Early Voting and Early Spending:

The Impact of Early Voting on The Timing of Campaign Expenditures

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Abstract

Despite the increasing significance of early voting in United States elections, much of the academic research on campaigns—specifically on campaign expenditures—fails to account for the role of early voters. This study uses newly available data from the Federal Election Commission and Congressional Quarterly and two regression models to establish the impact of early voting on expenditure timing and the impact of early spending on candidate vote share. It finds that while campaigns in states with early voting spend their funds significantly earlier than campaigns in states without early voting, this spending does not bring with it an apparent electoral advantage. This validates claims made by campaign experts and news media about earlier spending, guides the expenditures of campaigns, and challenges the academic literature to account for early voting.

Introduction

In an October 1st, 2008 *Washington Post* piece titled, "Nov. 4 Isn't the Only Election Day; Campaigns Adjust as Early Voting Rises," author Mary Pat Flaherty outlines the steps the major party presidential campaigns were going through to win over "electoral gold" (early voters), including specially targeted ads and get-out-the-vote operations. The media reports that campaigns have adjusted to the increasingly large number of early voters, but scholars have yet to adjust their work to incorporate these changes in campaigning. While there is a large body of work exploring the changes in turnout and electoral demographics due to early voting, there is almost no work examining the role of early voting in the behavior of campaigns. This appears particularly important for scholars examining the role of campaign expenditures on electoral outcomes. Existing work simply does not account for a world in which a large number of voters have cast their ballots before campaigns have made one-hundred percent of their expenditures.

This study begins to fill that gap, demonstrating that candidates do spend money earlier in states with early voting, and also offering evidence to suggest this early spending may not necessarily give candidates an electoral advantage. The first finding helps to validate the claims made by campaign experts and news media about the impact of early voting on campaigns. The second finding can guide the spending of campaigns in states where there is early voting, who may be tempted to spend their money early. Finally, together, they challenge the academic literature to account for the growing role of early voters.

An Unexplored Topic

This study stands at an intersection between two relatively large fields of research within the study of American electoral politics. The first field is the study of early, absentee, and mail-in voting. Oliver (1996), exemplifies the focus of this field, generically asking the question, "What impact does early voting have?" In practice, however, the authors in this field tend to look at two subsidiary questions: "Who votes early?" and "Does early voting increase turnout?" These questions may consider the influences of campaigns on early voting, but they do not tend to consider how early voting influences campaigns. In addition, they tend to focus on the voter as the major unit of analysis, and see the individual elector as the driver of American politics, at the expense of considerations of candidate and campaign. The second field is the study of candidate campaign expenditures. This field is largely focused on the broad question, "Do campaign expenditures matter?" There are two major categories of work surrounding this question. There are theoretical "economic" models, as referred to by Jacobsen (1978), and "empirical" studies, as termed by Strattman (2005). The economic models generally lack connection to the actual conduct of elections and campaigns, relying instead on assumptions of motives and relationships between variables. The empirical studies tend to focus around the practical question of whether

incumbent spending matters in comparison to challenger spending and the methodological question of how best to consider the question. This field as a whole tends to focus on the campaign and the candidate as the unit of study and the major driver of elections.[1]

Early Voting Literature

Most of the work conducted on early voting looks at whether the widespread availability of early voting boosts turnout. A couple of major studies, one conducted by Oliver (1996) and another by Stein and Garcia-Money (1997), both suggest early voting can boost turnout, especially when campaigns mobilize voters to use it. The other large subsection of research into early voting focuses on the demographics of early voters and is exemplified by Stein's (1998) research comparing early voters to election day voters in Texas. These studies do consider the role of campaigns, but fail to explore how early voting impacts them, despite having established that campaigns benefit from mobilizing voters to vote early. Gronke (2008), does suggest a course of research that includes the study of early voting's impact on campaigns, but this piece, like the other work in the field, focuses on voters and ballot return instead of directly exploring the impact on campaigns. There is an exception to this framework; Andrew Busch (1998) looks at the impact of early voting on campaigns, attempting to discern if the cost of campaigning rises or the amount of negative advertising decreases. The study lacks methodological rigor, however, looking at a hodgepodge of data from surveys of campaigns and county clerks along with a narrow span of campaign finance data in the state of Colorado.

Economic Models of Campaign Expenditures

Economic models of campaign expenditures—and often money in politics more broadly— use concepts from economics to theorize about the relationships between donors,

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[1] This study will focus on campaign expenditures, ignoring other topics of money and politics. For a thorough review of the literature, see Strattman (2005).

candidates, and voters, hypothesizing about the motives and behaviors of each group and seeking to understand the impact money (or the things it can buy—advertising) has on each. Models of this type vary in complexity. There is Welch's (1974) relatively simple, yet oft cited, theory. This theory first establishes an economic demand market for campaign money from its ability to win votes and then shows how this demand relates to supply and donors' ability to influence candidates. In contrast, models, such as Prat's (2002), attempt to account for an enormous number of variables in every aspect of the campaign finance system including lobbies, election timing and voter welfare. Generally, these models lack interaction with the variance of actual campaigns, where motives and behaviors vary from person to person and campaign to campaign. Pratt (2002), almost sarcastically demonstrates this point through an extremely complex model which attempts to account for every possible variable in the campaign world. Some models do interact with the empirical world, just in a theoretical way. For example, Milyo (2001) attempts to correct what he sees as an error in many empirical studies: their flawed interpretation of a campaign's goal. Most studies used vote share maximization—where models are built around how much of the final vote a candidate receives—as opposed to win likelihood maximization. Milyo used economic arguments to suggest candidates are actually looking to win as opposed to maximize their vote share. As is the case with Milyo's piece, economic models tend to focus on a theoretical explanation for the generalized workings of the entire campaign finance world, and are less useful for investigating the impact of individual variables.

Empirical Investigations of Campaign Expenditures

Almost all of the current empirical literature on campaign expenditures traces back to one study. This study, by Gary C. Jacobsen (1978), makes two key points that have launched the two central debates in the field. The first is whether incumbent expenditures have significantly less

impact on election outcomes than challenger expenditures. The second is whether traditional Ordinary Least Squares regression models, looking at final expenditure and vote share data, accurately measure the relationship between expenditures and election outcomes because incumbents are able to spend more in reaction to challengers spending more, thus making it appear as if spending actually hurt the incumbent candidate.

The first question is, primarily, answered in two ways. There are those who follow the work of Green and Krasno (1988, 1990), who argue incumbent spending does have a significant positive impact on vote share and election outcomes relative to challenger spending. There is also another set of authors, such as Coates (1998), who agree with Jacobsen (1978), arguing that incumbent spending has no positive impact on election outcomes relative to challenger spending and may even have a negative impact. There is also a third answer to this question—Levitt (1994) finds that both challenger and incumbent spending have only small impacts on election outcomes. The debate will likely go unsettled with study and counter study; the combination of a methodological uncertainty and a controversial theoretical conclusion have created an environment where decisive evidence seems nearly impossible to find.

The other major distinction in the work exploring the relationship between expenditures and votes is methodological. Specifically, the studies vary in how they attempt to compensate for the effects of an incumbent's ability to spend money when faced with a strong challenger—that is, the impact of likely electoral outcome on incumbent expenditures. Most of the major studies have focused on manipulating the model or the statistics to control for these issues (Jacobsen 1978, 1990 Green and Krasno 1988, Coates 1998). These studies tend to make little headway and, as Gerber (2004) points out the "approaches vary widely." Some research, however, has manipulated the study or experiment itself in an attempt to isolate the expenditure variable. For

example, Levitt (1994), focused only on repeat challengers to attempt to control for candidate viability. Other examples are offered by Gerber (2004) as well as Green and Panagopoulos (2008), who actually manipulate campaign advertising in an experiment. These examples, however, look at a specific scenario (as with Levitt's use of repeat challengers), or have an anecdotal number of cases (as is the case with both the Gerber and Green studies). Another approach is offered by Kenny and McBurnett (1992) who use a lagged measure of campaign income to control for the impact of time. Their study, however, lacks any sense of actual campaign expenditure patterns, instead assuming expenditures occur relative to when donations are made, regardless of whether those donations are made early or late in the campaign.

Two Questions and Hypothetically Straightforward Answers

This study focuses on campaign expenditures as they relate to early voting, asking whether spending campaign funds before early voting begins positively impacts election outcomes. This allows us to control for challenger strength and the linkage between incumbent spending and vulnerability by using the proportion of funds spent as opposed to the total amount. Thus, we can control for variables previously unaccounted-for in expenditure studies without significantly limiting the number of cases to examine. The question can, however, be reconsidered in terms of early vote research by asking whether early voting influences the timing of campaign expenditures. In essence, this leaves two potentially interesting avenues to explore. First, it must be asked if candidates in states that allow the general population to vote early are more likely to spend money earlier than candidates where there is not a significant portion of the population voting early. From there, we can ask if candidates who spend money early in states where early voting occurs are more likely to win a large portion of the vote than candidates who do not.

Both of these questions offer a relatively straightforward hypothesis. First: in comparing US House campaigns, those in states where a large portion of the population vote before election day, will be more likely to spend their funds earlier than those in states without a large portion of the population voting before election day. Second: in comparing US House campaigns in states with early voting, those that spend their funds earlier will be more likely to win more votes than those that do not spend their funds earlier.

A New Dataset, a New Model and an Old Model

The first half of this study focuses on the operating expenditures of the 2008 major party candidates from challenger House races (that is, races where there was a challenger and an incumbent) where there was one candidate from the Democratic Party and one candidate from the Republican Party—224 races in all.[2] House races are selected to ensure a large sample size and because US House races are required to report each of their expenditures to the Federal Election Commission (FEC). Thanks to significant increases in data complied by *Congressional Quarterly* from 2008 US House electronic candidate filings through the Federal Election Commission (FEC), for the first time, the requisite data to build models based on a campaign's daily expenditure levels was readily available online. Thus, the question is explored with the OLS model:

$$SD \sim \beta_0 + \beta_1 E + \beta_3 I + \beta_4 SP + \beta_5 P \qquad (1)$$

where the model is calculated three times with the dependent variable, 'SD', equal to the number of days from Election Day at which a candidate has spend fifty, seventy-five and ninety percent of their total expenditures as taken from candidate expenditure reports to the FEC. The predictor variable 'E' is coded as one in states with general population early voting and zero in states

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[2] In Minnesota the Democratic Farmer Labor Party will be used. Louisiana will be excluded because of their "Jungle Primary" system.

without general population early voting. The first date of early voting is considered the day after

no-excuse, absentee or mail-in voting ballots are available or the first date of general population

early voting. For the purposes of this study, excuse required absentee voting is not considered

early voting. Three basic control variables are included in the model. 'I' assesses incumbency

and is coded as zero for challengers and one for incumbents. Relative overall spending as

reported to the FEC is labeled 'SP' and calculated as the candidate's total spending divided by

the opponent's total spending and used to control for the relative amount of funds available and

the relative strength of the candidates. Finally, P represents the candidate's party and is coded as

zero for Republicans and one for Democrats.

The second half of the study focuses on challenger vote margins and uses 2008

challenger House races where there was one candidate from the Democratic Party and one

candidate from the Republican Party, but borrowing from Jacobsen's 1978 study, looks only at

the challengers in these races. The study adapts Jacobsen's OLS model, adding a series of terms

to account for early voting and early spending. This creates two curvilinear OLS models—where

the first model accounts for the timing of early voting and the second the percentage of the

electorate voting early.

$$CV \sim \beta_0 + \beta_1 CE + \beta_2 IE + \beta_3 P + \beta_4 PS + \beta_5 SD + \beta_6 ED + \beta_7 (SD*ED) \qquad (2)$$

$$CV \sim \beta_0 + \beta_1 CE + \beta_2 IE + \beta_3 P + \beta_4 PS + \beta_5 SD + \beta_6 EV + \beta_8 (SD*EV) \qquad (3)$$

The dependent variable 'CV' is equal to challenger vote share as reported by state election

officials.[3] The major predictor variable 'SD' is equal to difference between the number of days

from Election Day at which a challenger has spend fifty, seventy-five and ninety percent of their

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[3] Milyo (2008) argues this measure should be dropped in favor of a binary variable indicating whether the race was won or lost. This study, however, is looking at the proportion of early spending to total spending as opposed to the difference between challenger and incumbent spending. This makes winning irrelevant to the study.

total expenditures and the number of days from Election day at which the incumbent has spent

the same amount. The predictors 'ED' and 'EV' are equal to the first possible date to vote early

in a given state and the proportion of the population voting early. The interaction terms are

combinations of SD, ED, and EV. The control variables 'CE', 'IE', 'P', and 'PS' are taken from

Jacobsen's 1978 model and refer to challenger expenditures, incumbent expenditures, challenger

party, and party strength. The first two are taken from the FEC, while party is taken from state

election officials and coded as zero for Republican and one for Democrat, and party strength will

be equal to the 2004 presidential vote share in the district as reported by *Congressional*

Quarterly.[4]

Data Collection

While most of the data was collected directly from the sources listed, data for the SD

variable had to be compiled by first downloading the individual expenditure reports from every

candidate under consideration, made available through *Congressional Quarterly's* "Money

Line." These are newly available in manageable electronic format and include a record for each

expenditure made by a candidate and reported to the FEC. These records include a date that was

used to find the spending for each day, which was divided by the total spending to find the

percentage of total spending conducted on any given day. By adding together these days in order,

the aggregated percentage of spending conducted by a given day was determined. The date at

which point fifty, seventy five, and ninety percent of expenditures were made was then

subtracted from election day.

Results: Early Voting has Clear Impact on Campaign Expenditure Timing

Model (1) was run three times, where the dependent variable 'SD' "Spending Days" is

equal to the number of days from the election at which an observed candidate has spent fifty,

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[4] Jacobsen used previous congressional results to calculate party strength.

seventy five, or ninety percent of his or her total operating expenditures for the campaign. These results indicate that in states where general population early voting occurs there is a tendency for campaigns to spend their funds earlier. Furthermore, while the significance of other variables fluctuates as we shift the dependent variable from fifty to seventy-five, to ninety percent of total spending, only the presence of early voting has a significant impact at all three points. Despite this strong relationship, however, neither of the other two measures of early voting, timing 'ED' or percentage of people voting early 'EV,' have a significant impact on the model. Additionally, early voting has limited predictive power for determining the timing of expenditures. Because early voting, though significant, predicts only about ten percent of variability in the dependent variable, with some other factor, or simply the random influence of the sheer number of people involved, accounting for the rest.

First Half of Expenditures Made Much Earlier in Early Vote States

In the first test considering the relationship between early voting and campaign spending, the dependent variable, SD, is the number of days from the election at which a candidate had spent fifty percent of his or her overall campaign operating expenditures. For most candidates, this point comes early in the campaign. The intercept places it about two months out from the election. Three of the variables, E, I, and SP all returned significant results with p values less than .001, .05 and .001, respectively. The strong impact of early voting here—candidates in early voting states hit this point nearly twenty-four days earlier than candidates in non-early voting states—is of particular importance to this study, and shows a real link between the two. The other two significant variables here, incumbency and spending proportion, are not surprising. Incumbents have likely been in the race for much longer than their challengers, and candidates with an advantage in fundraising have likely had to spend money to gain that advantage. Overall,

this model has a relatively weak predictive value, an issues we will address at the end of this chapter.

Table 1. Fifty Percent of Expenditures Vs. Early Voting

Variable	Estimate	Standard Error	T Value	P Value
Intercept	60.123	7.087	8.484	<.001***
Early Voting	23.591	6.695	3.524	<.001***
Incumbency	16.577	6.450	2.570	.011*
Party	3.4073	6.2080	.549	.583
Spending	.6375	.1107	5.757	<.001***

R^2 = .137 F=16.72. 422 degrees of freedom
* p<.05, **p<.01, ***p<.001

Early Vote Candidates Also Reach Three Quarters Mark Faster

In the second test the dependent variable, SD, was moved forward and calculated as the number of days from the election at which a candidate had spent seventy-five percent of his or her overall operating expenses for the campaign. The intercept here suggests that, holding other variables constant, this occurs for most candidates just under a month away from the campaign, or about twenty-three days from the election. At this point, most of the big expenditures, TV ad buys, polling and mailings, have been paid for. The relative impact of early voting on when a candidate reaches this mark actually appears to increase. Candidates in early voting states reach this mark about sixteen days before candidates in states without early voting compared to the twenty-three days out estimated overall. This is proportionally larger than the twenty-four days out of sixty overall seen in the fifty percent test. This model also show less impact from other

variables. Only the spending advantage variable is significant, and challengers appear to have caught up with the spending of incumbents by this time.

Table 2. Seventy Percent of Expenditures Vs. Early Voting

Variable	Estimate	Standard Error	T Value	P Value
Intercept	22.779	3.751	6.072	<.001***
Early Voting	16.312	3.544	4.603	<.001***
Incumbency	-1.886	3.414	-.522	.581
Party	3.4076	3.286	1.037	.300
Spending	.149	.058	2.534	.012*

R^2 = .069 F=7.56 on 422 degrees of freedom
* p<.05, **p<.01, ***p<.001

Early Vote Relationship Remains Strong to End of Campaign

In the final test, the dependent variable, SD, is calculated as the days from Election Day at which the observed candidate has spent ninety percent of his or her operating expenses. For most campaigns this point is reached right before, or sometimes after, election day. As the model shows, our intercept here is just under 11 days out from Election Day. As was the case with the other two models, the presence of early voting is a significant factor in determining when candidates reach this point in their spending, with p <.001. Candidates in states with early voting spend ninety percent of their funds more than a week sooner than those in states without early voting. Interestingly, as candidates reach the end of their available funds, the significance of overall spending advantage seen in the previous two models falls away. Additionally,

incumbents, who spend the first half of their funds much faster than challengers, slowed down

their spending significantly and actually reached this point about six days after challengers.

Table 3. Ninety Percent of Expenditures Vs. Early Voting

Variable	Estimate	Standard Error	T Value	P Value
Intercept	10.779	2.356	4.574	<.001***
Early Voting	7.982	2.225	3.587	<.001***
Incumbency	-6.503	2.144	-3.033	.003**
Party	-.886	2.064	-.429	.668
Spending	.013	.037	.354	.723

R^2 = .0494 F=5.481 on 422 degrees of freedom
* p<.05, **p<.01, ***p<.001

Strong Relationship Does Not Extend to Other Measures of Early Voting

The final important finding from these models is the lack of importance of variables

measuring either the number of days from the election at which early voting begins or the

percentage of the electorate voting early. When added to the model neither of these variables

have a significant impact on either the dependent variable or the model as a whole. This suggests

that merely the possibility of voters going to the polls before election day forces campaigns to

consider moving their spending earlier, even in places where this voting does not occur

particularly early or in particularly large numbers.

Models Do Have Significant Limitations

Finally, it is important to consider the significant limitations of these models. All three

iterations of the model had relatively low predictive value, explaining about thirteen, seven, and

five percent of the variability in the dependent variable, respectively. There is clearly something this model does not, or simply cannot, consider. There could be an unknown variable causing this effect, but it could also be the result of relatively complex and immeasurable randomness. The large number of different people, circumstances and situations surrounding each campaign could cause this randomness. There are an immeasurable number of variables that could cause variance in the timing of expenditures that have yet to be examined by campaign scholars. These vary from the speed at which candidates raise money to the personal payment preferences of individual campaign consultants, to the timing of important campaign events or debates. In either case, our results hold true. The presence of early voting is having a clear impact on the timing of expenditures that would be extremely different to confound with another lurking variable and no other variable we tested has clear significance.

Despite Widespread Early Spending in Early Vote States, No Evidence to Suggest Electoral Advantage

The second set of models explored the electoral impact of early voting and early spending. Model 2 compared challenger vote share to campaign expenditure timing and the timing of early voting in a given state. The third model also compared challenger vote share to campaign expenditure timing, but replaced the timing of early voting with the volume of registrants voting early as a percent of total voters. Expenditure timing was calculated as the number of days between when the observed challenger has spent a certain percentage of their expenditures and when the observed incumbent had spent that same amount. Each model was tested three times with this percentage calculated to fifty, seventy five, and ninety percent of total expenditures. Both of these models used expenditure, and party strength variables from Jacobsen's 1978 study as controls.

Despite data showing campaigns do spend money earlier in states with early voting, in the six tests conducted here, there is no evidence to suggest that spending money early in conjunction with early voting actually improves candidate performance. This could be caused by early voters who are not persuadable, or it could be that we lack sufficient data or a sufficiently thorough model. There is certainly a case to be made that early spending is so widespread that there are only handful of cases in 2008 where one candidate spent early while the other did not. Further research exploring early voting—possibly focusing races where one candidate spent early and the other did not—could help verify this result. At face value, however, these results call into question the decision of so many candidates to spend in advance of early voting periods. The results also offer some circumstantial evidence to support arguments that candidate spending has little to no impact on elections overall. Due to the model's construction we cannot rule out that, on the whole, campaign spending is insignificant to outcomes, but we can conclude that early spending is.

Number of Days to Vote Early and Early Expenditures Show No Electoral Advantage

Model (2) CV~CE + SD + SDED + ED + IE + P + PS, was run three times with the main explanatory variables 'SD' or "Spending Days" calculated as the number of days between when a challenger has spent fifty, seventy-five, and ninety percent of their funds and the incumbent has spent that same percentage. The variable 'SDED' is also calculated three times as 'SD' multiplied by the number of days before Election Day at which general population early or absentee voting begins (zero for states without early voting).

In all three tests, the primary test variable Spending Day Times Early Day failed to show any significance, as did the Spending Day variable. The control variables taken from Jacobsen's model all consistently showed significant findings, as expected given previous research using

these variables. Interestingly, the ED variable, for which there is not previous research, showed a

significant negative impact on challenger vote share, suggesting that particularly early voting

may actually hinder a challenger's ability to win. This is not particularly surprising; it takes time

for a candidate to gain standing and name recognition, raise and spend money. A challenger who

has less time as a result of an early voting date is, in fact, put at a disadvantage against an

incumbent who likely had a head start.

Table 4. Vote Share vs. Fifty Percent of Expenditures, Vote Day

Variable	Estimate	Standard Error	T Value	P Value
Intercept	9.59E-02	2.25E-02	4.254	<.001***
Challenger Spending	1.78E-08	4.65E-09	3.815	<.001***
Spending Days	-1.60E-05	5.14E-05	-0.311	0.756
Spending Days Early Days	-3.69E-07	2.57E-06	-0.144	0.886
Early Days	-7.16E-04	2.76E-04	-2.59	0.01*
Incumbent Spending	1.47E-08	5.40E-09	2.724	0.007**
Party	8.42E-02	7.95E-03	10.597	<.001***
Party Strength	5.02E-01	4.77E-02	10.509	<.001***

R^2 = .651 F=57.27. 215 degrees of freedom

* p<.05, **p<.01, ***p<.001

Table 5. Vote Share vs. Seventy-Five Percent of Expenditures, Vote Day

Variable	Estimate	Standard Error	T Value	P Value
Intercept	9.19E-02	2.01E-02	4.58E+00	<.001***
Challenger Spending	1.78E-08	4.61E-09	3.855	<.001***
Spending Days	-4.49E-05	7.23E-05	-0.621	0.535
Spending Days Early Days	-4.73E-06	4.25E-06	-1.113	0.267
Early Days	-6.95E-04	2.60E-04	-2.676	0.008**
Incumbent Spending	1.51E-08	5.35E-09	2.829	0.005**
Party	8.54E-02	7.68E-03	11.117	<.001***
Party Strength	5.08E-01	4.45E-02	11.419	<.001***

R^2 = .656 F=58.58. 215 degrees of freedom

* p<.05, **p<.01, ***p<.001

Table 6. Vote Share vs. Ninety Percent of Expenditures, Vote Day

Variable	Estimate	Standard Error	T Value	P Value
Intercept	1.06E-01	1.94E-02	5.50E+00	<.001***
Challenger Spending	1.73E-08	4.61E-09	3.76E+00	<.001***
Spending Days	-7.99E-05	9.86E-05	-8.11E-01	0.418
Spending Days Early Days	-5.67E-06	5.98E-06	-9.49E-01	0.343
Early Days	-6.60E-04	2.61E-04	-2.53E+00	0.012*
Incumbent Spending	1.46E-08	5.34E-09	2.73E+00	0.007**
Party	8.17E-02	7.61E-03	1.07E+01	<.001***
Party Strength	4.83E-01	4.38E-02	1.10E+01	<.001***

R^2 = .656 F=58.56. 215 degrees of freedom

* p<.05, **p<.01, ***p<.001

Early Expenditures and Early Voting Volume Also Show No Impact on Vote Share

Model (3) CV~CE + SD + SDEV + EV + IE + P + PS, was also run three times with the main explanatory variables 'SD' or "Spending Days" calculated as the number of days between when a challenger has spent fifty, seventy-five, and ninety percent of their funds and the incumbent has spent that same percentage. The variable 'SDEV' was calculated three times as 'SD' multiplied by the percentage of the electorate that voted before election day (zero for states without early voting).

Again, in all three tests the primary test variable SDEV failed to show any significance, as did the SD variable, while the control variables taken from Jacobsen's model again all consistently showed significant findings. Unlike the lone ED variable from the previous model, the lone EV variable did not have a significant negative impact on challenger vote share. What this suggests is that voting done particularly early may disadvantage challengers who may not have time to raise money, run ads, or make themselves known, but that simply having a large portion of the population voting early does not have that same effect. In fact, one might hypothesize that larger populations voting early could actually mitigate the effects of the ED variable by forcing challengers to start their campaigns early—but that's a question for another study.

Table 7. Vote Share vs. Fifty Percent of Expenditures, Vote Volume

Variable	Estimate	Standard Error	T Value	P Value
Intercept	8.80E-02	2.31E-02	3.81E+00	<.001***
Challenger Spending	1.80E-08	4.73E-09	3.82E+00	<.001***
Spending Days	-2.36E-05	4.97E-05	-4.76E-01	0.634
Spending Days Early Volume	-2.84E-05	1.80E-04	-1.58E-01	0.875
Early Volume	-1.51E-02	1.92E-02	-7.85E-01	0.433
Incumbent Spending	1.44E-08	5.48E-09	2.62E+00	0.009**
Party	8.72E-02	8.01E-03	1.09E+01	<.001***
Party Strength	4.96E-01	4.83E-02	1.03E+01	<.001***

R^2 = .640 F=54.64. 215 degrees of freedom

* p<.05, **p<.01, ***p<.001

Table 8. Vote Share vs. Seventy-Five Percent of Expenditures, Vote Volume

Variable	Estimate	Standard Error	T Value	P Value
Intercept	8.42E-02	2.08E-02	4.05E+00	<.001***
Challenger Spending	1.78E-08	4.68E-09	3.80E+00	<.001***
Spending Days	-6.41E-05	7.02E-05	-9.14E-01	0.362
Spending Days Early Volume	-4.10E-04	3.89E-04	-1.05E+00	0.293
Early Volume	-1.39E-02	1.79E-02	-7.76E-01	0.438
Incumbent Spending	1.53E-08	5.48E-09	2.79E+00	0.006**
Party	8.80E-02	7.77E-03	1.13E+01	<.001***
Party Strength	5.02E-01	4.54E-02	1.11E+01	<.001***

R^2 = .646 F=55.98. 215 degrees of freedom

* p<.05, **p<.01, ***p<.001

Table 9. Vote Share vs. Ninety Percent of Expenditures, Vote Volume

Variable	Estimate	Standard Error	T Value	P Value
Intercept	1.00E-01	2.00E-02	5.01E+00	<.001***
Challenger Spending	1.73E-08	4.70E-09	3.68E+00	<.001***
Spending Days	-1.09E-04	9.72E-05	-1.12E+00	0.262
Spending Days Early Volume	-3.52E-04	5.41E-04	-6.51E-01	0.515
Early Volume	-1.32E-02	1.78E-02	-7.44E-01	0.457
Incumbent Spending	1.46E-08	5.46E-09	2.67E+00	0.008**
Party	8.40E-02	7.79E-03	1.08E+01	<.001***
Party Strength	4.75E-01	4.45E-02	1.07E+01	<.001***

R^2 = .644 F=55.75. 215 degrees of freedom

* p<.05, **p<.01, ***p<.001

Conclusion

This study begins to fill a significant gap in the literature left by the exclusion of early voting from the existing research on campaign expenditures, and really from all other research on campaigns as well. By no means should this be seen as an exhaustive attempt to do so. There is an immense role played by early voters in modern candidate campaigns and early voting has been segregated in literature into its own sub-field. Any attempt by a single researcher to fill this gap in a single study would be foolhardy at best. To fill the gap an adjustment must be made across the field, incorporating early voting into dozens of studies in every aspect of research into campaigns.

Rather than a comprehensive correction of this problem, this study should, be seen as an attempt to expose the gap and challenge the field to fill it. It does this by presenting results that demonstrate the significance of early voting in US elections and the need to incorporate it into all lines of study. Specifically, in the findings of the first model, we see the real impact early voting has on the conduct of campaigns. Campaigns in early voting states are spending their money weeks ahead of those in states without early voting, something every avenue of research into campaigns needs to consider. This effect is only compounded by the continued expansion of early voting in the past decade. The literature needs a complete overhaul to incorporate this shift in voting patterns into every aspect of the literature.

This study also holds real world applications, forcing candidates and campaign strategists to reconsider their previous answers to the difficult question of when to spend money during a campaign. The findings call into question the decision of so many campaigns to sink valuable campaign funds into ad buys and GOTV programs well in advance of Election Day aimed solely at targeting and turning out early voters. Further research into this question is necessary to conclude decisively that early spending is a waste of money, the findings of models 2 and 3 suggest that this spending is ineffective. They at least raise the distinct possibility that what is often seen as a common sense practice, spending money in advance of early voting, is actually not.

Finally, the findings of these models call into question the impact of campaign spending at all. Again, significantly, more research needs to be conducted, but this study demonstrates the potential for early voting to be used as tool for delving more deeply into the relationship between campaign spending and candidate success. Using a proportional measure of campaign expenditures, we are able to control for lurking variables previously unaccounted for in studies

of a large size and rigor. Although the results of this aspect of the study were largely inconclusive, the technique can help to shine light on the hotly debated question of whether or not incumbent expenditures change outcomes, and offer a method for analyzing campaign expenditure effects in the future.

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