RE-EXAMINING THE EFFECTS OF CONTRIBUTION LIMITS ON CAMPAIGN EXPENDITURES IN GUBERNATORIAL CAMPAIGNS

A Thesis
presented to
the Faculty of the Graduate School
at the University of Missouri-Columbia

In Partial Fulfillment
of the Requirements for the Degree

Master of Arts

by
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AUGUST 2007

The undersigned, appointed by the dean of the Graduate School, have examined the thesis entitled

RE-EXAMINING THE EFFECTS OF CONTRIBUTION LIMITS ON CAMPAIGN EXPENDITURES IN GUBERNATORIAL CAMPAIGNS

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and hereby certify that, in their opinion, it is worthy of acceptance.

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ACKNOWLEDGEMENTS

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ABSTRACT

While much time has been spent delving into relationship between campaign spending and election outcomes, little has been spent on the question of campaign finance laws on elections. Until Eom and Gross addressed the issue in, "Contribution Limits and Disparity in Contributions between Gubernatorial Candidates," the effects of laws on campaign spending were always assumed to be uniform between all candidates. Running a standard OLS regression with the disparity between campaign spending of incumbent and challengers in gubernatorial elections as the dependent and contribution limits and other control variables as independents, they conclude that these laws do not impact the disparity between candidates in spending.

I recognized flaws in their analysis in three areas: 1) small data set of 57 observations, 2) lack of adequate control variables, and 3) an ill defined law independent variable. Before proposing other models or doing further work, I determined it best to instead retest their model after fixing these three flaws. Using a data set of 368 observations, including state control variables and disaggregating the law variable into separate corporate and individual limitations yielded the opposite conclusion of their paper.

Using the model they have proposed corporate contribution limits have a significant negative impact on spending disparity while individual contribution limits have a significant positive impact on spending disparity. Borrowing their terminology, this would imply corporate limits increase election competition while individual limits decrease election competition.

I. Introduction

Much has been written in the literature on the subject of money in politics. While in no way is there a grand consensus on the true power of campaign spending in election results, there have been some strong hypotheses proposed. Jacobson, while admitting his model is imperfect, contends that challenger spending is the only money significantly influencing elections (Jacobson 1978, 1985, 1990). Many others have proposed additions to his basic model in an attempt to explain the apparently illogical assertion of incumbent spending insignificance (Green and Krasno 1988, Abramowitz 1988, Gerber 1998). The inconclusive results are that incumbent spending may or may not matter, but at most has a smaller marginal impact than challenger spending[1][2].

The glaring holes left in the literature are the assumed policy conclusions drawn concerning campaign finance laws. The implications supposed are that laws which extract money out of elections, such as contribution limits, disproportionately harm challengers while laws that inject money into elections disproportionately help challengers (Jacobson 1978, Thomas 1989, Gerber 1998). The question no one asked, until Eom and Gross addressed it, was, "Do campaign finance laws evenly affect candidates for elected office" (Eom and Gross 2006)?

II. Review of Previous Literature

Prior to the Federal Elections Campaign Act of 1971 there was no effective way to gather data about elections in the United States. Researchers would collect small

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[1] Several researchers have proposed that the actual marginal effect of incumbent spending is somewhere between have that of challenger spending and equal to challenger spending (Green and Krasno 1988, 1990, Gerber 1998).

[2] Levitt contends that while the marginal effects of incumbent spending and challenger spending are nearly identical they are so small as to be trivial (Levitt 1994).

pieces of information about individual races, or limited information about state elections (many states had disclosure laws by this time, though most were limited). But, no one could collect enough data to make any statistical claims about money and elections. The FECA and its accompanying amendments in 1974 not only created the Federal Elections Commission and set contribution limits, but also required uniform full disclosure of all contributions over $100 and all expenditures in all federal elections.

This required reporting provided researchers with approximately 471 observations every two years between the US House of Representatives and the Senate. While there was a steadily growing literature in the 60's and 70's, it wasn't until a few election cycles of data had been collected that effective analysis of spending in elections on a national scale could take place (Jacobson, 1978).

Jacobson's seminal work in 1978 set the standard for campaign finance analysis and first posed many of the important dilemmas still faced today. He collected data from the 1972 and 1974 congressional elections and attempted to find the most appropriate model that would account for election success. Two statistical methods were posed, OLS and Two-Stage Least Squares. Regardless of what variables he included in the analysis he received the same strange results, and clarified one of the paramount questions in campaign finance research writing that

> In simple terms, the more incumbents spend, the worse they do; the reason is that they raise and spend money in direct proportion to the magnitude of the electoral threat posed by the challenger. (Jacobson, 1978).

The endogeneity issue he posed provides a serious hurdle to any potential model. If one assumes that incumbents have the ability to raise and spend an unlimited amount of money (or at least unlimited compared to any challenger), then any OLS model

estimates are going to be biased and inconsistent (Jacobson, 1978). It is only logical, he supposed, that the only consistent model would be a 2SLS regression. Since the current assumption was that incumbents chose spending in some proportional response to challengers, a perfect instrumental variable was readily provided in challenger spending. Accounting for some other instruments, like experience, incumbent leadership positions (such as whip, leader, speaker, etc.) he determined that while incumbent spending is not significant to the election outcome, challenger spending is very significant (Jacobson, 1978). This is a clear break from all previous literature which had established spending as significant, but had attributed that effect as even across both incumbents and challengers[3].

Beyond establishing the precedent that only challenger spending matters, Jacobson identified several other important assumptions and considerations that future research would need to address. The paramount issue is that of diminishing marginal returns to spending. He argued that regardless of the evidence, the shear fact that no candidate can ever earn more than 100 percent of the vote means that at some point excess spending, even by the challenger, will have no marginal effect (Jacobson, 1978). What he does not do is identify the appropriate way to deal with that apparent curvature. While one would assume some log form, he contends that a semi-log transformation would establish too steep of a curve (Jacobson, 1978).

He also established the policy assumption that any policy which increased money raised and spent in elections would help challengers, as any increased challenger

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[3] Some previous literature had suggested some type of imbalance between candidates in the impact of spending. Shepard (1977) looked at the California Congressional Delegation and determined there existed some bias in spending effects, such that Republican spending was significant yet Democrat spending was not.

spending would provide far greater benefit than increased incumbent spending (Jacobson, 1978).

The tone set by Jacobson is continued for the next several years. Caldeira and Patterson (1982) looked at state legislature elections in California and Iowa. While they chose an OLS model, which Jacobson contends is biased, their results are very similar to his. They find that incumbent spending is not significant in the election outcome while challenger spending is significant (Caldeira and Patterson, 1982)[4].

While they deviate from previous methods in several ways, like not using 2SLS, breaking down candidates into parties and also looking at general party election results, their primary break from Jacobson was attempting to model the diminishing marginal returns of spending[5]. Their OLS model is composed of Republican spending, Democrat spending and the squared spending of both candidates (Caldeira and Patterson, 1982). Their results show that the quadratic variables are significant, supporting the assumption of diminishing returns to spending.

That same year Patterson (1982) made the first thorough analysis of gubernatorial elections. In looking at the overall election results, he considered three primary areas of predictor variables; partisan strength, incumbency and spending, with partisan strength measured as the party's most recent presidential candidate's vote share. The benefit he contended in looking at governors is the apparent limited effect of incumbency. While there is obviously a benefit to being an incumbent governor in an election, he noted that

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[4] They also use a similar approach to Shepard (1977), in dividing candidates by party. While they find that both Democrat and Republican spending is significant, unlike Shepard, they do support his general conclusion in that Republican spending is much more impactful than Democrat spending.
[5] Caldeira and Patterson also begin to approach effective ways to include party status into the model. While their approach is crude and mostly ineffective, we should note the importance of beginning to address the issue as it will become more crucial in the future.

incumbent reelection rates have not changed since the early 1900s (Patterson, 1982)[6].

That is in contrast to the steadily increasing reelection rates for US Congressmen and

Senators. He theorized that this should provide a 'cleaner' field for analyzing spending

(Patterson, 1982).

While his data consists of only 34 races in 1978, it does provide some interesting

insight. Regressing partisan strength, incumbency (measured by years in office) and log

spending per voter he found a significant relationship in spending (Patterson, 1982). This

result gives a few pieces of information. First, it supports the assumption of diminishing

marginal returns. Second, it again seems to show a higher impact of Republican

spending than Democrat spending[7].

Between 1980 and 1985 Jacobson published a series of books and articles in

which he expanded his previous research to encompass the increased data collected

during each US House election cycle (Jacobson, 1981, 1985). Summarizing that work in

a 1985 article he reaffirmed his previous arguments. His primary contention is that

looking at all US House election from 1972 through 1982 challenger spending was highly

significant and incumbent spending was trivial[8]. This result held when he looked at each

individual election cycle and when he looked at the aggregated decade of data (Jacobson,

1985). The secondary conclusion he made is that limitations in statistical methods mean

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[6] This assumption may not be entirely accurate. Tompkins (1984) looked at gubernatorial races from 1947-1981 and found that while it appeared incumbency benefits had not changed, the incumbency benefit had actually shifted. Incumbents appear to have gained stronger benefits in their first reelection campaign over time while actually having tougher times in subsequent elections. This may cause Patterson's use of years in office for incumbency to be inconsistent, as it may also have diminishing marginal returns.

[7] While the implication of this result is not clear, it seems that one possible explanation is that Democrat candidates begin to experience diminishing marginal returns at a lower level of spending than Republicans. The reason for this is not evident.

[8] Though he did not stress this result, he often found incumbent spending to be negative and either significant or not significant. Using a 2SLS model he did obtain a positive effect, but that effect was never significant (Jacobson 1985).

he must be wrong in his primary assumption. The logic to this conclusion is relatively simple. If there was absolutely no benefit to incumbent spending, as the regressions show, then why would incumbents spend a total of hundreds of millions of dollars over the data time period? His concern is noted clearly when he wrote

> If incumbents really gain nothing by spending money in campaigns, ironies abound. Incumbents spend defensively and reactively, but pointlessly; the doubling of their real spending over the past decade has merely compounded the waste. The unpleasant work of fundraising which members of Congress complain of so passionately is not even necessary. Most of whatever influence PACs may enjoy must be based on the illusion of incumbents do not really need PAC contributions. It is not easy to believe that irrationality is so pervasive; alternative explanations need to be considered. (Jacobson, 1985)

Since this strange result came out of both his OLS and his 2SLS models, he decided that there was simply no way to correctly model the endogenous nature of incumbent spending. While there must be some minimal level of incumbent spending per challenger spending simply to counteract campaign ads, there was no way to measure it (Jacobson, 1985)[9].

In response to the challenge Jacobson leveled, that the simultaneity could not be measured, Donald Green and Jonathan Krasno created a 2SLS model that they claim refuted Jacobson's assertions (Green and Krasno, 1988). The pair agrees with Jacobson's statements, in that there must be some benefit to incumbent spending. They sum up their reasoning by claiming one of two underlying truths explains Jacobson's regression results. The first option is that there are ulterior motives to incumbent

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[9] Over this five year time period, Jacobson wrote three books, each of which obviously covered a larger topic area than just spending and election results. He discusses and analyzes (with both quantitative and qualitative approaches) various areas as the benefits of incumbency, historical trends in campaign strategy and advertising, and so on. While they are fascinating and important in the field of political campaigns, they are not applicable to campaign finance research and are therefore not discussed in this paper.

spending, such as deterring future challenges, or that incumbents are so desperate as to spend even though they receive littler marginal benefit (Green and Krasno, 1988). If that is not the underlying motive to spend, which the two say is highly likely, then the only other alternative is that Jacobson's modeling was wrong (Green and Krasno, 1988). Believing the latter of the two options, they determined there must be a model that can at least approximate the endogenous spending to give an more accurate picture of spending as a whole.

Green and Krasno chose to replicate Jacobson's analysis of the 1978 Congressional election cycle, which was published in his 1980 book Money in Congressional Elections (cited in Green and Krasno, 1988). There were three issues that they identified as flawed in the model chosen by Jacobson. The first was the lack of a measure of candidate quality, the second was the imposition of a linear functional form on the regression, and third was the lack of appropriate accommodation for the endogenous incumbent spending variable (Green and Krasno, 1988). As probably one of the greatest contributions to the body of literature, the concept of effectively measuring candidate quality is one that had not been discussed prior to this article[10]. For the purposes of this research they combined several factors into the candidate quality variable, looking at previous offices held, celebrity status and experience running for office (Green and Krasno, 1988). The resulting numerical variable ranged from 0 to 8, with 8 being the highest quality. They argued that quality is important on many levels. On its face value, it is logical to assume that a candidate of higher quality would have an easier time winning votes. For this reason it should be included as a direct predictor

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[10] It should be noted that quality had been addressed prior to this point, but only in the limited scope of incumbency (Jacobson, 1978, 1985). This measure factored only previous political office into the model, and made no accommodation for education, fame, physical appearance or any other candidate trait.

variable in any model. But, more subtly, they argued that candidate quality is also an instrument for spending, addressing what they see as an inadequacy in dealing with the simultaneity problem in Jacobson's model. While the rational is not intuitive, they show that it is rational to assume candidates with higher quality will have an easier time fund raising, and will therefore spend more money (Green and Krasno, 1988).

In addressing their contention with Jacobson's linear parameterization, they suggest imposing a log transformation on challenger spending to deal with diminishing marginal returns (Green and Krasno, 1988). This is not entirely against previous convention (Jacobson, 1978). They agree with Jacobson's assertion that any possible transformation would be either too restrictive or not restrictive enough. Their rational for including log spending was that while it is not perfect, it is a comparably better fit than the linear form (Green and Krasno, 1988).

The results that Green and Krasno report are in stark contrast to the default positions the literature had taken for the preceding decade. They find that through a 2SLS procedure, using quality, challenger spending and incumbents previous election spending as instruments, incumbent spending is indeed significant (Green and Krasno, 1988). They contended not only that incumbent spending impacted the election, but also that challenger spending reached diminishing marginal returns at much lower levels than incumbents.

In 1990, Jacobson directly refuted Green and Krasno. The crux of his paper is that the simultaneity problem pertaining to incumbent spending is far more complex than they assumed it to be (Jacobson, 1990). In oversimplifying the problem they created a biased and inconsistent model (Abramowitz, N.d. as cited in Jacobson, 1990).

Abramowitz showed that when adjustments are made for the bias, incumbent spending again becomes insignificant. Also, in applying an unbalanced transformation to account for diminishing returns by only transforming challenger expenditures, their model drastically overstated the true significance of incumbent spending (Thomas, 1989)[11]. Even if they did choose to transform both spending variables evenly, he contended, imposing a log transformation is far to restrictive (Jacobson, 1978, 1985, 1990). If one were to impose diminishing returns he believes something like a Box-Cox method would provide a less generic and better fitting curve (Jacobson, 1990)[12].

To give a more expansive test of Green and Krasno's assumptions, Jacobson used their model to analyze individual election cycles from 1976-1986. What he found was that their model held for 1978, the election they used in their paper, as well as 1976 and 1980, but not for the other three elections (Jacobson, 1990). The story he tells to explain this fact is simple. He agrees that incumbent spending must have some positive impact on vote share (even though this effect is not measurable through his proposed model). But, if the effect of incumbent spending was anywhere near that of challenger's, as Green and Krasno estimated them to be approximately equal, then incumbents would *never lose* (Jacobson, 1990). One fact which was assumed by nearly all the authors for the previous several decades, including Green and Krasno, is that incumbents have the potential to raise unlimited amounts of money compared to their challengers. If this really was true, and no one has argued to the contrary, then incumbents could always just match their

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[11] Thomas finds that while incumbent spending is technically significant when one transforms both incumbent and challenger spending, it is very close to trivial when compared to the impact of challenger spending (Thomas, 1989).
[12] This is only an assertion that Jacobson makes, as he does not actually encompass a Box-Cox transformation on the spending variables. He contends, as he did previously, that it is not appropriate to impose an artificial form on spending (Jacobson, 1978, 1990).

challengers spending by some ratio, like 2:1 or 3:1 and they would always win (Jacobson, 1985, 1990).

The conclusion Jacobson draws from his analysis of Green and Krasno's work is that their model does not adequately compensate for the assumptions they argue must be made (Jacobson, 1990). While they model for diminishing returns, they do so in an unbalanced and inefficient way. While they control for simultaneity, they do not compensate for the inherent model bias. And, while he commends them for further inclusion of candidate quality, he points out that inclusion, by their own admission, does not impact the results of the model (Jacobson, 1990, Green and Krasno, 1988).

Green and Krasno directly challenged Jacobson's claims in the same issue of the *American Journal of Political Science*. Concerning the proper method of handling the simultaneity spending problem, they argued that their approach was not biased (Green and Krasno, 1990). They concur with Jacobson and Abramowitz in the fact that inclusion of previous election incumbent spending as an instrument would cause bias if it were correlated with omitted variables which impacted the dependent variable, vote share. The problem they pointed out is that the only omitted variable Abramowitz claimed was correlated was previous challenger strength (Abramowitz, 1989). Green and Krasno argue it did not meet the biased criteria as previous challenger strength has no impact on the current election's vote (Green and Krasno, 1990).

In response to Jacobson's critic of the unbalanced log transformation, they claim that it is not unbalanced. They contended that while it was logical to try to model incumbent diminishing returns, there is no evidence to suggest the incumbents in their sample spent enough to incur those decreasing returns (Green and Krasno, 1990). They

concede that future elections may see incumbent spending levels to justify inclusion of log transformations, but not the 1978 data with which they were working[13].

The third major argument Jacobson made was that their model did not hold when extended to multiple time periods (Jacobson, 1990). Their counter claim is that it does. While they cannot provide an exact explanation, they believe he must have incorrectly replicated their model[14]. When they extrapolate their analysis across the same elections they claim significance in incumbent spending in each election (Green and Krasno, 1990). Taking the process one step further, they aggregated all the elections from 1976-1986 and found reaffirmation of their original findings.

In addition to refuting Jacobson, they provide a basic rationale for choosing their model. Looking at the marginal benefits of spending, their model allows not only for analysis of challenger and incumbent marginal effects, but also of challenger marginals given their quality (Green and Krasno, 1990). What they found was the average challenger has a marginal benefit of approximately four while incumbents have two[15]. They agree that challenger spending is much more effective, but no where near the extent that incumbent spending is trivial (Green and Krasno, 1990). The added benefit they see from including a multinomial quality variable allows for marginal analysis given a quality level[16]. For example, a challenger who possess a quality of seven[17] sees a

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[13] This would also explain the results generated by Thomas (1989), who looked at the same data using uniform log transformations on spending and saw significant but trivial impacts from incumbent spending.
[14] The modeling replication error they suspect is that of their quality variable, of which Jacobson might not have had all the proper data to correctly code (Green and Krasno, 1990).
[15] This merely implies that challengers have twice the marginal benefit from spending.
[16] Jacobson's model would allow for limited analysis similar to this, as his includes only a binary quality level using only previous elected office experience (Jacobson, 1985).
[17] While their quality measure ranges from 0-8, none of the candidates in the 1978 election had a rating of 8. The highest ratings assigned were 7s. Their marginal analysis was limited to the 1978 data.

marginal benefit of nearly 6, a 50% improvement over the average candidate (Green and Krasno, 1990).

In essence, Green and Krasno claim that there is plenty of room to debate the merits of functional forms to capture diminishing returns, quality and simultaneity. But that doesn't mean they should be ignored, or that the smaller impact of incumbent spending means it is unimportant.

As previously mentioned it had been a long standing assumption in the literature that incumbents can choose to raise as much money as they want (Jacobson, 1978, 1985). Box-Steffensmeier and Dow are the first to begin to question this long held belief. They point out that most campaign finance research has been done in the framework of the 'Chicago' model of regulation, implying that the political markets of influence clear (Box-Steffensmeier and Dow, 1992). The dilemma they point out was that all the focus on the large national data, which was rather easily accessible doesn't meet this the conditions to have a perfect market. This was due to the fact that contribution limits have been in place since the beginning of the data collection. In this setting, where limits are imposed, incumbents may not actually be able to raise the funds they would choose to have to repel challengers (Box-Steffensmeier and Dow, 1992). So, to test the assumptions developed in previous research, they felt it would be appropriate to find data from elections in which there were no contribution limits and see if the same principles hold[18].

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[18] It would be appropriate to point out that any data used would have to come from elections in which limits were not imposed yet full disclosure was required. One could make an argument that this would inherently bias the results, allowing for the same types of artificial limitations on fund raising (incumbents may want more money but will not take it from groups they find objectionable). This issue is not directly addressed by the authors.

The authors chose two election cycles, 1984-86, for the California State legislature. This data provides a comparably large sample size in an unregulated setting. As opposed to the traditional model of voting, they chose to look solely at the funds raised by the incumbents and model which factors impact what they were able to raise (Box-Steffensmeier and Dow, 1992). The predictor variables consist of voting histories, seniority, party, leadership role and committee assignments. The contribution data was categorized by types of interest groups.

While there were obviously several limitations to the results that can be drawn from the model proposed[19], there was one basic premise they claim is shown. The model shows that interest groups, in an unregulated setting, maximize their ultimate benefit by contributing large sums of money to incumbents they deem to be sympathetic to their causes and powerful (Box-Steffens Meier and Dow, 1992). The authors believe this supports the assumptions made by most researchers, that incumbents can raise nearly unlimited sums in unregulated settings. Further analysis would need to be done to adjust for artificial contribution limits. And, while it was not definitive, it suggested that interest groups would contribute large sums of money to challengers in relation to their experience and potential to maximize the contributor's benefit (Box-Steffensmeier and Dow, 1992)[20].

Over the course of the development of campaign finance literature, several authors have discussed the need for a dynamic model analysis of campaign spending on voter choice (Ben-Zion and Eytan, 1974, Jacobson, 1978, 1985). To do so would require

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[19] As the model does not include any measure for challenger fund raising or contributions (or for that matter, any individual election specific variable) the results are dubious at best.

[20] This point is not clearly defined, but is supported when the authors gives support to previous authors like Jacobson when they claim that more money in elections helps challengers more than incumbents.

more than after-the-fact data on election spending. It would require some information collected from voters during the election, as money is being spent, leading up to the election. This would provide much needed insight into how money *changes* voters opinions before they go to the polls (Kenny and McBurnett, 1992). While one prior analysis was attempted[21], Kenny and McBurnett were the first to take an extensive look into one election to see how money played a roll.

The pair argued that while information can be gleaned from aggregate analysis, looking at an entire election's spending and resulting vote, there are still many unanswered questions that the regressions cannot answer (Kenny and McBurnett, 1992). The biggest of those is causation/correlation of spending and votes. Does a candidate who spends more allow them to garner more votes? Or, does a candidate who is expected to win more votes have more money contributed, and therefore spend more? To help answer this question, Kenny and McBurnett used a single election, that of Indiana's Third District in 1984. This allows them to gather detailed survey data[22] and tie the respondent's answers to the amount of money spent in the election up to that point. While there are obvious limitations in drawing general conclusions, their OLS analysis showed significance in challenger spending and no significance in incumbent spending (Kenny and McBurnett, 1992)[23]. Their contention was that this result is much stronger than previous statements (Jacobson, 1978, 1985, 1990, Caldeira and Patterson, 1982,

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[21] While the primary purpose of Jacobson's 1990 paper was to refute Green and Krasno (1988), he also spent time looking at polling data collected by ABC news during the 1988 election. Since the data and results are circumstantial, covering several races and lacking a level of depth, it is fair to assert Kenny and McBurnett conducted the first extensive study incorporating survey data with spending (Kenny and McBurnett, 1992).

[22] A three wave survey of 1500 residents of the district designed to gather a representative demographic sampling. Only the second and third waves were used, since the first did not ask about candidate preference.

[23] The incumbent was Republican John Hiler and the challenger was Democrat Michael Barnes.

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Thomas, 1989) because it shows challenger spending to be significant *during* the election, effectively changing voters choice before they go to the polls.

The question of adjusting the analysis for candidate quality was addressed by Levitt in 1994. What had been recognized by this point was that candidate quality needed to be included in at least some minimal way (Green and Krasno, 1988). The rationale for this was the proven upward bias in challenger spending effectiveness, due to the fact high quality challengers who have a better chance of winning will raise more money (Snyder, 1990). The problem, as Levitt points out, is there is no reasonable way to quantify quality. Jacobson had given it a dummy coding of one for political experience and zero for none (Jacobson, 1978, 1985), while Green and Krasno had created an intricate scale of 0 to 8 (Green and Krasno, 1988). Levitt argues these all fall short. Quality is an all encompassing feature that involves more than previous offices held (Levitt, 1994). It involves charisma, speaking ability, intelligence and a host of immeasurable qualities. So Levitt decided to eliminate the quality question by weeding it out of the data set (Levitt, 1994).

To do this he simply used only Congressional elections in which the same candidates meet each other multiple times[24]. The effect of this data selection is candidate quality becomes much less of a biasing issue, since the primary difference between the elections will be the amount of money spent (Levitt, 1994). One might say this is a more pure sampling for the purposes of determining significance of campaign spending[25]. The results of the OLS analysis with district specific fixed effects show again that spending is

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[24] Intuition would say this would be a rare occurrence, but oddly enough between 1972-1990 there were 633 elections which meet this criteria (Levitt, 1994).
[25] Levitt admits this would be a poor data set to use in determining the effects of incumbency, party or any other effect. But, since he is only concerned with spending, it is perfect (Levitt, 1994).

significant. The divergence from previous literature is that it has only slightly positive marginal effects, to the point that an additional $100,000 spent by a candidate would earn them an extra .33 percent vote share (Levitt, 1994). Levitt's findings also support Green and Krasno, showing that while challenger spending is marginally more productive than incumbent spending, the difference is small. For the purposes of a policy discussion, he argued this means campaign finance limitations do not hurt challengers and any effort to increase campaign spending (such as increasing limits or public funding) would be misplaced as they would have no effect on the election outcome (Levitt, 1994).

In 1994 Squire and Fastnow publish one of the first articles to look back to Gubernatorial races since 1982. Up to this point there had been much research in national elections. There is little direct fault in this, as national data was easily available and uniform in nature. The flaw, as they point out, was that the body of literature had assumed the results obtained from national elections were universally applicable to other elections (Squire and Fastnow, 1994). But previous works had already laid the ground work for challenging this assumption, showing that incumbent reelection rates had remained even, bucking the national trend (Patterson, 1982, Tompkins, 1984). This would suggest state governor elections may have different characteristics than Congressional or Senate races (Squire and Fastnow, 1994).

Looking at a series of surveys and polls over the previous decade, they drew a general picture of gubernatorial elections designed to help future research. The first image was the obviously higher incumbent loss rate of governors compared to senators (Squire and Fastnow, 1994). The second part was the overly high media exposure granted to incumbents. Using rough measures, such as counting the number of stories

run in a given year mentioning a state's Governor compared to those mentioning the state's Senator. What they saw was that while senators got coverage on a national scale, governors are much more visible to the public through local press (Squire and Fastnow, 1994). What this implies is that while senators may be able to get away with missteps or small scandals, governors do not get that chance. Since the governor is seen on a regular basis, their actions are taken much more personally by voters. This makes for much less loyal voters (Squire and Fastnow, 1994). The third portion of the picture painted is the media and public acceptance of challengers. In most races challengers must spend large sums of money to get into the public light prior to garnering media attention. Squire and Fastnow suggested the flip side of the spot light on the incumbent governor is the large attention paid to challengers (Squire and Fastnow, 1994). This lowers their cost of entry into the political race and increases their chances of winning in the general election.

The implications of their work is to urge analysis of governor races separate from national elections. And, when doing so, to remember the apparent differences in the important factors impacting the election outcomes (Squire and Fastnow, 1994). This analysis was expanded by Leyden and Borrelli the following year, looking at the effects of economic conditions and government unity on the election outcome.

Using data collected from gubernatorial elections from 1972-1990, they used a simple OLS model which does not account for spending to detect other variables which would be appropriate to include in further research (Leyden and Borrelli, 1995). What they discovered is that a unified government[26] actually hurts the candidate whose party is in control. Also, enlighteningly, economic conditions such as unemployment are only

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[26] Unified government is a dummy variable used to indicate whether the candidate's (whether it be the incumbent or the incumbent parties successor) party controls both the governors office and both houses of the state's legislature (Leyden and Borrelli, 1995).

significant to the candidate whose party is in control (Leyden and Borrelli, 1995). Both of these articles provided a beginning frame work for gubernatorial election analysis.

At the same time, Ansolabehere and Gerber attempt to explain the seemingly contradictory assumptions that challenger spending impacts election outcomes and incumbent spending does not. The problem they identified with previous models was that aggregate expenditures were assumed to represent campaign spending[27]. They contend that rarely are all funds spent by a campaign actually spent campaigning (Ansolabehere and Gerber, 1994). If aggregate expenditures are an effective proxy for actually campaign spending, such that most candidates spend the same proportion of their funds campaigning, then previous models are accurate. If the expenditure proportion varies between candidates, most notably between incumbents and challengers, then all previous models are biased and inconsistent (Ansolabehere and Gerber, 1994).

To test their theory, they analyze the 1990 Congressional election. Sifting through election reports, they categorized spending into three areas; communication with voters, overhead and non-campaign related (Ansolabehere and Gerber, 1994). What they discovered was that the average challenger spend 60% of their funds on communication (commercials, advertisements, rallies, etc.) while the average incumbent only spent 40% (Ansolabehere and Gerber, 1994). They then performed OLS regressions using the categorized data. The results were that while aggregate expenditures are not efficient proxies for actual spending, the results line up with the traditional opinion expressed by Jacobson[28]. Even further than that, they found using only communication spending in

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[27] Which is an assumption I have been making for this entire review.
[28] What is interesting is they spend a small portion of the article discussing the issues argued by Jacobson and Green and Krasno pertaining to simultaneity, yet choose to use only an OLS model.

place of aggregate expenditures, incumbent spending was significant and negatively impacted the incumbent's vote share (Ansolabehere and Gerber, 1994)[29].

Squire pointed out the increasing complexity of the question of money in elections when he reviewed the literature body in 1995. In looking at the differences between what I will label the Jacobson camp[30] and the Green and Krasno camp[31], Squire boiled it down to a disagreement on statistical methodology and not underlying assumptions. According to Bartels (1991, as summarized by Squire, 1995), the primary issue of dealing with the endogenous nature of incumbent spending has not been settled[32]. What this means is that most researchers agree on the basics, that challenger spending is more effective than incumbent, that spending exhibits diminishing returns and that incumbent spending is endogenous. The actual remaining points of contention lie in determining the functional form of spending returns and the appropriate 2SLS specification (Squire, 1995).

Since there was no clear way to settle the simultaneity debate at the time, research turned to drawing policy implications from what information had already been determined (Goidel and Gross, 1996). Goidel and Gross took four previously proposed models, those of Jacobson, Green and Krasno, Abramowitz and Goidel and Gross, and used them to determine the predicted effects they would have with certain campaign

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[29] This fact is obviously explained by the use of OLS instead of 2SLS. The endogenous nature of incumbent spending previously established (Jacobson, 1978, 1990, Green and Krasno, 1988) shows that OLS would be biased and quite possible produce negative coefficients for incumbent spending.

[30] This refers to those researchers who see incumbent spending as insignificant, at least in the sense of through statistical results.

[31] This refers to those researchers who see incumbent spending as significant, both ideologically and statistically.

[32] Bartels used the disagreement between Jacobson and Green and Krasno as an example of the dilemma of specifying simultaneous equations using 2SLS. Bartels could be considered an objective supporter of Jacobson's assertion that statistical methods are not at that point developed enough to handle incumbent spending. Green and Krasno (1988, 1990) would argue with support from Thomas (1989) and Kenny and McBurnett (1994) that one can appropriately specify the 2SLS model.

finance reforms. One significant change in the analysis they conducted was that they used both vote share (which was the literature norm) and a win/loss dummy variable (which has not been used) as response variables. In looking at proposed campaign spending limits, they saw that all four models predicted that the measure would either hurt challengers or have a neutral effect on the election results (Goidel and Gross, 1996). When looking at the proposal of matching funds raised, they discovered that high enough matching limits (those in the 300-600 thousand dollar range) would help challengers (Goidel and Gross, 1996)[33]. Finally, they looked at public funding of campaigns. This was the one reform which produced clear results in all four models. They showed a clear increase in challenger competition[34] (otherwise, a more competitive race overall) with public funding (Goidel and Gross, 1996)[35].

In 1998 Gerber attempted to re-examine the simultaneity issue using Senate elections. Previous attempts to address endogenous incumbent spending used incumbent quality/experience, challenger spending and lagged incumbent spending (Jacobson, 1978, Green and Krasno, 1988). The problem Gerber poses with these instruments was they were inappropriate given the nature of 2SLS (Gerber, 1998). He argued that appropriate instruments are those that do not directly affect the response variable. Numerous literature has shown that challenger spending is significant and Green and Krasno (1988, 1990) make strong arguments for candidate quality impacting the election outcome. This means those two variables are off limits for 2SLS analysis (Gerber, 1998). Gerber

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[33] The one exemption to this conclusion is Green and Krasno's (1988) model which had a slightly larger positive impact on challenger's election prospects than higher levels of matching.
[34] In this case, the Goidel and Gross model predicted significant positive change in challenger competition, but the effect was remarkably small.
[35] This result was tamed slightly when a combination of public funding and spending limits was considered. Those results suggested, at the worst, that campaigns would be no less competitive than they currently were (Goidel and Gross, 1996).

proposes three appropriate instruments for Senate elections; candidate wealth, state

population and lagged spending. It is logical, he concludes, to use candidate wealth as

more rich candidates move into office. They can unload large sums of money outside of

federal restrictions. State population apparently has an inverse relationship on

spending[36], as special interests will funnel large sums of money to Senate incumbents in

small states. Finally, he supports lagged incumbent and challenger spending as the only

true instrument accounting for spending (Gerber, 1998). This rationale follows his belief

that incumbent spending is not as immediately responsive as many have contended[37]. If

one can assume that incumbents choose broad spending targets prior to the election and

any challenger spending, then Gerber claims lagged spending is all one would need

(Gerber, 1998).

Gerber uses both OLS and 2SLS, comparing the results of each to summarize the

effects of the instruments used. His OLS results showed that while both candidate's

spending is significant, challenger spending has about twice the marginal effect of

incumbent spending (Gerber, 1998). This would support the traditional view of spending

formed by Green and Krasno (1988)[38]. What Gerber discovered when running the

identical 2SLS regression was that both candidate's spending was significant and

marginally identical (Gerber, 1998). This implies challengers have no spending

advantages over incumbents.

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[36] This is a long standing argument outside the scope of this paper. Many believe that since Senators have
one vote regardless of state size, special interests have a remarkable incentive to target incumbents with
small states, as their spending givens more 'bang for their buck.' For more on this discussion one may
refer to Hibbing and Brandes (1983), Westlye (1991) and Krasno (1994) as cited in Gerber (1998).
[37] Jacobson (1985), Green and Krasno (1990) and Kenny and McBurnett (199) supports the idea that
incumbent spending is nearly immediately responsive to challenger spending, as measured by weeks or
months.
[38] Jacobson (1978, 1985, 1990) would agree with the premise that challenger spending is more effective,
but would disagree with several aspects of the model; including the simultaneous functional form, no
accounting for diminishing returns and many extraneous predictor variables.

He is careful to point out that these results, while robust, do not necessarily cross apply to other elected offices (Gerber, 1998). Reminding us of Jacobson's original hypothesis, that challenger spending is only advantageous in educating the constituency about their qualifications, Gerber points out this may be solely a characteristic of Senate elections. As a disproportionate number of Senatorial challengers are already well known (maybe Governors or Congressmen) and might already be as well know as the incumbent, it would make sense that their marginal spending effects would be identical (Gerber, 1998)[39].

Gerber's analysis relies upon the assumption that the events during an election do not substantially impact the aggregate spending of candidates[40]. Fuchs, Adler and Mitchell decided to test this hypothesis by studying the New York City Mayoral democratic primary. The data they collected showed weekly polling data between the three top candidates and weekly contribution reports. Using time series analysis they attempted to match changes in polling results to changes in contributions (Fuchs, Adler and Mitchell, 2000). What they witnessed was a drastic increase in contributions to candidates as their approval (likelihood to vote for) rating difference with other candidates narrowed (Fuchs, Adler and Mitchell, 2000). While there is an obvious question as to causation verses correlation, and the results do not directly cross apply to other elections, their research suggest that there exists events during an election that cause contributions to change, ultimately changing spending.

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[39] This observation is made to clarify that he does not directly contradict Jacobson's original theory, and that Jacobson's analysis may still hold for Congressional elections.
[40] This is not to say that fundraising would not be impacted. Candidates would 'smooth' their spending, borrowing or spending personal wealth, to maintain expenditures as contributions fluctuate (Gerber, 1998).

Partin then makes one of the first full studies of campaign spending in gubernatorial elections[41]. Looking at gubernatorial elections from 1978 through 1994, and using a broad model, consisting of previous party vote shares, state population, changes in taxes and per-capita income, primary difficulty, candidate quality, gender and log expenditures per voting age population he planned to identify OLS and 2SLS results of spending on candidate vote share (Partin, 2002). His results are somewhat limited, as his data is divided by in-party and out-party candidacy. This means results can not be concluded for incumbents/challengers or Republicans/Democrats[42]. Partin found, looking at both OLS and 2SLS using opposing candidate spending as an instrument, that both candidates had significant positive effects from campaign spending (Partin, 2002). Also, as an incumbent would be an in-party candidate, one could extrapolate that they also receive positive effects from spending[43]. This is the first work to show the effects of spending in gubernatorial elections and establishes a perspective that all candidates have equal spending benefits.

Up to this point in time the primary question with which I am concerned, that of whether campaign finance laws change campaign spending, has been primarily ignored. Goidel and Gross (1996), as previously mentioned, do address the issue. But, their analysis was limited to measuring predictions given by previously proposed models and

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[41] Patterson (1982), Tompkins (1984) and Squire and Fastnow (1994) have all looked at gubernatorial elections, but have instead focused on qualitative measures. These studies helped identify differences between governor elections and federal elections as well as potential significant variables for analysis. What they did not do, however, was regress any model including campaign expenditures on vote share.
[42] By many regards this may be a more appropriate measure, as a large number of states during this time frame passed term limits of one or two terms. Analysis from the perspective of incumbent/challenger would miss the effects of the open contests which can obviously be impacted by the outgoing governor's policies and behavior.
[43] Since an incumbency dummy variable was included in the model, it would be conceivable for one to pull incumbent spending from the model by adding an interaction term between the incumbent variable and spending. Why this was not done is not clearly explained.

did not include one of the most widely used regulations, that of contribution limits. It is little fault of the researchers, for analysis of this question is nearly impossible to conduct with national data. Since national data has been collected only since 1972, and set contribution limits have been in place since this time, there is no variation in laws to allow regression analysis of the data (Gross, Goidel and Shields, 2002).

That is why Gross, Goidel and Shields decide to look at state level data to attempt to ascertain the effects of finance laws on election outcomes. This question was an important one as all previous literature had not directly addressed it (Jacobson, 1978, 1990, Green and Krasno, 1988, 1990, Gerber, 1998). For instance, Jacobson concluded that any action that would increase money in elections would help challengers (Jacobson, 1985). He therefore advocates increasing contribution limits. He does this believing this would increase the money in elections without any analysis as to whether his desired effect would occur. Gross, Goidel and Shields look at governor elections from 1978-1997 with a variety of finance laws to identify which ones, if any, actually impact the election outcome.

They used several different dependent variables for their analysis, looking at incumbent, challenger, Republican and Democrat vote share and the absolute difference in contributions between the two candidates. The results of their analysis were that spending limits with public financing and contribution limits were significant, increasing the competition in the race and reducing the absolute difference in contributions between the candidates (Gross, Goidel and Shields, 2002). While these results were important as some of the first in their field, they are very limited in their application. The method of analysis chosen was OLS, which makes clear sense for the absolute difference in

contribution dependent variable[44]. What they lack is justification for ignoring the

simultaneity problem with incumbent spending[45]. Their own analysis shows that

campaign finance laws impact contributions. This brings into question their regression

results with the vote share dependent variables, as they have demonstrated collinearity in

spending and finance laws.

Regardless of the questions surrounding their results, they do provide an

important first look into the effects of regulation on elections. While the previous

literature has obviously been remarkable in increasing our understanding of money in

politics, it has provided little guidance for policy. Any recommendations made to

increase electoral competition (which has been an assumed goal for most researchers)

have been made without understanding of policies effects on the amount of money in

elections. Gross, Goidel and Shields (2002) provided a good starting point for further

analysis into campaign finance laws.

At this same time, Coate took a different approach to the analyzing campaign

laws. Instead of looking at electoral results, he attempted to establish a theoretical basis

for contribution limits and public finance (Coate, 2004). While he did not provide

guidance as to the effectiveness in altering the amount of money in elections, he

demonstrated the potential social benefits rarely considered, may justify regulations.

These benefits include increased public faith in their representatives while not reducing

candidate quality. He labels this as a Pareto improvement as elective officials will owe

fewer favors (or at least the public will perceive them to owe fewer favors) while

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[44] Gross, Goidel and Shields (2002) make a very clear argument for the use of OLS over GLS in dealing
with the heteroskedastic nature of the pooled data.
[45] Or for that matter, the simultaneity problem that would theoretically arise from using a Republican verses
Democrat model.

candidates will still be able to signal their quality and qualifications through raising and spending money (Coate, 2004).

III. Discussion of Eom and Gross

In their paper, "Contribution Limits and Disparity in Contributions between Gubernatorial Candidates," Eom and Gross posed two basic questions: 1) Do campaign finance laws affect the disparity between funds raised by gubernatorial candidates[46]? and 2) Do campaign finance laws change political contributor's contribution habits? The dilemma presented by the answers proposed to these questions by Eom and Gross is that they seem to contradict each other. The goal of this paper will be to fix the disconnect between those answers.

Their study is based upon data from the National Institute on Money in State Politics which collected information on 57 gubernatorial elections taking place between 1990 and 2000 (Eom and Gross 2006)[47]. Using ordinary least squares they regressed several measures of contribution and spending disparity on an aggregated campaign finance law variable and several control variables[48]. The conclusion they reached, with regards to their first question, was that finance laws had no significant impact on the difference between contributions raised by incumbents and challengers.

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[46] This question implies no concern over the actual amount of money spent in any given election. Many legislatures have justified contribution limits on the grounds of reducing corruption, which is an issue not addressed here. This question is concerned with the proportional disparity between what an incumbent can raise and spend and what a challenger can.

[47] It should be noted that this set of observations includes 27 elections which involved incumbents and is a non-random sample taken from the population of 156 gubernatorial elections which took place over that time period.

[48] The nature of these variables and the model used will be discussed in greater detail later in the paper when we replicate their analysis.

One can understand taking a pause before accepting this unintuitive conclusion. My concern is supported by the fact that Eom and Gross even conclude in their paper that particularistic contributors[49] tend to donate more to challengers and less to incumbents in a regulated setting leading one to believe, intuitively, that these laws should in some way decrease the disparity between candidates. If nothing else, our society has assumed up to this point that contribution limits have some type of positive impacts on electoral competition. So, considering the positive reception of the papers conclusions[50] I decided a critical review of their proposed model and results was warranted. In analyzing the paper I found three areas of contention[51] with the assumptions and processes used by Eom and Gross: 1) the number of observations in the sample used, 2) the characteristics of the sample used and 3) the use of an aggregated finance law independent variable.

The size of the data set used in their analysis presents several general problems. While the entire set includes 57 elections, Eom and Gross break down their analysis into two areas; one concerning all the elections and another with just those elections involving an incumbent. As the general consensus is the greatest policy benefits can be derived from understanding the incumbent/challenger relationship I am most concerned with those results. The dilemma lies in the fact there are only 27 gubernatorial races included in the incumbent data set. The 14 degrees of freedom remaining from their study make any normality assumptions about the results hard to justify. First off, it is hard to justify

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[49] Those contributors who donate in order to influence resulting government policy.

[50] The paper was cited in a US Supreme Court dissenting opinion in *Randall v. Sorrell* which concerned overturning Vermont campaign finance contribution and spending limits.

[51] I in no way wish to assert these three are my only points of contention, but merely that these three are the most appropriate to address at this time in this format. While issues with endogeneity and model selection should be analyzed, and will be briefly discussed further in the paper, my primary goal is to initially test the model they propose in the 'best light possible' by making all possible corrections that still preserve the spirit of the model. It would be prudent to test these additional concerns in future work.

the predictive power of the outcomes of this model[52]. Second, there is no opportunity for

sensitivity testing by including additional control variables, such as state fixed effects[53].

Third, the limited degrees of freedom artificially increases the chance of failing to find a

significant coefficient where one actually exists[54].

The underlying structure of the data set also causes me to question the robustness

of the model's results. This concern goes beyond the issues of the non-randomness of the

included elections. What is seen is that 18 of the 27 incumbent/challenger election data

points occurred in 1998. Also, as previously mentioned, only two states are repeated.

The results generated from this data are inherently biased toward the conditions in these

states in one particular year. The cross-sectional nature of this data means the model is

not picking up any variation in state finance laws over time, again granting little

predictive power to the results.

The primary concern inherent in the model design is the aggregated campaign

finance independent variable. Eom and Gross assign this variable a value between 0 and

4 with 0 meaning a state had no contribution restrictions and 4 meaning a state had the

most complete restrictions[55]. This imposes an ordinal relationship between all

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[52] Non-normal sample observations imply non-normal coefficient estimates in small samples. This makes hypothesis testing unreliable in the sense that little confidence can be had the results will hold if additional data points were to be added.

[53] As there are 24 states included in the incumbent/challenger set, it is impossible to consider the effects states have on election outcomes. Also, additional economic or demographic variables would use up valuable degrees of freedom the analysis can't lose.

[54] This is a difficult problem, as their method of hypothesis testing is not clearly specified. They provided specific null hypotheses that contribution limits will increase the disparity. The problem is their statistical analysis and argumentation said that the coefficients generated for the limitation variable were insignificant. That result means those coefficients were not statistically different from zero with the given data. This effect is what is exacerbated by having few degrees of freedom. That is clearly a different statement than showing they were significantly different from a positive number, which is what would be required to reject the null hypotheses given.

[55] "1 if some limits are placed on corporations, labor unions and PACs with no limitation on individuals or political parties…2 if some limits are placed one corporations, labor unions and PACs with some limits on either individuals or parties…3 indicates some limits are placed on corporations, labor unions and PACs

contribution limit laws where there is little argument that one should exist. As previously

discussed, they concluded these laws impacted particularistic contributors and did not

impact universalistic contributors[56]. This would imply laws impact different contributors

in different ways. It is quite possible laws limiting corporate contributions might affect

incumbents more than limits on individual contributions[57].

IV. Replication of Eom and Gross

In order to retest the model proposed by Eom and Gross I decided to correct the

three ideological concerns presented above and rerun the regressions. Since the first two

concerns addressed the sample used, more data was required. The general data set I used

consists of 368 gubernatorial elections taking place between 1977 and 2004[58]. Inside this

data are 198 elections which involved incumbents. The price of using this larger data set

is that it is composed of campaign spending and not contributions as primarily used by

Eom and Gross. That means these results will not be able to directly predict the effect of

these laws on disparity in contributions. I do contend, however, that spending is just as

accurate, if not more so, than contributions a measure of inequality in elections. As many

candidates have shown a propensity for consumption smoothing, saving contributions for

future races or borrowing for current races, one can often see races where more is spent

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with some limits on both individuals and political parties …[and] 4 indicates that corporations and labor unions are prohibited from contribution and there are some limits on PACs, individuals, and political parties" (Eom and Gross 2006).

[56] Universalistic contributors would be those that contribute for ideological or moral reasons (Eom and Gross 2006).

[57] In following Eom and Gross's logic, this would require the assumption that corporate contributors are proportionally more particularistic and individual contributors are proportionally more universalistic.

[58] This data does not include all gubernatorial elections which took place during this time. Many states implemented disclosure laws and various times, and due to differing reporting standards these are the states from which somewhat uniform data was provided. We would like to thank The Gubernatorial Campaign Finance Database, compiled by Thad Beyle and Jennifer M. Jensen, for a majority of the campaign spending data. The remainder was collected from state campaign spending disclosure documents.

than raised in a given election cycle. This means it is prudent to be just as concerned

with finance law's impacts on spending as the with impacts on contributions.

The model used is identical to that proposed by Eom and Gross:

$$\text{Disparity}_i = \beta_0 + \beta_1\text{Limitation}_i + \beta_2\text{IPC}_i + \beta_3\text{Partisan Strength}_i + \beta_4\text{Government}$$

$$\text{Status}_i + \beta_5\text{State Income}_i + \beta_6\text{College}i + \sum\nolimits^9_{j=2} + \varepsilon_i$$

Disparity$_i$ represents two dependent variables analyzed. The Ratio Disparity

consists of incumbent spending divided by challenger spending. The Difference

Disparity consists of the absolute value of the difference between both candidates

spending divided by total spending. IPC$_i$ represents inter party competition, which is the

absolute value of the difference between the two party general vote share[59]. Partisan

Strength$_i$ is the absolute value of the difference between the most recent two party

presidential election vote shares. Government Status$_i$ is a dummy variable signaling

whether one party controls both the legislature and the governor's office. State Income$_i$

is the state's GDP and College$_i$ is the percentage of the state's population which has

earned at least a bachelor's degree. Each of these variables in this data set is calculated

and coded in an identical manner to that described by Eom and Gross.

Limitation$_i$ is the aggregated code signifying the campaign finance laws in a

particular state. This is the one variable which I could not identically replicate. The

variable is coded 0 through 3, with 0 meaning no contribution limits or public financing,

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[59] It should be recognized that Eom and Gross ran no endogeneity tests, and as such I will also leave the
issue alone (for a reason). However, there is good reason to be concerned with IPC being endogenous.
The underlying assumption in this line of research is that there is some causal relationship between
spending and election outcome. If this relationship exists, then there is an obvious endogeneity problem
with IPC as an independent variable. If this relationship doesn't exist, there is little cause for studying
campaign finance laws, as they have no impact on election outcomes. Regardless of these facts, my
rationale for not testing this case is avoidance of the model selection question. My contention is that while
creating a 2SLS model or throwing out IPC would be prudent, they are outside of the scope of my goal of
testing their original model with better data.

1 representing some corporate contribution limitations but no individual limitations or public financing, 2 identifies some corporate and individual contribution limits but no public financing and 3 showing the existence of corporate and individual limitations as well as public financing of gubernatorial elections. This was done in an attempt to mirror Eom and Gross's assumptions as much as possible.

As seen in Tables 1 and 2, I have listed both the results from Eom and Gross's paper and the analysis I conducted. The first step was to run the model with a subset of this data using only the states Eom and Gross included in their regressions[60]. While the results were not identical to their's, they were similar. In both studies the only significant variable was IPC and most of the coefficients were similar[61]. The second step was to correct my concerns with their chosen sample by running the same model with all of my sample data points. Those results, which consisted of larger coefficients and standard errors and a drastically smaller R^2, show a general instability within the model highlighting potential robustness problems. I then corrected for what I believe to be the largest omitted variable, that of state fixed effects, which can be seen in the fourth column of both tables.

All of this work allowed me to then address the paramount objection to the model, that of the aggregated finance law variable. With more data and more adequate controlling for inter state variations I disaggregated the variable. This meant three separate variables, one for corporate limitations, one for individual limitations and one

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[60] As is evident, our analysis is short two states for the ratio disparity and one state for the difference disparity. This is due to some incomplete information in our data which we are currently attempting to correct.

[61] We should note that in the ratio disparity, partisan strength and college had opposite coefficient signs that in Eom and Gross's paper, as does government status in the difference disparity. It should be noted however that our coefficients lie within their standard errors of the coefficients generated by Eom and Gross. This type of result should be expected in any analysis using a sample this small.

for public financing of gubernatorial elections. The results of this seemingly small change are quite stark. In table 1 with the ratio disparity it is shown that corporate contribution limits had a significant and large negative impact on incumbent spending, decreasing the disparity, while individual contribution limits had a significant and large negative impact on challenger spending, increasing the disparity[62].

The results of that last regression explain the reason for previous models generating insignificant coefficients for campaign finance laws. The two laws had opposite effects, and by compressing them into one variable their effects were counteracted by each other. What is interesting is this result is supported by the results of Eom and Gross's analysis of particularistic and universalistic contributors. When using the ratio disparity measure and looking at only particularistic contributors, who they label as predominantly corporations, labor unions and PACs, they generated a significant negative coefficient. This implies laws restricting particularistic contributions disproportionately hurt incumbents, decreasing the disparity. This is the same substantive result from my analysis. As corporate contributors, who are inherently particularistic, are limited they spread their money out among more challengers than they would in an unregulated setting[63].

V. Conclusions

There are two primary results to draw from this analysis. The first, which is academic in nature, emphasizes the need to always look at each type of campaign finance

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[62] It should be noted that we ran the model using the disaggregated finance variables without the state fixed effects. The results were all non-significant.

[63] This conclusion would be supported by Box-Steffensmeier and Dow, 1992, when they looked at unregulated California Assembly elections in 1984-86 and found incumbents can raise comparatively unlimited amounts of money compared to challengers in the absence of contribution limits.

law as distinctive and separate in nature while always considering geographic fixed effects. Some may argue, as Eom and Gross did, that states usually enact these laws in the order they used to aggregate the measure, starting with corporations and moving up to individuals[64]. But, that fact does not imply they all have the same type of effect on contributions and spending. By looking at each law separately we can better discover their true effects.

The second lesson concerns the policy implications of these results. Many academics up to this point have assumed that the goal of campaign finance policy should be limit the advantages held by incumbents thereby increasing the competitive nature of our democracy. That is a topic of debate for another paper. If in fact that is the correct goal, then we should not treat all contribution limits as equally effective in achieving campaign equality. What is instead shown is that limits on corporate contributions increase the competitive nature of elections while individual contribution limits actually benefit incumbents by decreasing the competition in elections.

This study is in no way the final authority on the effects of campaign finance laws. It is imperative to take a closer look at the effects of varying contribution limits, laws that limit the amount of spending in elections, public financing of elections and a host of other more specific areas before passing judgment. What I have done here is to provide a framework for beginning to seriously analyze this topic so we can better understand the potential effects of these laws before legislatures put them into action.

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[64] There is no guarantee that states *always* enact limit laws in this order. But, there is still an argument to be made that state *generally* adopt their limitation laws in that order.

Table 1: Ratio of Incumbent Spending to Challenger Spending

	Original Eom and Gross Results	Replication	Replication	Replication w/ Fixed Effects	Replication w/ Fixed Effects
Limitation	**-0.7110**	**-0.0996**	**1.1396**	**5.3607**	
	0.6070	*0.9862*	*1.9618*	*3.8900*	
Corporate					**-25.4635** **
					11.2092
Individual					**39.5723** ***
					10.5337
Public Funding					**1.3400**
					9.4431
IPC	**0.1830** *	**22.8333** ***	**34.3863** ***	**25.3169** *	**30.9858** **
	0.0690	*6.4124*	*13.2810*	*14.4876*	*14.0469*
Partisan Strength	**0.1200**	**-0.1196**	**-19.0964**	**-8.0578**	**1.1242**
	0.0910	*7.1222*	*17.9051*	*19.8692*	*19.3566*
Government Status	**0.8230**	**1.3212**	**-5.0030**	**-12.2145** **	**-10.5226** *
	2.2040	*1.8848*	*3.8616*	*5.6306*	*5.4327*
Income	**-0.0030**	**-2.66E-12**	**6.56E-12**	**1.43E-11**	**8.55E-12**
	0.0060	*4.81E-12*	*1.09E-11*	*5.04E-11*	*4.85E-11*
College	**0.0130**	**-0.6281**	**-119.7059** **	**-257.2077**	**-121.9594**
	0.2240	*25.5980*	*53.8004*	*165.3595*	*164.0364*
Year	Yes	Yes	Yes	Yes	Yes
State	No	No	No	Yes	Yes
Constant	**-3.1970**	**-1.6317**	**11.7297**	**50.9559**	**57.1936**
	5.6290	4.7088	26.7208	34.9701	34.6218
N	27	25	195	195	195
R^2	0.83	0.8785	0.11964	0.4373	0.4891
F Statistic	6.75	10.12	0.8	1.29	1.52

Notes: Standard Errors in italics.

* significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent

Table 2: Difference between Winner Spending and Loser Spending

	Original Eom and Gross Results	Replication	Replication	Replication w/ Fixed Effects	Replication w/ Fixed Effects
Limitation	**-0.0210**	**-0.0105**	**-1.03E-05**	**-0.0021**	
	0.0220	*0.0423*	*0.1203*	*0.0239*	
Corporate					**-0.0021**
					0.0681
Individual					**0.0295**
					0.0656
Public Funding					**-0.0639**
					0.0605
IPC	**0.0110** *	**0.0105** ***	**0.0104** ***	**0.0105** ***	**0.0105** ***
	0.0020	*0.0030*	*0.0009*	*0.0009*	*0.0009*
Partisan Strength	**0.0040**	**0.1867**	**-0.0814**	**-0.1294**	**-0.1093**
	0.0040	*0.3284*	*0.1148*	*0.1249*	*0.1228*
Government Status	**0.0000**	**-0.0138**	**-0.0022**	**0.0556**	**-0.0226**
	0.0000	*0.0828*	*0.0245*	*0.0971*	*0.0368*
Income	**0.1080**	**2.63E-14**	**6.65E-14**	**1.35E-13**	**4.44E-14**
	0.0710	*2.07E-13*	*7.38E-14*	*3.55E-13*	*3.51E-13*
College	**0.0090**	**0.1734**	**-0.5611**	**1.1720**	**1.3980**
	0.0090	*1.0280*	*0.3427*	*1.0507*	*1.0612*
Year	Yes	Yes	Yes	Yes	Yes
State	No	No	No	Yes	Yes
Constant	**-0.1190**	**0.1179**	**-0.2382**	**-0.1219**	**0.0045**
	0.2360	0.2280	0.1715	0.1913	0.2158
N	57	56	368	368	368
R^2	0.44	0.386	0.352	0.4778	0.4802
F Statistic	2.35	1.84	5.5	3.29	3.21

Notes: Standard Errors in italics.

* significant at 10 percent, ** significant at 5 percent, *** significant at 1 percent

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