CAMPAIGN CONTRIBUTIONS FROM CORPORATE EXECUTIVES IN LIEU OF POLITICAL ACTION COMMITTEES

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Abstract
To distance themselves from the specter of special interests, some Congressional candidates instituted personal bans on campaign contributions from corporate-linked political action committees (PACs). We leverage these to identify how corporate executives adapt their personal campaign contribution patterns in response to restrictions applied only to corporate-linked PACs but not to executives as individuals. In a newly constructed dataset, with 6,803,661 observations, that includes all executive-firm-candidate contribution pairs for active S&P500 firms over an 18-year period, we find that corporate executives increase personal giving to specific candidates in lieu of their corporate-linked PACs in a form of cross-actor substitution among corporate-linked sources of campaign contributions. This finding has important implications for regulatory design in scenarios where cross-actor substitution is possible. Vis-à-vis campaign finance regulation, it suggests that bans on corporate-linked PAC contributions alone cannot prevent corporate-linked money from finding its way into candidates' campaign coffers.
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1 INTRODUCTION

Campaign finance regulation has become even more widely debated since the *Citizens United* Supreme Court decision. Public debate revolves primarily around the scope, and disclosure, of corporate involvement in political campaigns but largely ignores the role of individuals who lead corporations. This study offers an empirical assessment of the effect of restrictions banning campaign contributions from corporate-linked political action committees (PACs) on the contribution activity of firms' executives. We find evidence in favor of a cross-actor substitution effect in which corporate executives make contributions in lieu of corporate-linked PACs when the PACs face restrictions on contributing to specific candidates. To identify this result we exploit variation within Congressional candidates' positions on accepting corporate-linked PAC monies in a newly constructed panel dataset of executive-firm-candidate campaign contribution pairs for S&P 500 firms that spans 18 years from 1991 to 2008 and has nearly 7 million observations.

Throughout the 1990s and 2000s a number of Congressional candidates—seeking to distance themselves from appearing tainted by corporate money—announced personal bans on accepting campaign contributions from corporate-linked PACs. Upon instituting such a self-imposed ban, Herb Kohl also adopted the popular campaign slogan "nobody's Senator but yours" (*Time* 1988) to emblemize his stated commitment to Wisconsin voters over special interests. Other candidates who instituted self-imposed bans on corporate-linked PAC contributions offered similar rationales: their justifications typically offered a public interest basis for additional campaign finance regulation. These candidates and like-minded reformers sought to eliminate what they believed to be the corrupting influence of business interests on federal elections and federal policymaking. Nevertheless, the same candidates who announced

their refusal to take money from corporate-linked PACs continued to accept and even champion campaign contributions from individual donors, regardless of whom the individuals were. This latter behavior suggests that despite these candidates refusal of PAC monies that they may still have been attempting to maximize reelection prospects and potentially even aggregate receipts of campaign contributions, albeit by focusing on a different source of funds.

Assuming that candidates adhered to their announced positions to refuse corporate-linked PAC monies, the channel between corporate-linked PACs and these candidates' campaign accounts should have been closed; however, the channel between corporate executives and these candidates' campaign accounts remained open. Whether corporate executives personally gave more or less to the candidates who banned PAC contributions remains an open empirical question; the answer relies critically on whether executives' campaign contributions are driven by strategic or ideological motivations (Francia et. al 2003). On the one hand, if executives' contributions are strategically motivated, we might expect executives to give more to these candidates: if a corporation wanted to maintain (or enhance) its relationship with a politician who no longer accepted corporate-linked PAC monies, executives from the firm could circumvent the candidate's ban by acting as individuals who write personal checks to the candidate's campaign. On the other hand, even if executives' contributions are strategically motivated, we might expect executives to give less to these candidates: particularly if corporations and their leaders interpreted a candidate's decision to refuse corporate-linked PAC monies as a signal that the candidate had become increasingly hostile to business interests, then we might expect funds to stop flowing from all corporate-linked actors, including executives, as the expected utility of giving fell. Alternatively, if executives' contributions reflect their ideological preferences, rather than strategic motivation, then we might not see any change in

their contributions. Hence, we might expect the effect of the politicians' self-imposed bans on PAC monies, (i) to shift the source of corporate-linked monies from corporate-linked PAC contributions to personal contributions from corporate executives, (ii) to reduce the total amount of corporate-linked monies candidates receive from both corporate-linked PACs and from corporate executives, or (iii) to lead to no change in executives' contributions to particular candidates.

Despite a number of theoretical studies with implications for different campaign finance regulatory regimes,[1] surprisingly little empirical work has explicitly examined the effects of restrictions on entities making campaign contributions. Most of the empirical work on campaign contributions focuses instead on whether or not PACs can buy policy outcomes (Ansolabehere, deFiguieredo, & Snyder 2003). What little empirical work that has been done on the implications of changing campaign finance regulation tends to focus on consequences for candidates re-election prospects (e.g., Stratmann & Aparicio-Castillo 2006; Stratmann 2010) or firms' valuations (Ansolabehere, Snyder, & Ueda 2004) rather than on the consequences for contributor behavior. None of the existing theoretical work considers the potential for cross-actor substitution effects among corporate-linked actors if campaign finance regulation restricts corporate-linked PACs but not associated individuals.

Our research is novel in that we are among the first researchers to tackle questions about the efficacy of campaign finance regulation in an empirical setting. It is also novel in that we are the first researchers to consider cross-actor substitution effects between the campaign contributions made by corporate-linked PACs and corporations' executives in either an empirical or theoretical setting. Moreover, we are some of the first researchers to construct and examine a

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[1] For a recent sampling of theoretical papers with implications for campaign finance regulation, see: Che & Gale 1998; Coate 2004; Drazen, Limão, & Stratmann 2007; Meriowitz 2008; Cotton 2009; Ujhelyi 2009; Daley & Snowberg 2011; Fox & Rothenberg 2011; or, Chamon & Kaplan 2013.

campaign contributions dataset focused on the on the interrelationships between PACs and individuals rather than on either set of actors independently.[2] Finally, this research adds to the growing literature analyzing individuals' campaign contributions, which account for over 90% of campaign contributions to candidates and parties.[3]

We exploit the identification opportunity afforded by candidates' decisions to refuse corporate-linked PAC contributions to explore whether or not corporate executives make campaign contributions in lieu of linked PACs. As our empirical findings below demonstrate, through an analysis of a newly constructed micro-level dataset of 18 years of campaign finance records, we find evidence for cross-actor substitution between corporate executives and corporate-linked PACs. Corporate executives' giving to particular candidates increases when PACs linked to the corporation they run are no longer able to give to a particular candidate because that candidate refuses corporate-linked PAC contributions as a policy. The increase in executive's contributions to a candidate we find is economically meaningful because it approximately equals the average contribution from the average PAC to the average candidate—suggesting that executives are in fact using their personal giving to substitute for their firm's linked PACs' inability to contribute to certain candidates.

Although empirically we are interested in a narrow question about executives' responses to candidate-specific bans on corporate-linked PAC contributions, our results speak to broader questions regarding how incomplete regulatory design can induce reactions that undermine policies' public interest objectives. As a result, our findings have implications not only for evaluating any future campaign finance reform proposals but also for understanding regulatory

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[2] Burris (2001) takes a comparative approach to looking at the nature of individual giving of executives and the nature of giving by corporate-linked PACs, but fails to consider the interrelationships between the two.
[3] For recent articles in this growing literature, see: Francia, et. al 2003; Gordon, Hafer, & Landa 2007; Ovtchinnikov & Panteloni 2012; and, Fremeth, Richter, & Schaufele 2013.

design issues more broadly, particularly in instances when cross-actor substitution between one regulated actor (firms' linked PACs) and other actors with whom they are associated (firms' executives) can occur.

2 RULES GOVERNING CAMPAIGN CONTRIBUTIONS

Given the convoluted realities of campaign finance regulation, the answer to whether or not candidates' decisions to refuse corporate-linked PAC contributions ultimately prevents corporate-linked money from entering the system is less obvious than it may initially seem. Despite individuals and corporate-linked PACs receiving separate treatment in the rules governing campaign contributions and despite rules constraining financial relationships between individuals and organizations interested in making campaign contributions, there are a number of linkages between the two sets of actors that ultimately govern their relationship.

All campaign contributions must originate from individuals who have the option of giving (within legal limits) to candidates, political parties, and PACs. In order to make a contribution to a corporate-linked PAC an individual should be a member of a restricted class of people who have explicit links to the corporation, which includes both managers and employees. When individuals contribute to corporate-linked PACs, they abdicate decision-making authority over which candidate(s) will ultimately receive the money to the PAC's treasurer. Hence, at the point at which funds are transferred forward from an individual to a PAC, a legal separation between the individual's money and the PAC's money occurs. Money is not allowed to travel backwards from the PAC or the associated corporation to individuals: it is illegal for PACs or corporations to remunerate (or give "bonuses" in the amount of the contributions) to individuals acting as conduits in making campaign contributions on an organization's behalf. As such, the law treats PACs and individuals linked to a corporation as if they are independent actors that

make independent decisions on which candidates to fund. This suggests that the underlying assumption embedded in the regulation of corporate PACs is that linked firms' executives act purely based on ideological motivations when formulating their personal candidate contribution decisions.

Nevertheless, as Figure 1—which provides a stylized illustration of the pathways campaign contributions may travel to a candidate—suggests, both executives and PACs are indelibly linked to corporate interests. Given this depiction of inter-relationships between executives and PACs, it is distinctly possible that they may not operate completely independently from one another and that executives may not make contributions purely based on ideological rather than strategic motivations. Rather, we may conceptualize PACs and executives as actors who share a common utility function in the campaign contributions arena—not that dissimilar from spouses who share a common household utility function in the labor economics arena.[4]

<center><Insert Figure 1 Here></center>

If this conceptualization were appropriate, then when candidates adopt a ban on corporate-linked PAC contributions, severing the last of the solid lines that connects corporate PACs to candidates in Figure 1, we would expect a reaction along the dashed line directly linking executives to candidates. Severing the link between a PAC and a candidate changes the calculus of giving not only for the individual actors (i.e., PACs and executives) but also for the actors jointly. Eliminating the path from the PAC to the candidate may cause the executives to donate in lieu of their firm's PAC in a form of cross-actor substitution if PACs and executives share a joint utility function. It may also change how much the executive gives to other political counterparties depending upon whether or not he has a binding personal budget constraint for

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[4] For research on household utility functions and cross-substitution in a labor economics context, see: Ashenfelter & Heckman 1974; Lundberg 1998; Lundberg & Rose 2000; Hyslop 2001; or, Cherchye, De Rock, & Vermeulen 2012.

political contributions. Finally, severing the link to one candidate may induce the PAC to give (more) to other candidates who do not adopt a ban on corporate-linked PAC contributions instead.

3 DATA

To test whether or not candidates receive money from a different set of actors associated with a corporation as a result of instituting self-imposed policies of refusing to accept corporate-linked PAC contributions, we need to construct a dataset the includes candidates' positions on accepting corporate-linked PAC monies and the dollar amounts contributed at the executive-firm-candidate pair level. We need the link in the campaign contributions data pairs to run from active executives through firms to candidates as our hypotheses relate specifically to the behavior of both individual executives and of PACs that can be linked explicitly to certain corporations. A single corporation can be identified as being associated with both corporate-linked PACs and any number of executives; however, we are chiefly interested in the CEO.

We collect data on all campaign contributions made by executives and corporate-linked PACs to candidates for firms in our sample over the course of each of the nine election cycles from 1991–2008. For firms and their active executives to be included in our sample, the firm must be an active member of the S&P500 in a given election cycle, of which there were 950 in our sample period. For candidates to be included in our sample, they must have been one of the 7,424 unique candidates who ran in the general election for a Congressional seat in the current election cycle.[5] Hence, we have an unbalanced panel dataset that includes 6,803,661 executive-

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[5] We restrict the sample in this way so as to eliminate a large number or less serious individuals who filed paperwork to appear on primary ballots and to establish fundraising committees but who were not serious contenders. We are aware that the restriction on candidates running in the general election in a given election cycle eliminates four of the six years over which incumbent Senators may be fundraising. Any concerns over missing contributions in those four years are mitigated by recognizing that the vast majority of campaign contributions for incumbent Senators arrive during the active election cycle rather than earlier. Our results are largely unchanged

firm-candidate-election observations over the nine election cycles included in our sample.

3.1   Candidates' Positions on Accepting Corporate-Linked PAC Contributions

The key factor determining the ability of corporations to make contributions via linked PACs rather than via executives is a candidate's policy toward accepting contributions from corporate-linked PACs. The Center for Responsive Politics has coded an election-cycle specific variable based on public announcements that captures whether or not each candidate for Congressional office stated they will not take contributions from corporate-linked PACs in a given election cycle. There are 51 candidates in our sample that in some election-cycle refuse to accept corporate-linked PAC monies; a majority of these candidates choose to accept corporate-linked PAC contributions in other election cycles, providing the within candidate variation we will use for statistical identification.[6]

Although it is not essential for our econometric identification strategy—given that we exploit within candidate variation in policies toward corporate-linked PAC contributions across a number of candidates—the candidates appear as if they were randomly assigned to adopt these policies when they did. Figure 2 shows the distribution over time of the number of candidates in our sample with announced personal policies to refuse all corporate-linked PAC contributions in effect for at least a portion of a given election cycle. It demonstrates (i) that candidates adopted self-imposed bans on corporate-linked PAC contributions in every election cycle we analyze and

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when we include incumbent senators in all election cycles in our sample as a robustness check.

[6] According to the Center for Responsive Politics (CRP), in total, there are 150 candidate/ election-cycle observations in which candidates refuse corporate-linked PAC monies and 58 candidate/ election-cycle observations in which candidates who at some point refuse corporate-linked PAC monies accept them. The CRP codes candidates as refusing PAC contributions in an election-cycle if they do so for any part of the election cycle. Hence, they understate the amount of within candidate variation as there are fewer candidate/election cycle observations in which candidates refuse corporate-linked PAC contributions for the entire election cycle. We re-code the Center for Responsive Politics' variable for our core analysis to ensure that we are only capturing candidates who refuse PAC contributions for entire election cycles since we are interested in sharp changes in this variable and since we want to eliminate observations in which PAC/ executive contributions occur in the parts of an election cycle in which a candidate accepts PAC contributions even though they reject them later in the same election cycle.

(ii) that the timing of these bans is not clustered around a particular election cycle or concomitant event. This over-time dispersion of candidates adopting bans on PAC contributions should help alleviate any concerns about differential trends in treatment and control groups in our research design.

<Insert Figure 2 Here>

In a qualitative sense, the candidates who refused corporate-linked PAC contributions appear to reflect the diversity observed among House and Senate candidates: among the candidates who refused corporate-linked PAC donations were prominent legislators such as Joe Biden and Bill Richardson, career legislators such as Jim Cooper and Phil Crane, and repeat losing candidates such as Victor Morales and Kara Anastasio. Table 1 quantifies observable differences in the characteristics of candidates who adopted a ban on corporate-linked PAC contributions and those who did not. Overall, it suggests both types of candidates are similar. The biggest observable difference is that candidates who adopt bans are more likely to be incumbents; this difference helps us exploit within candidate variation in adoption of these bans in our research design, particularly since there are relatively few perennial losers, only one of whom changed his stance on corporate-linked PACs between elections. The next biggest difference between candidates who refuse corporate-linked PAC monies and those who do not relates to party affiliation: there is only one independent/third-party candidate, and there is an over-representation of Republicans. All of this suggests that an idiosyncratic candidate-specific anti-special interest motivation drives the candidates' decisions to refuse corporate-linked PAC monies. Alternatively, it could suggest that any district and time specific factors that cause candidates to refuse PAC money in order to maximize election and/or aggregate fundraising prospects are idiosyncratic.

<Insert Table 1 Here>

The bottom rows of Table 1 show differences in the aggregate contributions to candidates by all S&P500 firms' executives and by all S&P500 firms' linked PACs.[7] The elevated level of giving by S&P500 firms' executives to candidates who refuse PAC contributions in Table 1 provides initial suggestive evidence that bans on corporate-linked PAC contributions may cause executives to give more to these candidates. Figure 3 provides further suggestive evidence as it shows that the mass of the distribution of candidates' aggregate receipts from S&P500 firm executives is marginally higher for candidates refusing PAC contributions in a given election cycle than it is for candidates accepting PAC contributions in a given cycle.

<Insert Figure 3 Here>

3.2   Campaign Contributions at the Contributor-Candidate Pair Level

Although aggregates of all campaign contributions made by S&P500 firms' executives to candidates, as shown above, can provide interesting and suggestive evidence that executives give larger campaign contributions to candidates who refuse corporate-linked PAC contributions, micro-level data are available and allow us to make stronger inferences. Hence, our core observation unit for campaign contributions is at the executive-firm-candidate pair level—which can also be interpreted as contributor-candidate pairs where the contributor can either be an executive at a firm or the firm's linked PAC, the two of whom share a joint utility function. Typically in the literature on campaign contributions the data are aggregated to a much a higher-level than what we consider in our core analysis, making this approach to the data innovative.

The Federal Election Commission (FEC) collects and publishes transactional level

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[7] Although the aggregate contributions for linked PACs should be zero for candidates who have a ban in place, we observe a small but non-zero value because some candidates only have a ban in place for a fraction of an election-cycle and some PAC contributions from S&P 500 firms are recorded in error, at least according to some of the candidates with such bans in place (Fisher 2012).

records of campaign contributions made by individual donors and PAC donors for all contributions over $200. This data, as cleaned by the Center for Responsive Politics (CRP), serves as the basis for our executive-firm-candidate campaign contribution pairs. We take the initial transaction-level data and aggregate it, if needed, so that our data reflects the total volume of campaign contributions at the level of executive-firm-candidate pairs and PAC-candidate pairs within election cycles.

Although FEC forms ask for individuals' employment information, the FEC data collection is not intended to explicitly link individuals to leadership positions at unique S&P 500 firms. We construct this link using the data collection procedure Fremeth, Richter, & Schaufele (2013) devised to build their comprehensive dataset on S&P 500 CEOs' personal campaign contributions.[8] The contributions from all individuals who served as CEO of a given firm during an election cycle are aggregated into a single executive-firm-candidate data entry.[9]

Similarly, the FEC requires corporate-linked PACs to list their names; however, it does not provide an explicit link between these PACs and unique S&P 500 firms. We construct this link based on Myers' (2005) hand-matching. If a given S&P 500 firm has multiple linked PACs in an election cycle, we aggregate contributions from each into a single PAC-candidate data entry.

3.3 Summary Statistics

Table 2 provides summary statistics describing the campaign contributions executives make to individual candidates. It further breaks these out depending upon the candidates' positions on accepting corporate-linked PAC monies. Table 2 also provides analogous summary

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[8] CEOs of S&P 500 firms are defined as those individuals demarked as such in the ExecuComp database. Using additional identifying biographical information, matches are made by hand between individuals' names and identifiers in the cleaned Federal Election Commission (FEC) data.

[9] Hence, if a firm has two CEOs who were active during an election cycle, the data reflects the aggregate contributions to a given candidate from both executives affiliated with the firm during that time-frame.

statistics describing the contributions corporate-linked PACs make depending upon the candidates' positions on accepting corporate-linked PAC monies. The summary statistics for the corporate-linked PAC contributions help provide a baseline for interpretation of the magnitude of our results for the effect on the change in corporate executives' personal contributions resulting from a change in the candidates' willingness to accept corporate-linked PAC monies.

Since we are analyzing a new dataset, it is worth considering what these summary statistics tell us. First, it is worth noting that the median executive-candidate and PAC-candidate contributions are zero when considering all candidates in the pool. This tells us that even wealthier than average individuals and large firms with sizeable PACs make relatively few contributions and do not donate to the majority of candidates. PACs contribute along only 3% of possible firm-candidate observations, or along only 205,569 of a possible 6,805,309 pairings. CEOs contribute along only 0.15% of possible executive-firm-candidate observations, or along only 10,300 of a possible 6,805,209 pairings.

Unsurprisingly, the average non-zero contribution PACs make $2,276.53 is substantially larger than the average non-zero contribution executives make $1,364.32, given that PACs face a higher contribution limit than individuals. The average contribution for each actor is much smaller, however, when including the zeros: the average PAC contributes only $68.67 to the average candidate and the average executive contributes a meager $2.06 to the average candidate. This reflects the fact that the average executive contributes to relatively fewer candidates than the average PAC. Fremeth, Richter, and Schaufele (2013) show that the active S&P500 CEO contributes to only an average of 3.9 candidates per election cycle.

<Insert Table 2 Here>

We can also glean information from this table that is suggestive of our result that CEOs

may in fact make campaign contributions in lieu of corporate-linked PACs that face restrictions on contributing to certain candidates. The average amount that an S&P 500 CEO gives to candidates with a restriction on accepting PAC contributions in place, $5.92, is several times larger than the average contribution to the average candidate, $2.06—reflecting an increased rate of giving to these candidates. It is also worth noting that in periods when candidates who at some point refuse campaign contributions from PACs accept them, the average PAC contribution to these candidates, $143.36, is larger than it is to the average candidate, $68.67— which suggests that these are candidates to which S&P 500 corporations are relatively more interested in contributing than the average candidate.

4 EMPIRICAL STRATEGY

Our main statistical hypothesis is that:

The conditional effect of a political candidate changing his stance toward accepting corporate-linked political action committee (PAC) contributions for his campaign produces no change in the contribution level of executives (i) at all firms, (ii) at firms associated with active PACs, and (iii) at firms associated with PACs that previously gave to the candidate.

Rejection of this hypothesis would indicate that a change in a candidate's stance on accepting corporate-linked PAC contributions would produce a meaningful change in the contributions that candidate receives from corporate executives. This could be interpreted as evidence in favor of a CEO-PAC cross-substitution effect, particularly if parts (ii) and (iii) of the hypothesis can be rejected.

Stated more formally, the average treatment effect of a political candidate switching his status toward accepting corporate PAC monies on a corporate executive's giving to that candidate, τ, can be written as:

$$\tau = \mathrm{E}[Y_{ict} \mid \alpha_{ic}, \gamma_t, X_{ct}, X_{it}, AcceptsPAC\$_{ct} = 1] - \mathrm{E}[Y_{ict} \mid \alpha_{ic}, \gamma_t, X_{ct}, X_{it}, AcceptsPAC\$_{ct} = 0]$$

where Y_{ict}, the dependent variable, is the amount of money the executive at firm i gives

to candidate c in election-cycle t.

α_{ic} represents fixed and unobserved pair-specific effects (i.e., observation unit fixed effects) about the relationship between the executive at a given firm and a given political candidate. They capture such factors as whether or not the firm at which an executive serves has a reason to have a donor relationship with a particular candidate because that candidate represents the state in which a firm operates or because that candidate is focused on policy domains important to the firm. Inclusion of the pair fixed effect precludes the inclusion of time-invariant firm-specific factors and candidate-specific factors from the analysis.

Election-cycle fixed effects covering each two-year period (i.e., time-fixed effects) are denoted by γ_t. These control for time specific changes in the level of giving such as the increase in giving that occurs each year as regulatory caps on giving rise, the elevated giving that goes to all candidates in presidential election cycles, favorable macroeconomic conditions, etc.

X_{ct} is a vector of observable and time-varying control variables that capture attributes of each candidate. The controls in which we are most interested are those that may drive political contributions to a given candidate that are not correlated with changes in his stance on corporate-linked PAC monies. Hence, appropriate controls should primarily capture factors related to the public profile and power held by the candidates in question (Grier & Munger 1986).

X_{it} is a vector of observable and time-varying control variables that capture attributes of each executive and firm. The most relevant ones are factors that could shift the executives' ability or willingness to make campaign contributions to any candidate. Moreover, we may want to control for firms' propensity to be politically active, since more politically active firms may have more politically active CEOs.

Despite the inclusion of X_{ct} and X_{it} above, our preferred results are the parsimonious

ones that identify the average treatment effect without accounting for these variations in candidate or executive-firm attributes over time. The reason why our preferred specifications are parsimonious is simple: the main question we are interested in answering is whether, in the face of restrictions on corporate-linked PACs' abilities to make contributions to particular candidates, corporate executives make contributions in lieu of the linked PAC or stop making contributions they had planned regardless of who the candidates and the executives are. Hence, we will treat regression specifications that include X_{ct} and X_{it} as robustness checks.

Empirically, in our tests of this hypothesis, we are exploiting variation within candidates' policy on accepting corporate-linked PAC contributions in a quasi-experimental research design applied to micro-data. Our statistical identification relies on deviations from the baseline amount of money executives at a particular firm give to a particular candidate, caused by changes in a candidate's stance on corporate-linked PAC monies. We exploit changes within candidates' stances on PAC monies to identify deviations in the counterfactual trend of giving between a firm's executive and a particular candidate.

The validity of the empirical strategy is predicated on two assumptions. First, we assume that candidates for political office do not choose to switch from accepting corporate-linked PAC monies to refusing to accept such monies because of their relationships with specific firms or executives (i.e., that the treatment is exogenous). This is broadly plausible given that announcements candidates make about refusing to accept corporate-linked monies tend to focus on the candidates desire to be accountable to a class of voters rather than a class of special interests. Moreover, the treatment appears more-or-less as if it were randomly assigned to different candidates at different times given the evidence in Table 1 and Figure 2. Second, we assume that baseline candidate-corporation relationships (i.e., the counterfactual trend) can be

captured primarily by a pair fixed-effect, as they remain more-or-less stable over time. This is plausible if we believe that the primary reasons candidate-corporation relationships exist have to do with the geographic locations a candidate represents or with a candidate's unwavering ideological and policy preferences on issues important to the firm (Kalt & Zupan 1984). To the extent that there are any time-varying candidate characteristics that shift firm-candidate relationships over time, we mitigate concerns about these as omitted variables by including them in X_{ct} in robustness tests.

5 RESULTS

Our core results show that when Congressional candidates have a ban on accepting corporate-linked PAC contributions in effect, that corporate executives, at firms in our sample, increase the average amount they contribute to these candidates' election campaigns. We can interpret this econometric finding more broadly as evidence of a cross-actor substitution effect in which corporate executives give in lieu of corporate-linked PACs in the face of restrictions on the PACs' ability to contribute to target candidates. This core result—in which we find evidence in favor of CEO-PAC cross-substitution—stands up to several robustness tests.

5.1 Core Findings

Table 3 demonstrates the effect on executives' contributions to a candidate of the candidate changing his stance on accepting PAC contributions. Column I shows that for the average executive at the average firm in our sample, there is a treatment effect of $3.39 when a candidate changes his stance on accepting PAC monies from acceptance to refusal. This provides preliminary regression-based evidence in favor of our hypothesis and suggests that CEO-PAC cross-substitution may occur in the face of restrictions on PACs' abilities to contribute to certain candidates.

Stronger evidence in favor of a CEO-PAC cross-substitution effect would also incorporate information on the contribution activity of the CEO's firm's linked-PAC. Some firms in our sample do not have active PACs in any or all of the election cycles making it difficult to interpret the CEOs' personal behavior in these instances as being indicative of giving on behalf of his firms' non-existent PAC. Only CEOs at firms with active linked PACs in a given election cycle can be interpreted as having made a contribution in lieu of their linked PAC. Even if a firm has an active linked PAC in a given election cycle, that PAC may not necessarily be interested in contributing to a given candidate; hence, the strongest evidence in favor of a CEO-PAC cross-substitution effect would come in instances where a CEO's firm's linked PAC gave to a candidate in the past that currently refuses PAC contributions.

Column II of Table 3 demonstrates that we find a stronger average treatment effect, $6.02, on CEOs' personal contributions to a candidate who changes his stance on PAC contributions if the CEO led a firm with a linked PAC than if the CEO led the average firm which may or may not have a linked PAC. Column III of Table 3 shows that the average treatment effect, $64.75, is an order of magnitude larger for CEOs of firms with a linked PAC that previously contributed to the candidate who now refuses PAC contributions. Column IV confirms that there is no measurable effect on CEOs' contributions to candidates who currently refuse PAC contributions if their firm does not have a linked PAC. These results taken together suggest that CEOs do not modify their behavior on average to contribute to candidates who refuse PAC monies, unless they are in fact contributing in lieu of their corporate-linked PACs.

Columns V and VI decompose how much of the treatment effect is attributable to CEOs at firms with linked PACs versus CEOs at firms with linked PACs that previously contributed to the candidates. Column VI shows that of the total $64.86 treatment effect for CEOs at firms

with PACs that previously contributed to candidates who currently refuse PAC monies that $2.55 of this total is attributable to CEOs at firms with PACs that did not necessarily contribute to the candidates prior to their refusal of corporate-linked PAC monies. This is our preferred regression specification because it incorporates, but distinguishes between, all types of CEO-PAC cross-substitution activity.

<Insert Table 3 Here>

Although the $64.86 total increase may appear small at first, its substantive and economic significance is more appreciable when compared with the average PAC's contribution to the average candidate which is just $68.67 or the average executive's contribution to the average candidate which is just $2.06, as seen in Table 2. CEOs' average personal contributions to candidates are typically much smaller than PACs' average contributions to candidates; however, when candidates refuse to accept corporate-linked PAC monies, CEOs average contributions to these candidates begin to look like PACs' average contributions to the average candidates. This suggests that CEOs' personal campaign contributions begin to mirror those of corporate-linked PACs when candidates refuse to accept corporate-linked PAC monies.[10]

Another benchmark, we may want to compare the $64.86 treatment effect on CEOs contributions to is the average amount that a candidate loses when he announces that he will no longer accept corporate-linked PAC monies. We estimate this to be $547.80 for PACs that previously contributed to a candidate in Appendix A.[11] Hence, the average increase in a CEO's contributions makes headway into the average amount that a candidate loses from a corporate-

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[10] This CEO-PAC substitution effect has a historical analog in the increased giving of corporate-linked individuals to candidates in the wake of the Tillman Act of 1907, which banned direct contributions from firms' treasuries to candidates. In fact, Winkler (2004) argues that Theodore Roosevelt advocated for the Tillman Act because he fully expected such individual donations to make up for the loss in corporate contributions caused by the law—and, this very same logic may explain the behavior of strategic candidates who refuse corporate-linked PAC donations in the modern context.

[11] Appendix A details how we estimate the average treatment effect on PACs' contributions to candidates who switch their stance on accepting corporate-linked PAC monies from acceptance of them to refusing them.

linked PAC when he begins refusing PAC contributions. The average CEO's increased

contributions alone make up for approximately twelve percent of the monies that the average

linked PAC can no longer contribute to a candidate who began refusing corporate-linked PAC

contributions—and that amount does not consider the potential for other individuals associated

with the firm, including not only other members of the executive ranks but also a much larger

pool of rank-and-file employees, to contribute in lieu of the firm's linked PAC as well. Other

reasons why the average CEOs' contributions to candidates who refuse PAC monies may not

make up the entire difference lost from linked PACs include: (i) that individuals face

contributions limits that are roughly half that of PACs and (ii) that every CEO may not be

engaging in cross-actor substitution in which they give in lieu of their linked PAC.[12]

One potential mechanism explaining our result—that CEOs (and potentially other

executives) give in lieu of corporate linked PACs—is that government affairs officers coordinate

the activity. Informal conversations the authors have had with government affairs officers

suggest that these individuals draft lists of candidates to whom they believe executives should

consider making personal campaign contributions. In the event that a candidate no longer

accepts PAC contributions, but the government affairs office deems those candidates as

important, those candidates may appear on such lists. Further, in some instances, candidates may

in fact refund PAC contributions, given their public anti-PAC stance, while suggesting in private

to government affairs officers that personal contributions from corporate executives are welcome

(McChesney 1997). Hence, the effect we capture could be the realization of executives'

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[12] One reason some executives may not engage in the activity is that they are not all necessarily U.S. citizens, making some of them legally ineligible to make campaign contributions. To the extent that there are non-U.S.-citizen CEOs in our dataset, our estimates may be biased downward since we are implicitly assuming all CEOs can engage in cross-actor substitution when in fact this is not true. Nevertheless, we expect there are few non-U.S.-citizen CEOs in our dataset, for as Fremeth, Richter, and Schaufele (2013) demonstrate, 87% of these CEOs made at least one campaign contribution at some point over their respective careers.

following through on government affairs officers' suggestions.

5.2   Robustness

To improve our confidence in our result—that executives increase their campaign contributions to candidates that their corporate-linked PACs can no longer reach, particularly when their corporate-linked PAC previously contributed to a candidate—we address two primary robustness concerns. First, we show that the use of executive-firm-candidate pair fixed effects, along with period fixed effects, reliably captures the counterfactual trend in the executive at a given firm's campaign contribution patterns in the absence of candidates who switch their stance on PACs. To do so, we will show that our estimates of the coefficients of interests are relatively impervious to the addition of potentially omitted time-varying candidate and executive-firm characteristics. Second, we demonstrate that our inference is sound despite few treatment groups, which is particularly important given known issues with the calculation of standard errors in difference-in-differences type estimations in such settings. We perform several tests to this end, most notably one where we appeal to randomization inference by generating placebo switches in candidates' stances toward accepting PAC contributions.

Overall, we are confident that we can make strong inferences about changes in the behavior of executives at firms whose linked PACs previously contributed to candidates who currently refuse money. We are less confident in our ability to make such inferences about changes in the behavior of executives at firms with active linked PACs that did not necessarily contribute to the candidates who switch their stances on PAC money.

Potentially Omitted Time-Varying Candidate and Executive-Firm Characteristics

Despite the inclusion of executive-firm-candidate pair fixed effects and election-cycle fixed effects to capture an executive's baseline contributions to a given candidate, we might be

concerned that our parsimonious regressions suffer from omitted variable bias. This could be a particular concern if there are dramatic changes in candidate characteristics around candidates' adoption of bans on corporate-linked PAC contributions. We may also be worried that candidates' adoption of such bans occurs coincidentally with changes in executives' or firms' proclivity or propensity to make campaign contributions.

On the other hand, we may not need to be concerned about including time-varying control variables in our regressions as there are reasons to believe they will have little to no effect on our results. For time-varying candidate characteristics, we may expect this result because the treatment, a candidate adopting an anti-PAC policy, appears as-if it were randomly assigned given: (i) the relatively large number of candidates in our dataset who at some point refuse to accept corporate-linked PAC monies appear to be representative of the broader population of candidates for Congressional office as shown in Table 1, and (ii) the timing of these candidates' decisions appears to be broadly dispersed over the sample period as shown in Figure 2. For executive-firm characteristics, we may expect this result because it is highly unlikely likely that time-varying changes in executives' and firms' characteristics across the cross-section of heterogeneous executives and firms would be coincident with candidates' announcements that they will refuse corporate-linked PAC monies.

Results from regressions where we demonstrate that our core result is robust to the inclusion of time-varying candidate and executive-firm characteristics as controls appear in Appendix B. Our estimate of the average treatment effect does not appear to suffer from omitted variable bias. In the regressions where we control for time-varying candidate characteristics, we include election-cycle specific dummy variables indicating: if a candidate ran for a Senate seat; if a candidate is an incumbent; if a candidate sits on a committee that is strategically important to

an executive's firm; if a candidate ran in a close electoral race; and if a candidate ran in an uncontested race.   In the regressions where we control for time-varying executive-firm characteristics, we include controls for: executive salary; executive ownership (fraction of shares held); and the prior year's aggregate contributions by the corporate-linked PAC.

Randomization Inference to Handle Few Treatment Groups

A principal concern with many difference-in-difference estimates is the calculation of standard errors (Bertrand, Duflo, & Mullainathan 2004), particularly when there are few treated groups (Donald & Lang 2007; Conley & Taber 2011). We conducted several additional robustness checks aimed at the strength of our inference vis-à-vis this concern. Our primary robustness check to this end relies on building a randomization inference (Rosenbaum 2002; Dufflo, Glennerster & Kremer 2007) in which we assign candidates placebos changes in their stance toward accepting PAC monies. Our results confirm what we find in our other robustness checks: that we can make stronger inferences when firms' PACs previously contributed to candidates as opposed to when firms simply have an active PAC.

Randomization or permutation methods can often improve the quality of inferences made over those derived from clustered standard errors based on asymptotic assumptions, particularly when errors may be correlated not only within but also between clusters (Barrios, Diamond, Imbens, Kolesar 2012). To build a randomization-based inference to test whether our result— that executives increase their campaign contributions to candidates that their corporate-linked PACs can no longer reach, particularly when their corporate-linked PAC previously contributed to a candidate—holds, we run 5,000 regressions using placebo data on candidates' stances toward accepting PAC monies. Placebo switches in candidates' stances toward accepting PAC monies are randomly generated such that they occur at the same times in candidates' political

careers as the real switches for candidates active in the same years. This placebo data is then used in regressions based on the specification in Table 3, Column VI; we run these on a sample of candidates in which the actual treated candidates are excluded. The results of these 5,000 regressions based on randomized placebo treatments are then used to construct the empirical distribution of estimated coefficients. We can then place our coefficient estimates based on regressions run on the observed data (i.e., those estimated in Table 3, Column VI) in these empirical distributions to determine the probability of seeing a change in executive behavior as extreme as we did if the treatment—or change in candidates' stances—were randomly assigned (Ernst 2004).

Figure 4, Panel A shows a histogram of the empirical distribution for the coefficient on the variable indicating that a candidate currently refuses PAC contributions but previously accepted them for executives at firms with active PACs. The dashed vertical line at 2.55 represents the place in the distribution where our estimate on this variable in the observed data falls. Observations to the right of this line are more extreme than our estimate. 611 of the 5000 observations are greater than this value—suggesting that if we randomly picked a set of candidates to start refusing PAC monies, that we would only observe a reaction in executive contributions to those candidates as extreme at the one we actually saw 12.22% of the time. This is consistent with our finding an insignificant coefficient on this variable in some specifications in Appendix B vis-à-vis the inclusion of time-varying executive-firm controls. Hence, any inference about the direction of this coefficient is weak when compared with a p-value threshold of 0.1.

In contrast, our randomization inference on the other coefficient of interest gives us great confidence in our result that executives make a larger change in their behavior vis-à-vis

candidates who previously accepted monies from the firm's linked PAC. A histogram of the empirical distribution of this coefficient constructed using the placebo data appears in Figure 4, Panel B. Only 34 of the 5,000 observations are greater than the coefficient we estimated using the observed data. This suggests that we would only expect a result as extreme as the one we saw 0.68% of the time. By any standard, this suggests that inferences based on this coefficient are strong.

<Insert Figure 4 Here>

All told the results of our randomization-based inference help give us confidence in our findings to a greater degree than even clustering standard errors—along any variety of potential groups with unknown correlations—could give us.

Sensitivity to Individual Candidates

We leave a second check—in which we test the sensitivity of our results to each one of the few treatment units—to Appendix C where we show results dropping each treated unit from the sample and re-running our core regression found in Table 3, Column VI. As in the rest of our robustness checks, we come away with great confidence in our finding for executives of firms whose linked PAC previously contributed to the candidates in question and slightly less confidence in our finding for executives at firms that simply have an active PAC.

6 EXTENSIONS TO ANALYSIS GIVEN CORE FINDING OF CEO-PAC CROSS-SUBSTITUTION

Establishing robust evidence for a cross-actor substitution effect in which CEOs make campaign contributions in lieu of corporate-linked PACs when the PACs themselves cannot give to a particular target candidate leaves us with a new set of questions about CEOs' and PACs' responses. In this section, we extend our analysis to study whether or not there are other changes in CEOs' and PACs' giving patterns when the CEOs and PACs act in a manner consistent with

cross-actor substitution in making campaign contributions.

As Figure 1, which illustrates pathways between corporate-linked actors and candidates shows, CEOs may give to corporate-linked PACs or directly to candidates. Hence, we specifically ask what happens to CEOs' contributions to candidates in aggregate and to their corporate-linked PACs when they appear to engage in cross-actor substitution with their PAC. If CEOs have fixed budget constraints for campaign contributions, then we may expect to find a strict within-CEO substitution effect in which CEOs reduce their corporate-linked PAC contributions by the amount they increase their contributions to candidates. Alternatively, if CEOs do not have fixed budget constraints for contributions, they may leave their corporate-linked PAC contributions unchanged while increasing their contributions to candidates.

As Figure 1 also shows, PACs may contribute directly to candidates. Hence, we specifically ask what happens to corporate-linked PACs' aggregate contributions to all candidates when their CEO appears to engage in cross-actor substitution behavior because the PAC cannot contribute to a specific candidate. We may expect a decrease in PACs' aggregate contributions to candidates if the CEOs' contributions to candidates the PACs can no longer target serve as an effective substitute. Alternatively, we may expect no change in the PACs' aggregate contributions to all candidates if the PAC simply reallocates its planned contributions to candidates without current bans on accepting corporate-linked PAC contributions. It is also possible that the PAC may increase its aggregate contributions if it decides that making donations to multiple other candidates in addition to engaging in cross-actor substitution with its CEO is the best way to maintain or enhance its political influence in the face of new restrictions.

How both CEOs and PACs alter their contribution patterns vis-à-vis counterparties other than those with bans on PAC monies in effect when they appear to engage in CEO-PAC cross-

substitution remain open empirical questions. To answer these questions, we restructure our data as aggregate contributions vis-à-vis other counterparties at the level of executive-election-cycle observations or firm-election-cycle observations, depending upon if we are interested in CEO or linked PAC behavior. We create a dummy variable indicating whether or not there is a pattern of giving consistent with CEO-PAC cross-substitution that takes on a value of one if a CEO gives to a candidate who currently has a ban on accepting corporate-linked PAC contributions, but previously accepted them, in effect. This is the key independent variable in our regressions that are run with executive-election-cycle or firm-election-cycle fixed effects depending upon the question and the structure of the underlying data required to answer it.

Our statistical hypotheses here are that:

The conditional effect of an executive contributing to a candidate who currently refuses Political Action Committee (PAC) contributions (but previously accepted them) produces no change in (i) the aggregate contributions of the executive to all candidates, (ii) the contributions of the executive to his firms' linked PAC, and (iii) the executive's firm's linked PAC's contributions to candidates in aggregate.

Rejection of this hypothesis would indicate that an executive contributing to a candidate that his firm's linked PAC cannot would produce a meaningful change in the other aspects of the executives' giving or in other aspect of the linked PACs' giving. Depending upon the direction of the effect for all three hypotheses, this could be interpreted as CEO-PAC cross-substitution leading to a greater or smaller amount of corporate-linked money in politics.

Stated more formally, the average treatment effect of an executive contributing to a political candidate that currently refuses but previously accepted corporate PAC monies on a corporate executive's/ corporate linked PACs' giving, τ, can be written as:

$$\tau = \mathrm{E}[Y_{it} \mid \alpha_i, \gamma_t, CEO/PAC\ Cross\ Sub_{it} = 1] - \mathrm{E}[Y_{it} \mid \alpha_i, \gamma_t, CEO/PAC\ Cross\ Sub_{it} = 0]$$

where Y_{it}, the dependent variable, is the amount of money the executive or corporate-

linked PACs at unit i gives to a particular counterparty in election-cycle t.

α_i represents fixed and unobserved unit (i.e., executive of firm) fixed effects. They capture the counterfactual trend in executive or firm contributions to a given counterparty. Election-cycle fixed effects covering each two-year period (i.e., time-fixed effects) are denoted by γ_t. These control for time-specific changes in the level of giving such as the increase in giving that occurs each year as regulatory caps on giving rise, the elevated giving that goes to all candidates in presidential election cycles, favorable macroeconomic conditions, etc.

$CEO/PAC\ Cross\ Sub_{it}$ represents whether or not a given CEO/PAC pair demonstrate behavior consistent with cross-substitution activity. It takes on a value of one when in a given cycle an executive gives to a candidate who currently refuses PAC monies but previously accepted them. It takes on a value of zero otherwise.

Our statistical estimates rely on deviations from the baseline amount of money executives/PACs give to a particular counterparty created by CEO-PAC cross-substitution. Our results are reported in Table 4.

We show in Column I that when CEO-PAC cross-substitution appears to occur, that the average CEO responds by contributing \$1,968.23 more in aggregate to candidates. The average CEO's contributions to his firm's linked PAC remain measurably unchanged despite apparent cross-actor substitution as seen in Column II. Taken together these findings suggest that individual CEOs do not have fixed budget constraints on their campaign contributions, since the average CEO who appears to give in lieu of a PAC does not reallocate contributions from their firm's linked-PACs to candidates to whom the PACs cannot give, but rather, the average CEO appears to simply increase his contribution to candidates without compensating elsewhere.

Although the average CEO increases his aggregate contributions, Column III of Table 4

shows that the average corporate-linked PAC does not have a measurable change in its aggregate contributions to candidates when CEOs appear to give in lieu of the linked PAC. This suggests that PACs do not simply have CEOs make contributions in lieu of them while eliminating their contributions to a candidate who will no longer accept their contributions. Instead, it suggests that PACs reallocate money they planned on contributing to a candidate with a current ban on corporate-linked PAC monies—and give that money to another candidate in their stead.

<Insert Table 4 Here>

The broader implication of these findings relate to the aggregate amount of money in electoral politics. Because CEOs increase their aggregate giving when CEO-PAC cross-substitution appears to occur and because PACs do not decrease their giving, marginally more money flows from corporate-linked entities in aggregate to individual candidates. Together with our core findings, these results reveal that not only will corporate-linked money find its way into politics despite restrictions but also that the amount of corporate-linked money may actually increase on the margins when corporate-linked actors attempt to circumvent restrictions on the ability of PACs to make contributions.

7   DISCUSSION

7.1   Implications for Understanding Regulation Broadly

Our core empirical finding—that CEOs of firms act in lieu of constrained corporate-linked PACs in a form of cross-actor substitution between actors who share a joint utility function—has important implications for our understanding of regulation more broadly. Despite the potential for cross-actor substitution, economists studying regulatory design and the unintended consequences of regulation tend to focus on adjustment mechanisms that force the regulated parties to make trade-offs in their own behavior, often with negative implications for

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social welfare, in order to adhere to the regulations. For example, Jacobsen (2013) shows that regulations on vehicle emissions lead manufacturers to produce cars which are less safe for drivers, Greenstone (2003) examines how regulations on manufacturing facilities' harmful emissions led to cross-media substitution in which air pollution is reduced at the expense of water quality, and DiNardo and Lemieux (2001) show that increasing the minimum drinking age leads affected individuals to increase their marijuana consumption. The cross-actor substitution effect that we identify as an adjustment mechanism to cope with new regulation in the campaign finance environment is different because it allows the regulated parties to subvert intentionally the intended purpose of the regulation by using conduits.

The campaign finance environment, however, is not the only setting in which there are multiple actors who share joint utility functions can engage in similar behavior. In many regulatory settings, the focus is applied to only one conspicuous actor among a set of joint actors. Failing to regulate actors who have joint utility functions creates the opportunity for exploitation of loopholes in regulatory design when one non-regulated party can act in lieu of the regulated party. Enron provides an example outside the campaign finance environment: the firm's California-based energy marketer used an Oregon-based subsidiary as a conduit to which it sold and from which it bought back power as a means of circumventing regulatory price caps in the California market that did not apply to imported power (Kranhold, Lee, & Benson 2002). More generically, these types of loopholes are subject to exploitation where regulation in one jurisdiction or one domain fails to account for the regulated actor's or its affiliates' activities in other jurisdictions or other domains. Clearly, when regulated parties use conduits in other jurisdictions or other domains, the action subverts the intended purpose of the regulation. Hence, regulatory design that fails to restrict all actors sharing a utility function will be left prone to

exploitation.

7.2   Implications for Campaign Finance Regulation

In finding that when candidates refuse to accept monies from corporate-linked PACs that executives from corporations step in to fill the void, we have uncovered cross-actor substitution as a response to candidate-specific restrictions on contributions from PACs in the campaign finance environment. We discuss the implication of CEOs giving in lieu of PACs vis-à-vis the current campaign finance environment in which candidate-specific bans on PAC monies are in effect and vis-à-vis a hypothetical scenario in which contributions from corporate-linked PACs are completely prohibited.

Vis-à-vis Candidate-Specific Bans on Accepting PAC Monies

The cross-actor substitution we uncover in which CEOs give in lieu of PACs provides the first empirical evidence for the hydraulic theory of campaign finance (Issacharoff & Karlan 1999), which argues that regardless of how campaign finance regulations are designed and implemented, money will find its way into politics. This result raises serious questions about the efficacy of attempting to restrict the flow of corporate-linked money into politics when individuals affiliated with corporations are not subject to similar bans.

The proximate effect of bans on PAC contributions is that they decrease the quality of campaign finance disclosure, as donations are no longer as clearly linked to firms when they come from individuals instead. As a result, bans on corporate-linked PAC monies may give voters a false impression of the composition of a candidate's financial backers, potentially harming the public interest. Nevertheless, when campaign contributions come from individual executives in lieu of corporate-linked PACs, the private interests of both firms and candidates are served. Corporate-linked sources remain able to supply linked funds to relevant candidates.

Moreover, the candidates' private interests would remain unharmed if cross-actor substitution enables them to recover losses from PACs constrained by the candidates' self-imposed bans. Candidates may even benefit from taking an anti-special interest position if it helps them win votes. The pattern of behavior engaged in by the candidates and the corporate-linked entities illustrates how restrictions ostensibly designed to serve the public interest are circumvented to serve private interests instead, as the economic (or capture) theory of regulation would suggest (Stigler 1971). This result is in-line with previous studies of federal campaign finance reform legislation, which find that the economic theory of regulation has greater power than the public interest theory of regulation in explaining the presence and effect of reforms geared at limiting funds in elections (Abrams & Settle 1978; Aranson & Hinich 1979; Bender 1988).

Vis-à-vis a Complete Ban on PAC Contributions to Candidates

Given the rigor of our tests and the strength of the research design we employed, we are confident in the internal validity of our results; we are less confident, however, about our ability to project the implications onto other scenarios given that these would push the limits of our study's external validity. If for instance, new campaign finance regulation hypothetically disallowed giving from all corporate-linked PACs to all candidates, we might be able to remain confident that the direction of the effect we capture on executives personal contributions is accurate; nevertheless, we might be less confident that the magnitude of the effect we capture in this study is a good estimate of the effect in the hypothetical scenario. When considering our existing results vis-à-vis this hypothetical scenario, our current estimates are likely biased toward zero, meaning that we are measuring a smaller impact than might be expected if the broader hypothetical ban went into place. This is because two competing mechanisms might be at play in the scenario we analyze but not in the hypothetical one; these are: one that causes executives

to avoid giving to candidates they view as anti-business and another that causes executives to give in lieu of PACs facing restrictions. The former mechanism might cause executives to give less, while the later would cause executives to give more. Therefore, if a hypothetical ban were placed on all PACs but did not signal any particular candidate's anti-business stance, then only the later mechanism would be at play. If this were the case, we would expect a much larger effect on executives' personal giving if such a ban eliminated corporate-linked campaign contributions entirely. Hence, a complete ban on corporate-linked PAC contributions would be ineffective unless individuals affiliated with firms' contributions were similarly restricted. Nevertheless, such a ban on individual giving would almost certainly be deemed unconstitutional.

8   CONCLUSION

This research examined how actors affiliated with firms adapt to changing campaign finance rules—exploiting variation in candidates' announced willingness to accept funds from corporate-linked PACs. We find that when firms' linked PACs face restrictions on making contributions to particular political candidates that the firms' executives give as individuals in lieu of having the linked PAC make the contributions—suggesting that executives and corporate-linked PACs make campaign contribution decisions as if they share a joint utility function. This is the first robust evidence that demonstrates that one of the reasons individuals make greater campaign contributions when they serve in leadership roles is that they are giving strategically on behalf of their organization rather than giving only in-line with their longstanding personal preferences—a result speculated upon by Fremeth, Richter, & Schaufele (2013) as an explanation for why individuals who serve as CEOs make greater campaign contributions when they are in office than when they are not. Although we demonstrate that executives give more

when their corporate-linked PAC can no longer give, our results are highly suggestive of the fact that executives may make campaign contributions on behalf of their firms at other times as well. This remains a question for future research.

Our results also suggest that regulators need to be aware of the potential for strategic cross-actor substitution not only in campaign finance but in other contexts as well. Failure to account for these types of responses to regulatory regimes may render policies intended to constrain behavior ineffective, as regulated actors can use conduits to circumvent the regulation.

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**FIGURE 1 – Pathways from Corporate-linked Entities
to Political Candidates Campaign Coffers**
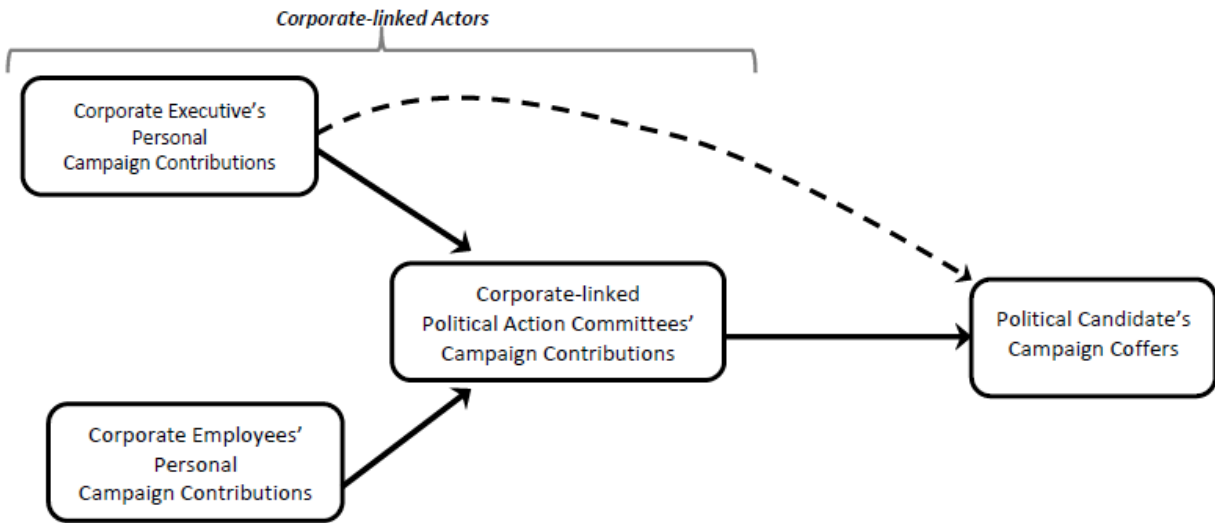
**FIGURE 2 – Distribution of Candidates who Refuse
Corporate-linked PAC Monies across Time**
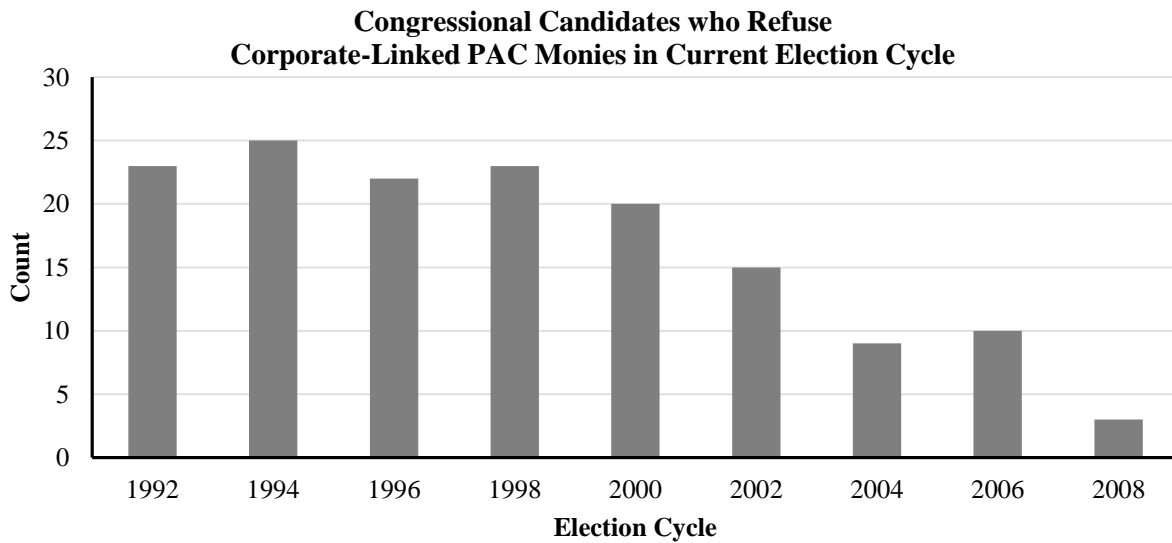
FIGURE 3 – Distribution of Candidates Aggregate Election-Cycle Receipts from S&P500 CEOs by Candidates Policy on Accepting PAC Contributions

Legend:
— Election Cycles in which Candidates Accept PAC Monies
--- Election Cycles in which Candidates Refuse PAC Monies

Aggregate Candidate Reciepts from S&P500 CEOs in a Cycle (Dollars)
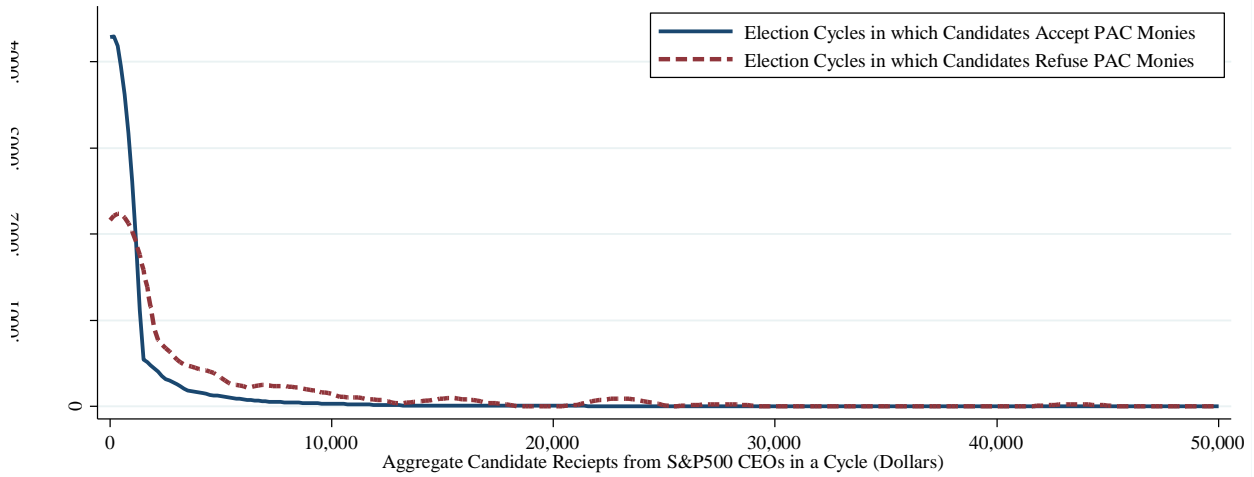
FIGURE 4 – Histograms of Coefficient Estimates from Regressions on Placebo Candidates who Refuse PAC Monies

Panel A

Placebo estimates greater than actual estimate in this region

Placebo Coefficient Estimates on
Candidates who Currently Refuse PAC monies
for Executives' whose Firms have an active Linked PAC

Panel B

Placebo estimates greater than actual estimate in this region

Placebo Coefficient Estimates on
Candidates who Currently Refuse PAC monies
but Previously Received Contribution from Executives' Firm's Linked PAC

TABLE 1 - Observable Candidate Characteristics by Candidates' Stance towards PAC Monies

	Candidates who **Accept** Corporate-linked PAC Monies throughout the current election-cycle		Candidates who **Refuse** Corporate-linked PAC Monies for a portion of the current election-cycle	
	Mean	*Standard Error*	*Mean*	*Standard Error*
Candidate for Senate	0.10	(0.30)	0.11	(0.31)
Candidate is Incumbent	0.30	(0.46)	0.82	(0.39)
Candidate's Election is Competitive (Vote Share between 40% and 60%)	0.31	(0.46)	0.34	(0.48)
Candidate's Election is Uncontested	0.08	(0.27)	0.11	(0.31)
Candidate is a Democrat	0.33	(0.47)	0.32	(0.47)
Candidate is a Republican	0.32	(0.47)	0.67	(0.47)
Candidate is an Indpendent or Third Party Member	0.35	(0.48)	0.01	(0.08)
Aggregate Amount Contributed by S&P 500 Firms' CEOs (Dollars)	$ 1,110.20	(4,699.27)	$ 3,376.47	(6,292.98)
Aggregate Amount Contributed by S&P 500 Firm-linked PACs (Dollars)	$ 38,278.71	(86,257.85)	$ 2,846.43	(20,503.61)
Candidate/ Election-Cycle Observations	12,195		150	

TABLE 2 -Summary Statistics

Sample Construction	
Number of Election Cycles (1991-2008)	9
Number of Unique Firms in S&P500 over Timeframe	950
Number of Firm-Election Cycle-Years	4,955
Number of Unique Candidates over Election Cycles	7,421
Number of Candidates-Election Cycle-Years	12,345
Number of Firm-Candidate-Election Cycle-Years	6,803,661
Number of Candidates who Refuse PAC Money in Any of the Election Cycles	51
Number of Candidate/Election-Cycle-Years for Candidates who ever Refuse PAC Money	208
Number of Firm-Candidate-Election Cycle-Years for Candidates who ever Refuse PAC Money	113,999

Personal Contributions made by S&P500 Firms' CEOs to Candidates per Election Cycle

	Mean	*Median*	*Std. Dev.*	*Count*
To Any Candidate				
All CEO-Candidate Pairs	$2.06	$0.00	$66.59	6,803,661
CEO-Candidate Pairs with positive values in the Current Election Cycle	$1,364.32	$1,000.00	$1,034.23	10,300
To Candidates in Election Cycles when they Refuse PAC Contributions (for some fraction of the Election Cycle)				
All CEO-Candidate Pairs	$6.15	$0.00	$99.41	82,311
CEO-Candidate Pairs with positive values in the Current Election Cycle	$1,132.45	$1,000.00	$726.92	449

PAC Contributions made by S&P500 Firm-linked PACs to Candidates per Election Cycle

	Mean	*Median*	*Std. Dev.*	*Count*
To Any Candidate				
All S&P500-linked PAC-Candidate Pairs	$68.67	$0.00	$560.74	6,803,661
All S&P500-linked PAC-Candidate Pairs with positive values in the Current Cycle	$2,276.53	$1,000.00	$2,318.26	205,569
To Candidates who at some point Refuse PAC Contributions but not in the current Election Cycle				
All S&P500-linked PAC-Candidate Pairs	$143.36	$0.00	$813.11	31,688
All S&P500-linked PAC-Candidate Pairs with positive values in the Current Cycle	$2,307.22	$1,000.00	$2,369.98	1,974

Table 3: Effect of Candidate Switch in Acceptance of PAC Monies on CEO Contributions to Candidate

	I		II		III	
Dependent Variable:	*CEO's Personal Contributions to Candidate (in Dollars), t*					
	Coef.	Std.Err.	Coef.	Std.Err.	Coef.	Std.Err.
Candidate Refuses PAC Contributions but Previously Accepted Them, t	3.39***	(0.87)				
Candidate Refuses PAC Contributions but Previously Accepted Them, t * Firm has an active corporate-linked PAC that contributes to Candidates, t			6.02***	(1.06)		
Candidate Refuses PAC Contributions but Previously Accepted Them, t * Corporate-linked PAC made Prior Contributions to the Candidate, t					64.75***	(4.38)
Executive-Firm-Candidate Fixed Effect	Yes		Yes		Yes	
Election Cycle Fixed Effects	Yes		Yes		Yes	
F-stat.	138.01***		139.91***		160.57***	
N	6,803,661		6,803,661		6,803,661	

	IV		V		VI	
Dependent Variable:	*CEO's Personal Contributions to Candidate (in Dollars), t*					
	Coef.	Std.Err.	Coef.	Std.Err.	Coef.	Std.Err.
Candidate Refuses PAC Contributions but Previously Accepted Them, t * Firm does not have an active corporate-linked PAC that contributes to Candidates, t	-1.51	(1.32)	-1.45	(1.32)		
Candidate Refuses PAC Contributions but Previously Accepted Them, t * Firm has an active corporate-linked PAC that contributes to Candidates, t			2.43**	(1.09)	2.55**	(1.09)
Candidate Refuses PAC Contributions but Previously Accepted Them, t * Corporate-linked PAC made Prior Contributions to the Candidate, t			62.49***	(4.51)	62.31***	(4.51)
Executive-Firm-Candidate Fixed Effect	Yes		Yes		Yes	
Election Cycle Fixed Effects	Yes		Yes		Yes	
F-stat.	136.46		131.98***		145.06	
N	6,803,661		6,803,661		6,803,661	

Notes:

***, **, * indicates significance at 1% , 5% and 10% levels respectively

Table 4: Effect of CEO-PAC Cross-Substitution on the CEOs' and PACs' Other Contributions

Dependent Variable:	I		II		III	
	CEO's Aggregate Personal Contributions to Candidates (in Dollars), t		*CEO's Aggregate Personal Contributions to His Firms' Linked PAC (in Dollars), t*		*PAC's Aggregate Contributions to all Candidates (in Dollars), t*	
	Coef.	Std.Err.	Coef.	Std.Err.	Coef.	Std.Err.
CEO-PAC Contribution Patterns indicative of Cross-Substitution, t	1968.23***	(333.14)	-146.68	(160.79)	13,835.08	(9,816.98)
Individual Fixed Effects	Yes		Yes		-	
Firm Fixed Effects	-		-		Yes	
Election Cycle Fixed Effects	Yes		Yes		Yes	
F-stat.	6.15***		5.87***		14.13***	
N	6,658		6,658		4,955	

Notes:

***, **, * indicates significance at 1% , 5% and 10% levels respectively

APPENDIX A – AVERAGE TREATMENT EFFECT ON PAC CONTRIBUTIONS OF CANDIDATES' BANS ON ACCEPTING CORPORATE-LINKED PAC MONIES

Table A1 confirms that when candidates announce that they will no longer accept corporate-linked PAC contributions that there is a meaningful decrease in PAC contributions to these candidates, corroborating the evidence from the summary statistics in Table 2. It also establishes an estimated average dollar amount of contributions candidates lose from their average PAC contributors by announcing they will no longer accept contributions from corporate-linked PACs. These results help us interpret our core results shown in Table 3, as they provide a baseline against which we can estimate the degree to which executives compensate for the loss of giving at PACs. To estimate these values, we analyze the behavior of corporate-linked PACs using candidate-PAC (firm) contribution pairs as our unit of analysis. Specifically, we test to see whether (i) a candidate's announcement of a ban on corporate-linked PAC contributions, (ii) a candidate's announcement of such a ban when a firm has a linked PAC, and (iii) a candidate's announcement of such a ban when a firm's linked PAC had previously given to the candidate affect the PAC's future giving to the candidate. This structure parallels what we do in the body of the paper when testing for an effect on a CEO's contributions. We also include fixed effects for the candidate-PAC pairs and election cycles.

The four specifications in Table A1 reveal that the average amount that PAC contributions decease by to the average candidate who adopts a ban on corporate-linked PAC giving ranges from $66.17 to $547.80. To be conservative and consistent with our estimated specifications, we use the latter of these numbers when benchmarking to the magnitude of the CEO's estimated average treatment effect in our discussion of Table 3.

Table A1: Effect of Candidate Switch in Acceptance of PAC Monies on PAC Contributions to Candidate

Dependent Variable:	I		II		III	
	Corporate-linked PAC's Contributions to Candidate (in Dollars), t					
	Coef.	Std.Err.	Coef.	Std.Err.	Coef.	Std.Err.
Candidate Refuses PAC Contributions but Previously Accepted Them, t	-66.17***	(6.79)				
Candidate Refuses PAC Contributions but Previously Accepted Them, t * Firm has an active corporate-linked PAC that contributes to Candidates, t			-88.63***	(8.29)		
Candidate Refuses PAC Contributions but Previously Accepted Them, t * Corporate-linked PAC made Prior Contributions to the Candidate, t					-547.80***	(34.33)
Firm-Candidate Fixed Effects	Yes		Yes		Yes	
Election Cycle Fixed Effects	Yes		Yes		Yes	
F-stat.	4799.02***		4801.20***		4817.08***	
N	6,803,661		6,803,661		6,803,661	

Notes:

***, **, * indicates significance at 1% , 5% and 10% levels respectively

APPENDIX B – INCLUSION OF TIME-VARYING CANDIDATE AND EXECUTIVE-FIRM CONTROLS

The analysis that follows show that our core result finding evidence in favor of cross-actor substitution as a response to restrictions on PACs—in which executives increase their campaign contributions to candidates who refuse to accept corporate-linked PAC monies—is robust to the inclusion of observable time-varying candidate and executive-firm characteristics.

In the regressions shown in Table B1, we add time-varying candidate attributes that might induce increased personal contributions from executives into our preferred specification from Table 3. When we do so, we find that our main results hold. The control variables we include are election-cycle specific dummy variables indicating if a candidate ran for a Senate seat; if a candidate is an incumbent; if a candidate sits on a committee that is strategically important to an executive's firm; if a candidate ran in a close electoral race; and, if a candidate ran in an uncontested race.

Senate candidates tend to raise more money than House candidates because they have relatively more power over policy, represent a broader geographic area, and typically run more expensive campaigns. As a result, Senate candidates are likely to attract greater contributions from the average CEO. Another factor that may affect individual CEOs' contribution patterns is whether or not the candidates in question are incumbent office holders in a given period, as there is an incumbency advantage in fundraising (Poole, Romer, & Rosenthal 1987; Baron 1989; Ansolabehere & Synder 2002). Data on these candidate attributes are taken from the Center for Responsive Politics' bulk data on candidates.

We also consider the strategic importance of incumbent candidates' current committee assignments to the firm. Given these positions' relatively greater ability to influence aspects of the legislative process important to firms, we might anticipate that CEOs have a greater propensity to give to them. Ovtchinnikov and Pentaleoni (2012) create a mapping between

Congressional committees and 4-digit SIC codes to define which committees are strategically important to firms in which industries. We applied this mapping to data on incumbent candidates' committee membership, which we gathered from Stewart and Woon's Congressional Committees dataset,[13] to create dummy variables indicating whether or not a given candidate sat on a committee that was strategically important to a given firm.

The expense of a campaign—and therefore the average campaign contribution made by any individual—increases with electoral competition (Jacobson 2009). Candidates in competitive elections—which we define as ones in which the winner garners less than 60% of the two-party vote—raise more money, and conversely, candidates in uncontested elections unsurprisingly raise less (Milyo 2001).[14] All of our electoral data came from the Office of the House Clerk.

<Insert Table B1 Here>

Across all of the specifications in Table B1, which include the time-varying candidate controls described above, our key finding holds: there is a significant and positive estimated average treatment effect on a CEO's personal contributions to a candidate when the candidate previously accepted corporate-linked PAC monies but now refuses them conditional on CEOs' firms' having an active corporate-linked PAC. The magnitude of our estimated average treatment effect after including these time-varying controls remains largely unchanged from that in the our preferred, baseline specification presented Column VI of Table 3. The significance and sign of coefficients on the time-varying candidate control variables estimated in Table B1 are largely as expected. The main exception is that in the specifications where we include the

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[13] Stewart and Woon's Congressional Committees dataset is available at:
http://web.mit.edu/17.251/www/data_page.html
[14] We may be somewhat concerned about possible endogeneity bias vis-à-vis the inclusion of contemporaneous election outcomes data as controls; however, any bias caused by the relationship between contributions and elections outcomes would lead to estimates on their coefficients biased away from zero as candidates in competitive races should raise more money. Hence, any bias on these coefficients would actually strengthen our conclusion that the omission of time-varying candidate characteristics does not bias the estimates on our coefficients of interest.

incumbency dummy variable (Columns II and VI), the coefficient's sign is not as predicted.[15]

Table B2 reports our results when we control for these time-varying executive/firm attributes. The executives' and firms' characteristics that we are most interested in controlling for in our analysis are those that may shift the executives' proclivity to make campaign contributions to any candidate. Hence, we add to our baseline specification, controls for: executive salary; executive ownership stakes in the firm (fraction of shares held); and the prior year's contributions by the corporate-linked PAC.

Higher salaries may relax a CEO's budget constraint, which in turn may make him more likely to increase the campaign contributions he makes, if campaign contributions are consumption goods (Ansolabehere, deFigueiredo, & Snyder 2003). Greater ownership stakes in the firm an executive leads may better align an executive's personal interests with his firm's strategic interests, and consequently, this variable may induce executives to increase the campaign contributions they make to an individual candidate (Gordon, Hafer, & Landa 2007). Data on both executive's salaries and ownership stakes in the firms they lead comes from the COMPUSTAT ExecuComp dataset. We also include corporate-linked PAC giving in the prior period, as firms with more active PACs may, due to the politically sensitive nature of their industries or practices, have more politically active executives on average.

<Insert Table B2 Here>

In Table B2, our core result that CEOs of firms with linked PACs that previously gave to a candidate give more to that candidate when he no longer accepts corporate-linked PAC monies holds. Across all four specifications in Table B2, the magnitude of our estimate of the average

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[15] The unanticipated result for the coefficient in Column II may be a result of other variables being omitted from the regression when incumbency is added individually, since the magnitude of the coefficient decreases by two-thirds (although, it remains statistically significant) when it is included with the entire set of time-varying candidate-controls in Column VI.

treatment effect remains in the range of what we found in our baseline specification in Table 3. In the two specifications where we included the firms' linked PACs' aggregate contributions to candidates, we lose statistical significance on the variable for firms with active linked PACs, suggesting our inferences here are weaker than on the variable for firms with PACs that previously contributed to a candidate that switches his status. The time-varying executive/firm control variables all have signs consistent with expectations.

Overall, the results displayed in Table B1 and B2 confirm that our core result is robust to the inclusion of time-varying candidate and executive-firm characteristics as controls and that our estimate of the average treatment effect—of a candidate changing his stance on accepting corporate-linked PAC contributions on the personal contributions to that candidate from the executive of a firm with an active corporate-linked PAC—does not appear to suffer from bias when they are omitted. For this reason, we prefer our estimate in Column VI of Table 3 to any of our estimates in Table B1 or Table B2.

Additional References for Appendix B

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Milyo, Jeffrey. 2001. "What Do Candidates Maximize (and Why Should Anyone Care)?" *Public Choice* 109 (1/2): 119–39.

Poole, Keith T., Thomas Romer, and Howard Rosenthal. "The Revealed Preferences of Political Action Committees." *American Economic Review* 77 (2): 298–302.

Table B1: Effect of Candidate Switch in Acceptance of PAC Monies on CEO Contributions to Candidate, Adding Back Characteristics of the Candidates and Electoral Competition

Dependent Variable:	I		II		III	
	CEO's Personal Contributions to Candidate (in Dollars), t					
	Coef.	Std.Err.	Coef.	Std.Err.	Coef.	Std.Err.
Candidate Refuses PAC Contributions but Previously Accepted Them, t * Firm has an active corporate-linked PAC that contributes to Candidates, t	2.22**	(1.09)	2.78**	(1.09)	2.51**	(1.09)
Candidate Refuses PAC Contributions but Previously Accepted Them, t * Corporate-linked PAC made Prior Contributions to the Candidate, t	59.21**	(4.50)	61.55***	(4.51)	62.25***	(4.51)
Candidate Ran for Senate	9.65***	(0.29)				
Candidate is an Incumbent			-1.77***	(0.16)		
Candidate holds a seat on a committee that is strategically important to firm					1.55***	(0.41)
Executive-Firm-Candidate Fixed Effect	Yes		Yes		Yes	
Election Cycle Fixed Effects	Yes		Yes		Yes	
F-stat.	236.00***		142.68***		133.18***	
N	6,803,661		6,803,661		6,803,661	

Dependent Variable:	IV		V		VI	
	CEO's Personal Contributions to Candidate (in Dollars), t					
	Coef.	Std.Err.	Coef.	Std.Err.	Coef.	Std.Err.
Candidate Refuses PAC Contributions but Previously Accepted Them, t * Firm has an active corporate-linked PAC that contributes to Candidates, t	2.73***	(1.09)	2.57**	(1.09)	2.35**	(1.09)
Candidate Refuses PAC Contributions but Previously Accepted Them, t * Corporate-linked PAC made Prior Contributions to the Candidate, t	62.38***	(4.50)	62.27***	(4.51)	59.08***	(4.51)
Candidate Ran for Senate					9.17**	(0.29)
Candidate is an Incumbent					-0.52***	(0.17)
Candidate holds a seat on a committee that is strategically important to firm					2.41***	(0.41)
Candidate ran for Competitive Seat (Vote share between 40-60%)	1.75***	(0.13)			1.11***	(0.16)
Candidate ran for Uncontested Seat			-0.65***	(0.16)	-0.10	(0.16)
Executive-Firm-Candidate Fixed Effect	Yes		Yes		Yes	
Election Cycle Fixed Effects	Yes		Yes		Yes	
F-stat.	148.66***		133.33***		181.07***	
N	6,803,661		6,803,661		6,803,661	

Notes:

***, **, * indicates significance at 1% , 5% and 10% levels respectively

Table B2: Effect of Candidate Switch in Acceptance of PAC Monies on CEO Contributions to Candidate, Adding Back Characteristics of the Executive/ Firm

	I		II	
Dependent Variable:	*CEO's Personal Contributions to Candidate (in Dollars), t*			
	Coef.	Std.Err.	Coef.	Std.Err.
Candidate Refuses PAC Contributions but Previously Accepted Them, t * Firm has an active corporate-linked PAC that contributes to Candidates, t	2.50**	(1.09)	2.55**	(1.09)
Candidate Refuses PAC Contributions but Previously Accepted Them, t * Corporate-linked PAC made Prior Contributions to the Candidate, t	62.37***	(4.50)	62.31***	(4.51)
Executive's Salary ($1000s)	0.003***	(0.0002)		
Executive's Ownership of Firm (Fraction of Shares Held)			0.20***	(0.03)
Executive-Firm-Candidate Fixed Effects	Yes		Yes	
Election Cycle Fixed Effects	Yes		Yes	
F-stat.	164.49***		136.39***	
N	6,083,661		6,083,661	

	III		IV	
Dependent Variable:	*CEO's Personal Contributions to Candidate (in Dollars), t*			
	Coef.	Std.Err.	Coef.	Std.Err.
Candidate Refuses PAC Contributions but Previously Accepted Them, t * Firm has an active corporate-linked PAC that contributes to Candidates, t	0.75	(1.38)	0.72	(1.38)
Candidate Refuses PAC Contributions but Previously Accepted Them, t * Corporate-linked PAC made Prior Contributions to the Candidate, t	46.17***	(5.52)	46.21***	(5.52)
Executive's Salary ($1000s)			0.002***	(0.0002)
Executive's Ownership of Firm (Fraction of Shares Held)			0.13***	(0.04)
Corporate-linked PACs' Aggregate Contributions to Candidates, t-1 ($1000s)	0.000014***	(0.000001)	0.000014***	(0.000001)
Executive-Firm-Candidate Fixed Effects	Yes		Yes	
Election Cycle Fixed Effects	Yes		Yes	
F-stat.	70.49***		68.80***	
N	2,201,437		2,201,437	

Notes:

***, **, * indicates significance at 1% , 5% and 10% levels respectively

APPENDIX C – DROPPING CANDIDATES WHO SWITCH STATUS ON PACS ONE-BY-ONE

Given that we have a relatively small number of candidates who are treated, we may be concerned that our results are driven exclusively by the presence of just one of them in our sample. To address this concern we ran a test where we dropped from the sample each of the candidates who switches his stance on accepting PAC monies at some point during the sample period. Doing so enables us to make a stronger inference about whether or not executives give in lieu of corporate-linked PACs when any candidate changes his stance toward accepting PAC monies.
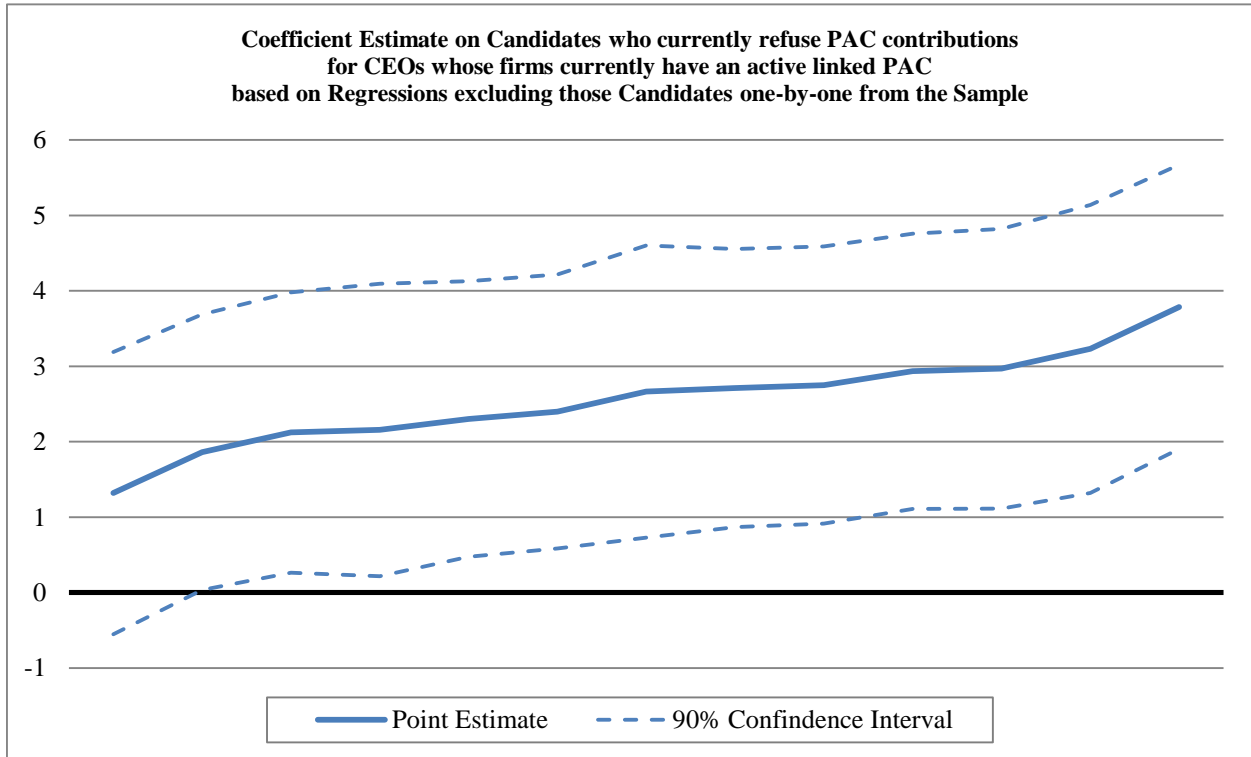
Figure C1, Panel A shows the coefficient estimates on the variable for candidates who currently refuse PAC contributions but previously accepted them for CEOs of firms with active PACs. All but one of the coefficient estimates on this variable from the analysis run on the data where candidates are excluded from the sample one-by-one yields a positive and statistically significant estimate at the 90% level.

Figure C1, Panel B shows the coefficient estimates on the variable for candidates who currently refuse PAC contributions but previously accepted them for CEOs of firms whose corporate-linked PAC previously contributed to the candidate in question. All of these coefficients are far greater than zero, suggesting that there is indeed a positive and economically significant change in these executives' behavior.

Taken together these findings give us greater confidence in our inference that executives give in lieu of corporate-linked PACs when candidates refuse to accept PAC monies, particularly when the firms' corporate-linked PAC had previously contributed to these candidates.

FIGURE C1 – Coefficient Estimates excluding Candidates from Sample One-by-One

Panel A

**Coefficient Estimate on Candidates who currently refuse PAC contributions
for CEOs whose firms currently have an active linked PAC
based on Regressions excluding those Candidates one-by-one from the Sample**

Panel B

**Coefficient Estimate on Candidates who currently refuse PAC contributions
for CEOs whose linked PAC previously contributed to that Candidate
based on Regressions excluding those Candidates one-by-one from the Sample**