which was used by the Bush campaign to portray Gore as something of an elitist. Whenever a candidate commits a glaring mistake, whether in a debate or on the campaign stump, the media will likely jump on that mistake and devote a lot of coverage to it, and the opposing campaigns will use that mistake to their advantage, such as Bush during the primaries having difficulties naming foreign leaders. And when campaigns begin making attacks against each other, the media will in turn cover those attacks as well.

The interplay between media coverage and campaign expenditures shows the importance of the campaign by also being linked to the expected vote. How the media and campaigns interact would be of no significance if neither had any effect on who the voters supported. Luckily for those who believe that campaigns matter, media coverage and campaign expenditures do have an impact on the expected vote, which in turn may help to guide the level and type of media coverage of candidates.

V. Conclusion

There are significant effects of Bush campaign expenditures on voter support. The expected vote instead impacted campaign expenditures indirectly, by influencing media coverage

which, in turn, impacted expenditures. Our results identify, for the first time, the direct effects of campaign expenditures on voter support independent of any potential simultaneity bias. At the same time, they highlight the critical role that media coverage plays in shaping campaign dynamics. It is a complex story, and a fascinating one to tease out for the 2000 Presidential election.

By studying the dynamics of the 2000 campaign with a model that allows and tests for endogenous relationships, we improve on the literature of campaign effects by more accurately describing the interplay between media coverage, campaign expenditures, and the expected vote. Each set of variables has some impact on the others. Additionally, we show that both the congressional and presidential campaigns literatures both have some part of the story right: media, spending, and expected vote are endogenous to each other, and campaign effects do matter.

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Table 1: Robinson estimates of fractional differencing parameters

Variable	Estimated d	Std. Error	p (H0: d=0)	p (H0: d=1)
Positive Bush Coverage	0.2257	0.0462	0.000	0.000
Positive Gore Coverage	0.2334	0.0466	0.000	0.000
Negative Bush Coverage	0.0636	0.0494	0.199	0.000
Negative Gore Coverage	0.2321	0.0514	0.000	0.000
Expected Vote	0.1120	0.0534	0.037	0.000
Bush Expenditures	-0.0076	0.0536	0.888	0.000
Gore Expenditures	0.0451	0.0462	0.330	0.000

**Table 2:
Wald Test for VAR Model of Presidential Campaigns**

<u>Equation</u>	<u>Excluded</u>	<u>chi2</u>	<u>Prob>chi2</u>
Expected Vote	Positive Bush Media Coverage	1.2209	0.9904
	Positive Gore Media Coverage	2.0421	0.9575
	Negative Gore Media Coverage	22.1563	0.0024
	Negative Bush Media Coverage	12.3037	0.0910
	Bush Expenditures	15.5505	0.0296
	Gore Expenditures	12.9908	0.0723
	All	64.3236	0.0149
Positive Bush Media Coverage	Expected Vote	21.2772	0.0034
	Positive Gore Media Coverage	3.4929	0.8360
	Negative Gore Media Coverage	1.6247	0.9777
	Negative Bush Media Coverage	1.2721	0.9892
	Bush Expenditures	7.3679	0.3916
	Gore Expenditures	15.0414	0.0355
	All	48.3326	0.2324
Positive Gore Media Coverage	Expected Vote	11.7032	0.1108
	Positive Bush Media Coverage	16.2976	0.0225
	Negative Gore Media Coverage	21.3642	0.0033
	Negative Bush Media Coverage	21.8312	0.0027
	Bush Expenditures	3.7851	0.8042
	Gore Expenditures	4.0289	0.7764
	All	91.3961	0.0000
Negative Gore Media Coverage	Expected Vote	5.2906	0.6246
	Positive Bush Media Coverage	13.8486	0.0539
	Positive Gore Media Coverage	15.3766	0.0315
	Negative Bush Media Coverage	18.8302	0.0087
	Bush Expenditures	8.0563	0.3277
	Gore Expenditures	1.9306	0.9636
	All	67.5262	0.0075
Negative Bush Media Coverage	Expected Vote	16.4069	0.0216
	Positive Bush Media Coverage	5.0388	0.6552
	Positive Gore Media Coverage	2.5956	0.9197
	Negative Gore Media Coverage	5.3646	0.6156
	Bush Expenditures	7.5945	0.3697
	Gore Expenditures	11.6670	0.1121
	All	59.8389	0.0364

Bush Expenditures	Expected Vote	12.6848	0.0802
	Positive Bush Media Coverage	8.4416	0.2953
	Positive Gore Media Coverage	7.1055	0.4180
	Negative Gore Media Coverage	25.4481	0.0006
	Negative Bush Media Coverage	3.5801	0.8267
	Gore Expenditures	21.7107	0.0028
	All	84.4714	0.0001
Gore Expenditures	Expected Vote	8.4269	0.2965
	Positive Bush Media Coverage	4.0777	0.7708
	Positive Gore Media Coverage	3.3047	0.8555
	Negative Gore Media Coverage	10.0222	0.1873
	Negative Bush Media Coverage	6.4255	0.4910
	Bush Expenditures	46.7106	0.0000
	All	85.2286	0.0001

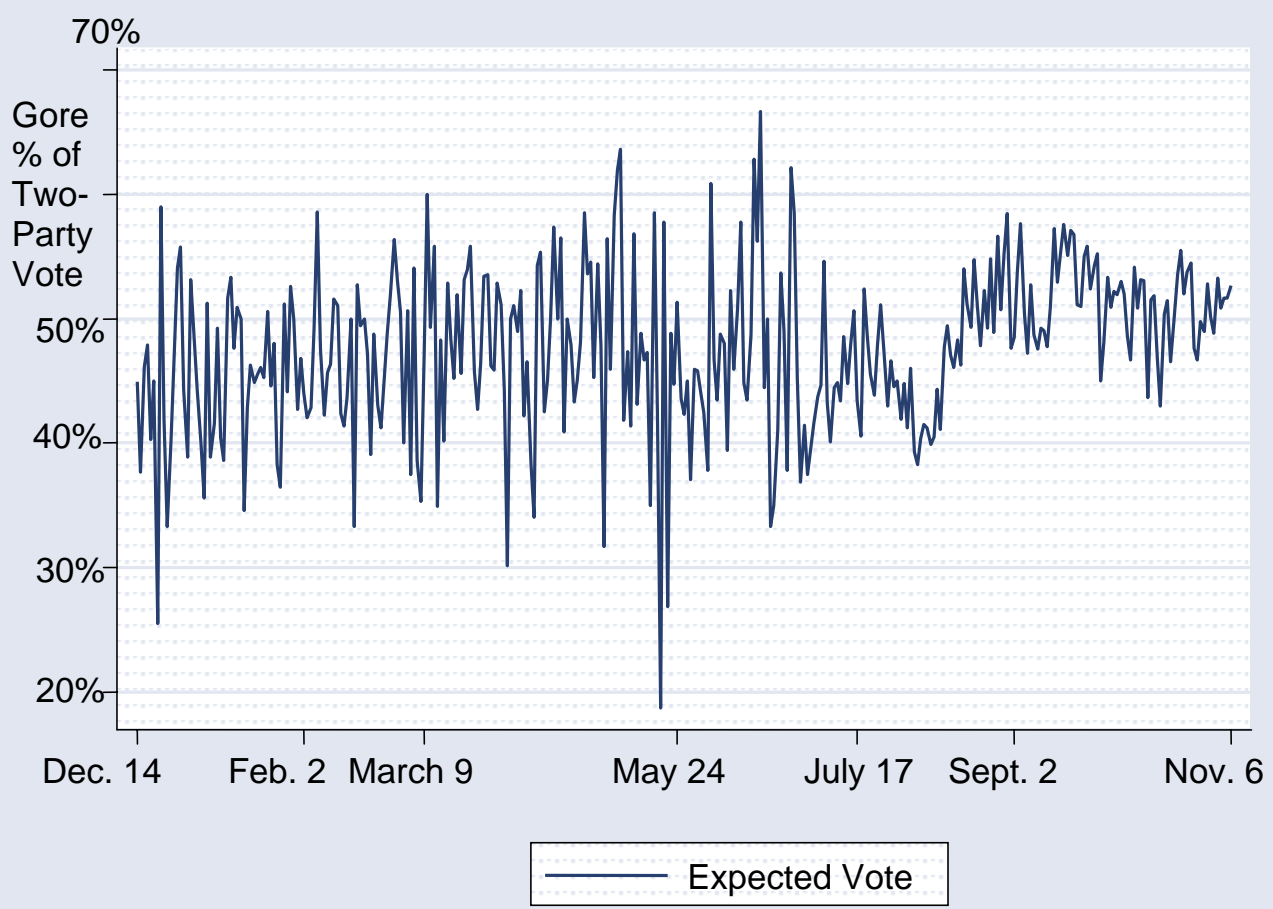


Figure 1 Daily Expected Vote

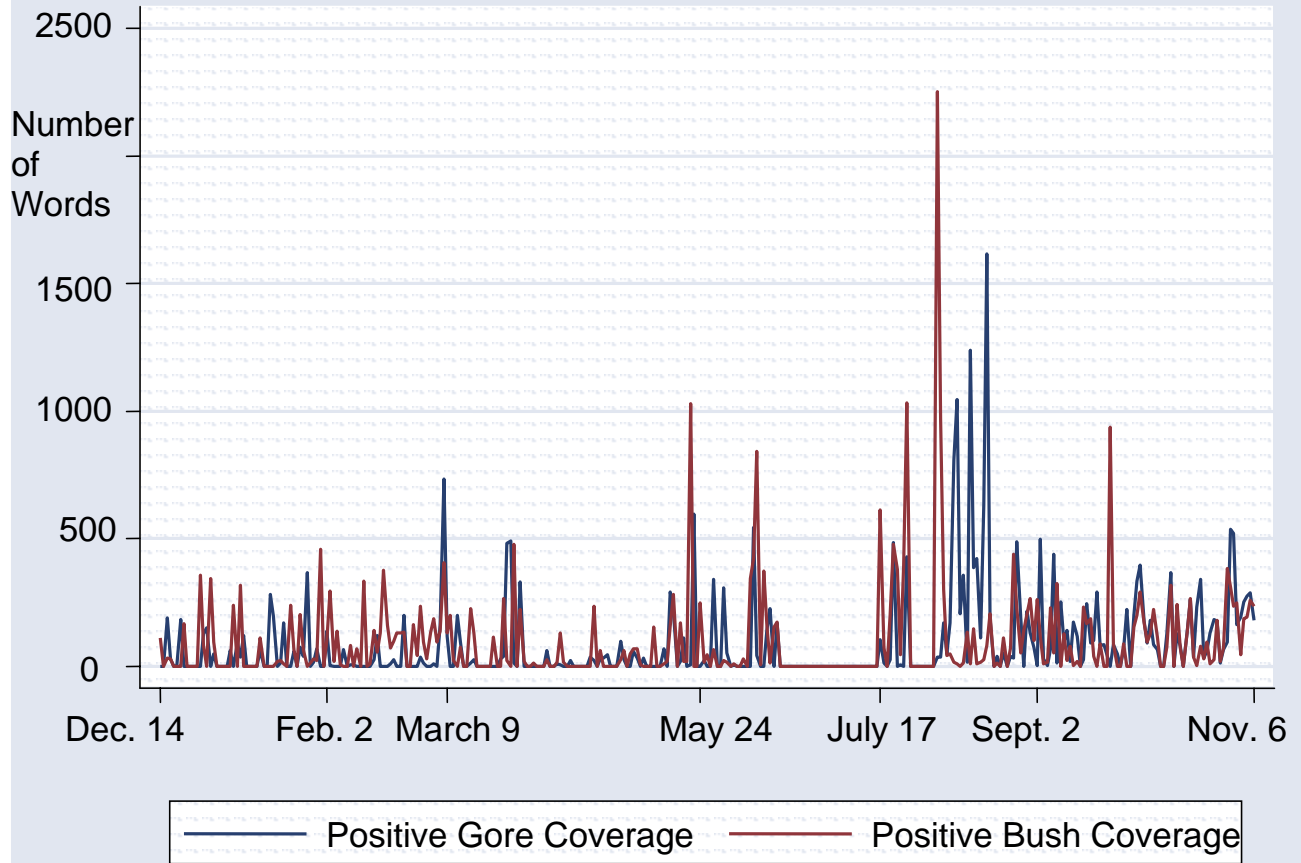


Figure 2 Daily Positive Media Coverage

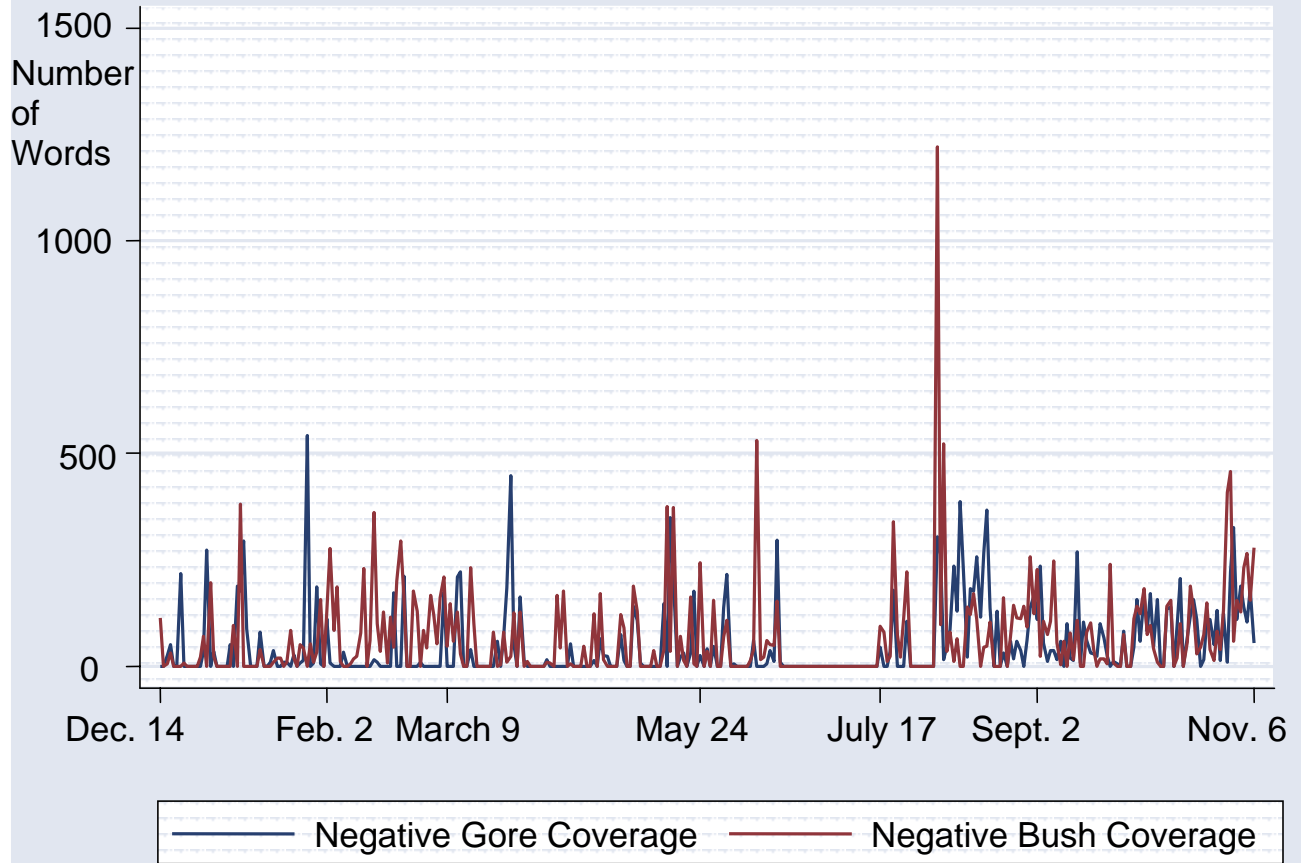


Figure 3 Daily Negative Media Coverage

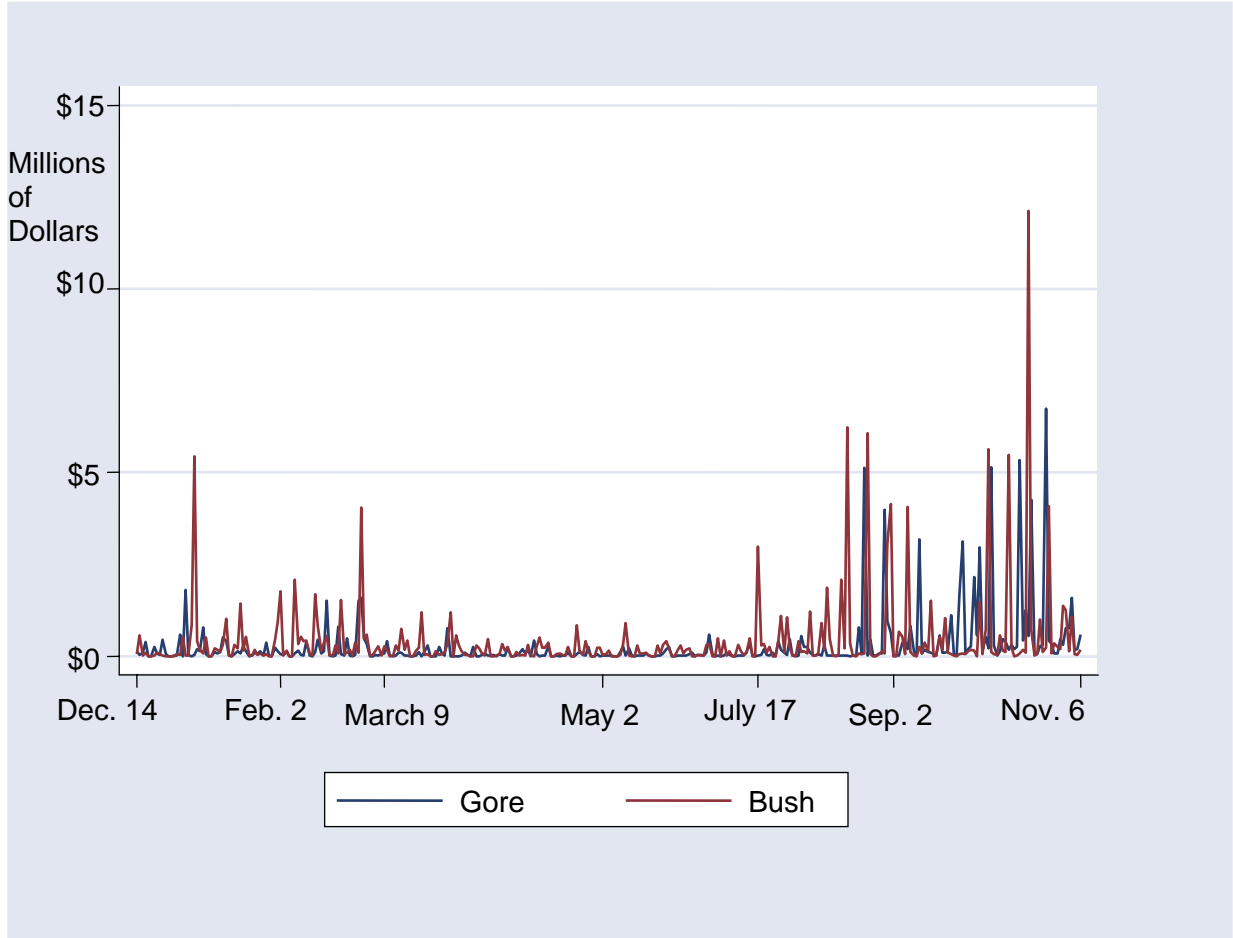


Figure 4 Daily Campaign Expenditures

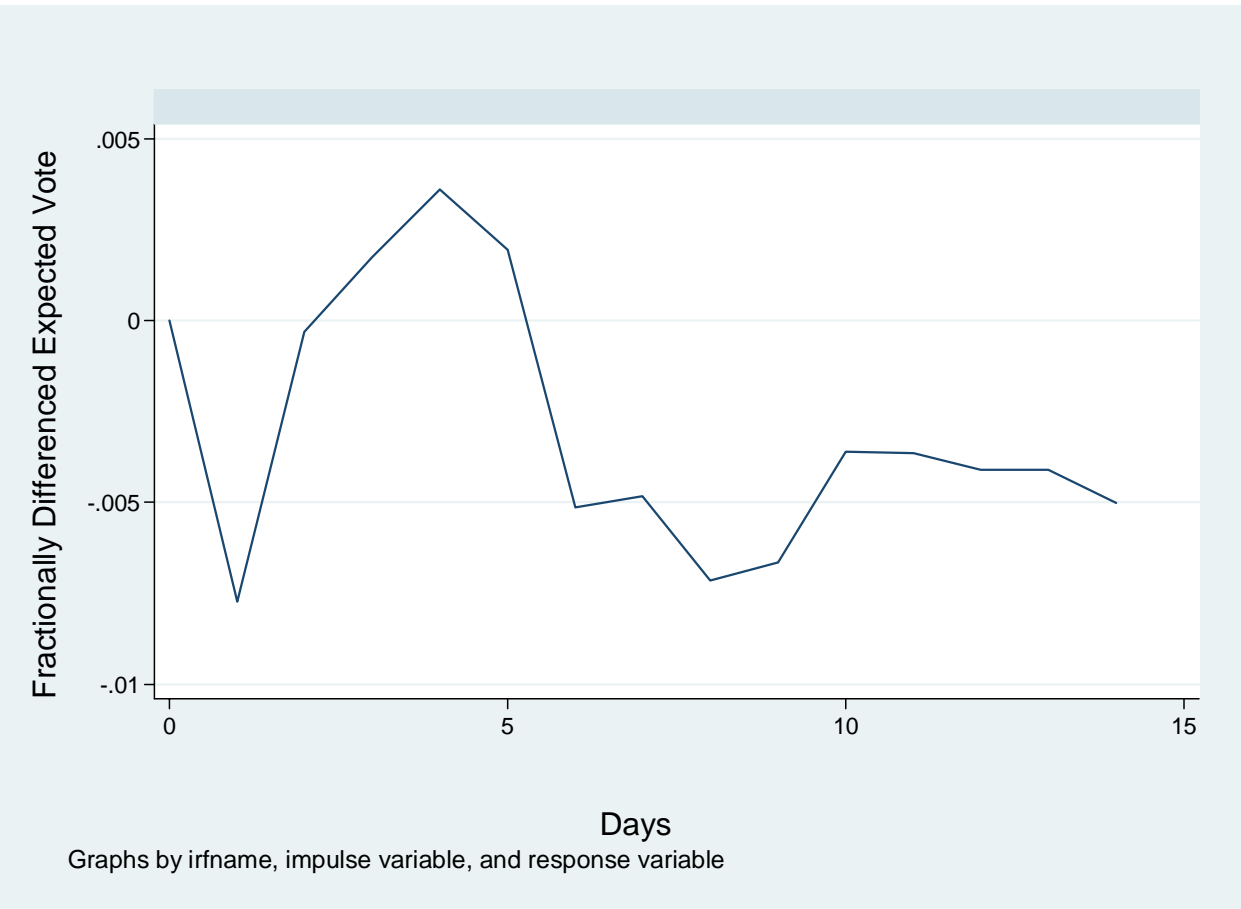


Figure 5 Negative Gore Coverage Impact on Expected Vote

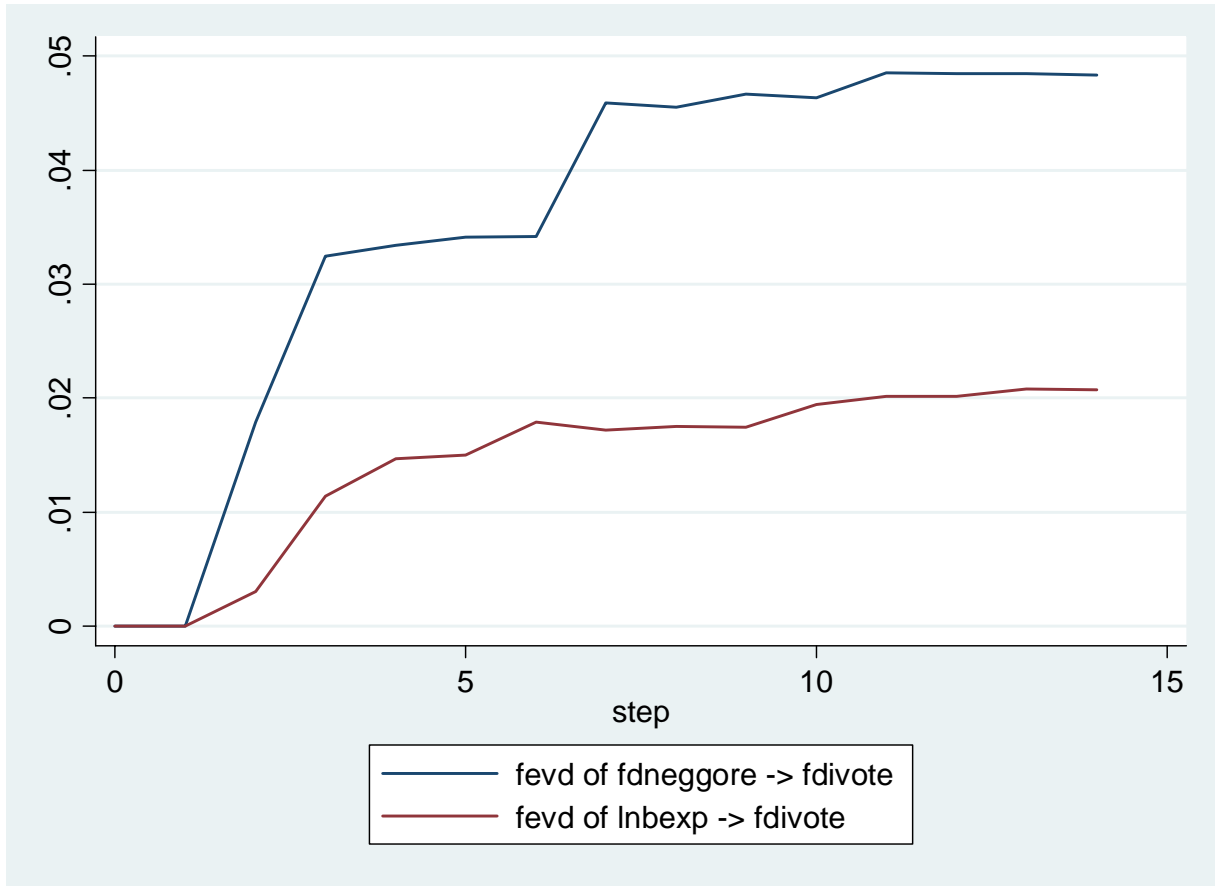


Figure 6 Forecast Error Variance Decomposition of Effects on Expected Vote

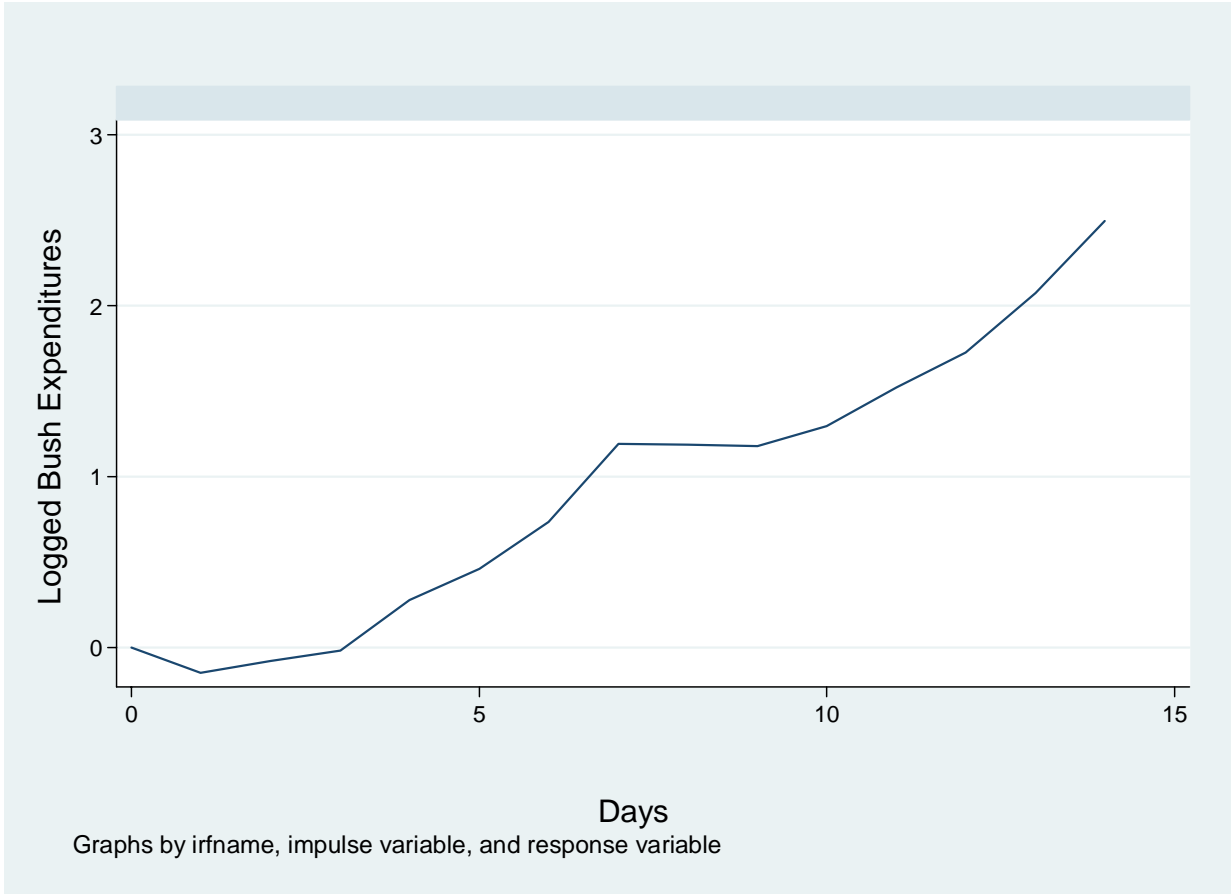


Figure 7 Gore Expenditures' Impact on Bush Expenditures

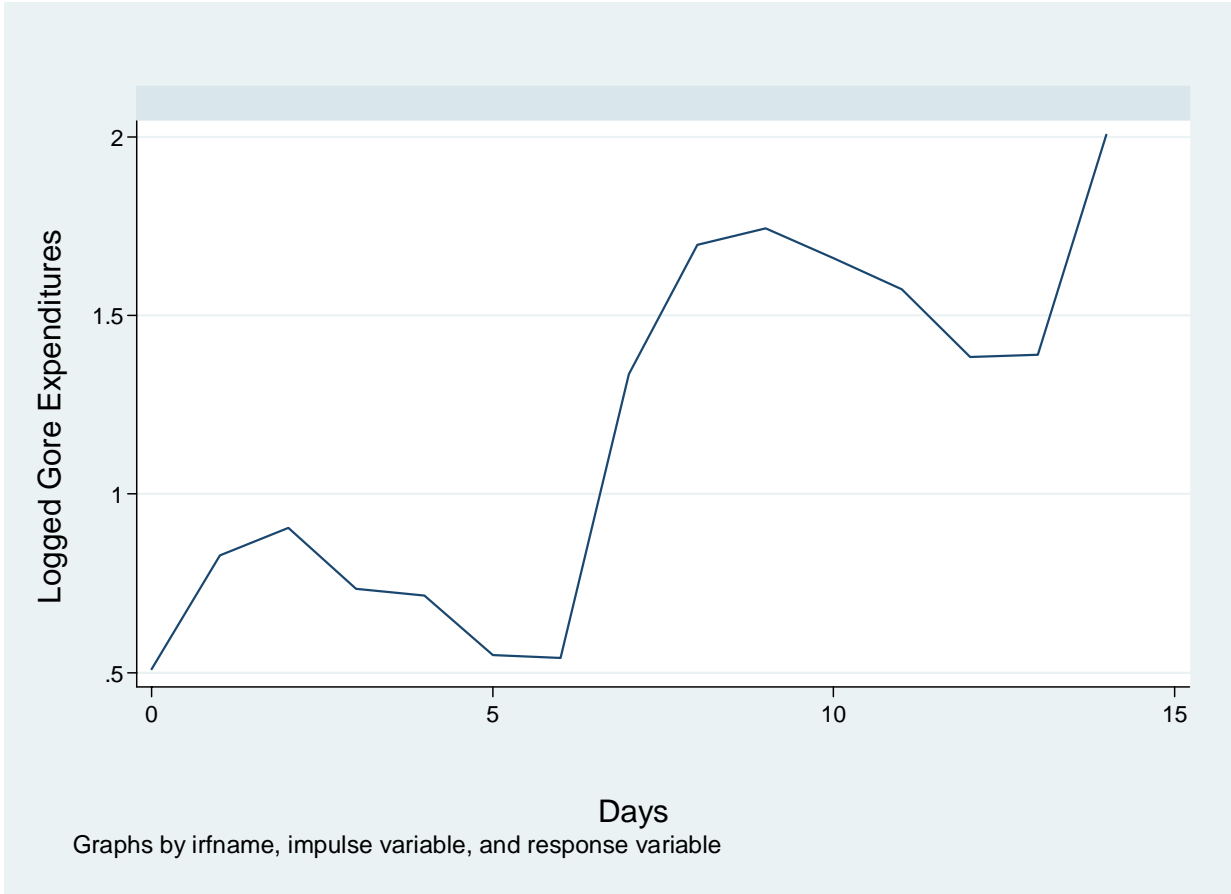


Figure 8 Bush Expenditures' Impact on Gore Expenditures