Power, Scrutiny, and Congressmen's Favoritism for Friends' Firms*

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Abstract

Does more political power always lead to more favoritism? The literature's usual affirmative answer overlooks the role of scrutiny in shaping the pattern of favoritism over the ladder of power. When a higher-powered position comes with much tighter scrutiny, a politician reaching this position may reduce his quid-pro-quo favors towards connected firms for fear of jeopardizing his career prospect. We find robust RDD-based evidence of this adverse effect among candidates in close elections to the U.S. Congress and firms whose directors are their former classmates. A politician's election to Congress, compared with a defeat, reduces the stock value of his friend's firm by 2.8% within a week. Consistent with our theoretical predictions, this adverse effect varies in response to cross-state scrutiny levels, politicians' power to give favor, and connection strength. It is prevalent in politicians' earlier career, when career concerns are more important, and changes to a value gain in the later stage of their career.

Keywords: favoritism, political connection, congressmen, close election, RDD, power, scrutiny

JEL Classification: D72, D73, D85, G14, G32

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"Power tends to corrupt and absolute power corrupts absolutely."

—Lord Baron Acton (1887)

"Because power corrupts, society's demands for moral authority and character increase as the importance of the position increases."

—*Commonly attributed to* John Adams

1 Introduction

Discussions of politicians' favoritism often evoke the widely shared view that politicians in more powerful positions tend to give more favor to individuals and groups connected to them. In particular, the age-old literature of distributive politics in the U.S. since Lasswell's (1936) *"Politics: Who Gets What, When, How"* has most often described U.S. congressmen with higher seniority in more powerful committees as more powerful in delivering funds and projects towards their constituencies and connected interests.[1] This view overlooks the possibility that, in response, existing institutions place stronger checks and scrutiny on more powerful positions, so that they need not produce more favoritism. This aspect of institutional design has already figured among the chief concerns of the Founding Fathers of the United States, as highlighted in the epigraph. In this paper, we elaborate the interplay between power and scrutiny and underline the importance of scrutiny in restraining U.S. congressmen's favoritism towards friends' firms based on evidence from close elections to Congress.

As we take into account the role of scrutiny, it is important to consider politicians' career dynamic, since the key part of democratic checks and balances lies in politicians' concern for reelection.[2] The politician faces the trade-off that giving more quid-pro-quo favor today may

[1] Examples abound in the literature of pork-barrel politics towards congressmen's constituencies, following Ferejohn's (1974) seminal work on the power of congressmen's membership and seniority in public works and appropriation committees, and also Ray (1981), Rundquist et al. (1996), Carsey and Rundquist (1999), Levitt and Poterba (1999), Rundquist and Carsey (2002), Cohen et al. (2011), DeBacker (2011), Fowler and Hall (2017), among others. Notably, Roberts (1990) documents that, following the sudden death of Senator Henry Jackson, the ranking Democrat on the Armed Services Committee, the market value of defense contractors from his home state of Washington declined, while that of contractors from Georgia, home to the next-most-senior Senator on the same committee, appreciated. In non-U.S. contexts, the literature of favoritism has demonstrated widespread evidence of favors from politicians promoted to more powerful positions across all forms of regimes, from Norway (Fiva and Halse, 2016), Sweden (Amore and Bennedsen, 2013), and Italy (Carozzi and Repetto, 2016) to China (Chu et al., 2020, Kung and Zhou, 2017) and Vietnam (Do et al., 2017), among others.

[2] Cases of politicians' favoritism towards unmerited firms, even if detected through formal audit, may still be

endanger his future career prospect.[3] Rising to a position of higher power, but under tighter scrutiny, his decision to increase or decrease favoritism will thus depend on his concern for his future career and future possibilities to give out favor. Due to those dynamic concerns, the stream of favors can vary greatly along the politician's career by his positions' power and scrutiny.

We organize those intuitions into a minimal model of the politician's career dynamic that may oscillate between two levels of political offices, the higher of which enjoys more power to exert favoritism but faces stronger scrutiny. Our major focus is the difference in expected favoritism between the two offices, each understood as the present value of all present and future benefits for connected firms. This differential present value follows a simple, tractable recursive dynamic, from which we draw testable implications on its sign and change in response to varying power, scrutiny, and career concerns. We highlight in particular the case of the "adverse effect" of higher positions on favoritism: When scrutiny trumps power, a politician's promotion from low to high offices may reduce favoritism towards connected firms. The model and the precise conditions are explained in section 2).

In that case, a politician's career is composed of two stages: While in the later stage of his career a politician's higher position produces greater present value of favors for connected firms, in the earlier stage a higher position lowers the present value of favors. To put differently, the dampening effect of scrutiny on early-career favors more than compensates the positive effect of power on late-career favors, so that the net present value of the higher office is negative for connected firms.[4] Furthermore, weakened scrutiny in state politics and bolstered power magnify this differential effect.

We test those implications in the context of firms that are socially connected to candidates in U.S. Congress elections. Congress seats represent the theory's higher offices, as opposed to positions in state-level politics.[5] We measure a politician's socially connected firm as one with a director who attended the same university program around the same year as the politician.[6] Data on corporate

rather difficult to prompt legal actions with immediate personal consequences. However, public media disclosure of politicians' malfeasance can weigh heavily on their electability, especially for those with stronger career concerns (e.g., Ferraz and Finan, 2008, Larreguy et al., 2019).

[3]For clarity and convenience, we address the politician as he/him/his.

[4]This is not inconsistent with the politician's willingness to win elections and ascend to more powerful offices (e.g., Groseclose and Stewart, 1998, Stewart and Groseclose, 1999). His net present value of higher office can still be positive, as he attributes an intrinsic value to the higher office.

[5]As studied in a long tradition in political science (Polsby and Schickler, 2002) and economics (Diermeier et al., 2005), U.S. Congressmen wield large political power and influence on economic activities, especially in their home state (Roberts, 1990). Their power likely strengthens with their seniority and memberships in key committees (Groseclose and Stewart, 1998, Stewart and Groseclose, 1999, Roberts, 1990). Section 6 will also show evidence that they become more scrutinized in the media.

[6]University alumni networks play an important role in the corporate world in the U.S., e.g., as shown by Cohen et al. (2008), Lerner and Malmendier (2013), Shue (2013), Fracassi (2017). Alumni networks likely have high network closure (Karlan et al., 2009), thus are very useful for favor exchange, as they guarantee against uncooperative behaviors

directors' educational backgrounds are gathered from BoardEx (previously used in, e.g., Cohen et al., 2008), and those regarding politicians are manually collected from archives of campaign websites and Lexis-Nexis biographies (section 4). The net value of a connected firm's present and future benefits from favoritism is reflected in its cumulative abnormal stock returns (CARs)[7] around the election, which will be used as the main outcome in our empirical specifications.

As abnormal daily returns may still reflect other sources of variation,[8] we seek to best identify the differential effect between the politicians' higher and lower offices by focusing on the Regression Discontinuity Design (RDD) of close elections, in which electoral victory and defeat are almost as random as a coin toss (Lee, 2008, Lee and Lemieux, 2010, de la Cuesta and Imai, 2016) (section 3). That is, we compare the CARs of firms connected to elected candidates with those of firms connected to defeated ones in a cross-sectional identification that eliminates all potential differences along observable and unobservable characteristics between the two types of firms (Lee and Lemieux, 2010). The RDD estimates a Weighted Average Treatment Effect corresponding to the model's key differential favoritism effect between higher and lower offices.

We find robust evidence of the adverse effect of higher positions on favoritism. On average, firms connected to newly elected congressmen face a differential loss in stock value of 2.8%, compared with firms connected to defeated candidates. This differential effect is robust to different specifications of the main RDD (section 5). Furthermore, the evidence strongly supports the model's additional predictions. First, this differential effect of connection to congressmen shrinks with higher scrutiny across states, using different proxies for the degree of scrutiny. Second, consistent with politicians' career concerns, the effect is mostly pronounced for the earlier part of their career (section 6). Third, the effect increases in the same direction as (i) politicians' power to give favor, (ii) firms' attributes that likely help them best benefit from favors, and (iii) the strength and quality of their connections (section 7). We further discuss issues regarding the measurement of connections based on alumni networks, and address two alternative interpretations of the mechanism at work based on

and reinforce mutual trust, under the threat of social punishment and ostracization from the network. Unlike links based on political campaign contributions, alumni-based connections predate the studied period for decades, hence are not endogenous to a firm's immediate decisions. See Marsden (1990), Ioannides and Loury (2004), and Allen and Babus (2009) for reviews and discussions of social networks measurement.

[7]The CARs are stock returns' residuals after filtering out market movements and/or other moments in standard empirical models (Fama and French, 1993, Carhart, 1997), as commonly executed in financial event studies (Campbell et al., 1997, c. 4).

[8]Event studies of connections exploit identification strategies on the time dimension (e.g., Roberts, 1990, Fisman, 2001). Those daily events and daily measures of stock returns are still subject to (i) the prior probability that an event would happen, and (ii) potentially confounding news and reactions around election day. While they can be better addressed with real-time data from prediction markets (Snowberg et al., 2007), prediction markets unfortunately did not exist for the vast majority of elections we consider.

same-school homophily and on Shleifer and Vishny's (1994) negative effect of political connections due to pressure to increase employment (section 8).

This paper's results can be best seen in comparison with the pervasive, monotonic finding that politicians' rise on the power ladder unfailingly increases favoritism, which has been a constant, long-standing feature in distributive politics (as recently summarized by Golden and Min, 2013). Related evidence in the U.S. comes from, e.g., surprising events regarding specific politicians in Roberts (1990), Jayachandran (2006), Fisman et al. (2012), and Acemoglu et al. (2016). Close presidential elections in the U.S. (Knight, 2007, Goldman et al., 2009, 2013, Mattozzi, 2008) also unveils the pattern of benefits to firms connected to the winning party. Another strand of the literature considers connections between firms and politicians based on contributions in firm-initiated Political Action Committees (PACs) in support of specific politicians, such as Cooper et al. (2010), Akey (2015), and Fowler et al. (forthcoming).[9] Beyond the U.S., from both cross-country and country-specific case studies, most evidence also points to the monotonic relationship between more powerful political positions and more favors targeted towards connected groups.[10] Instead of such relationship, this paper introduces a novel, more nuanced pattern of favoritism's dependence on the interplay between political power and institutional scrutiny. The evidence points to the key role of institutional checks and balances in curbing favoritism, and opens the natural question how to design the optimal structure of the system of scrutiny and monitoring mechanisms across different layers of government.

Besides this paper, we are aware of only two studies that have defied this positive effect of power on favoritism. Bertrand et al. (2018) shows Shleifer and Vishny's (1994) mechanism in which connected politicians pressure French companies to hire more before their elections. Fisman et al. (2012) reports that stocks connected to Vice President Dick Cheney are not affected either

[9]While earlier papers find an unambiguous positive relationship between positions in Congress and contributors' stock values, the latest, most thorough exercise by Fowler et al. (forthcoming) concludes that the average effect is very close to zero. It thus reaffirms Ansolabehere et al.'s (2003) prevalent view in political science that corporate campaign contribution is tightly restricted and could hardly promote firms' interests (at least before the U.S. Supreme Court's decision on *Citizens United* in 2010). The use of campaign contributions to measure connections between politicians and firms is the fundamental difference with our empirical exercise's reliance on alumni network links (e.g., Cohen et al., 2008), which cannot be affected by firms' short-term decisions.

[10]Cross-country evidence includes Faccio's (2006) and Faccio et al.'s (2006) findings from connections between firms and politicians based on family ties, prior employment, or ownership, and Hodler and Raschky's (2014) results with country leaders' region of birth. While Burgess et al. (2015) found evidence of favoritism in Kenya towards the president's ethnic group only under autocracy, elsewhere similar evidence is established in both democracies such as Norway (Fiva and Halse, 2016), Sweden (Amore and Bennedsen, 2013), France (Coulomb and Sangnier, 2014), Germany (Baskaran and Lopes da Fonseca, 2017), Italy (Carozzi and Repetto, 2016), as well as countries with weaker institutions such as Indonesia (Fisman, 2001), Malaysia (Johnson and Mitton, 2003), Pakistan (Khwaja and Mian, 2005), Brazil (Claessens et al., 2008), Thailand (Bunkanwanicha and Wiwattanakantang, 2009), Taiwan (Imai and Shelton, 2011), China (Fan et al., 2007, Chu et al., 2020, Kung and Zhou, 2017) and Vietnam (Do et al., 2017).

by news related to his health and political future in two special events or by the probabilities of Bush's victory or the Iraq war. While the finding is explained as evidence of the strength of U.S. institutions, the paper stops short of showing how.

2 Theoretical intuitions on favoritism and electoral concerns

In this section we illustrate the trade-off between favoritism benefits and career concerns in a setting when both power to give favors and scrutiny over favoritism matter. We clarify the intuitions and connect the parameters that determine favoritism to testable implications in our empirical RDD framework of close Congress elections. We highlight that the relative balance of power versus scrutiny between high and low positions is the key determinant of the differential value of favoritism between elected and defeated , which is the key estimate in the empirics. Mathematical details can be found in Appendix A.

We consider the politician's career dynamic between two stylized types of political positions, namely high versus low, that differ in both the power to favor connected firms and the level of institutional checks and balances over favoritism. Empirically, the high office corresponds to seats in Congress, and the low office to positions outside Congress, with focus on state-level politics.

The politician's career consists of a sequence of positions s in consecutive terms $(s_t)_{t=1,...,T}$: in each term t, $s_t = 2$ (1) designates the high (low) position. The transition matrix $\mathbf{P}_t = [P_{ijt}]_{i,j\in\{1,2\}}$ indicates the probabilities of transition P_{ijt} from state $s_t = i$ in term t to state $s_{t+1} = j$ in term $t+1$. For simplicity of exposition, we assume the following functional form, with $\gamma_2 \geq \gamma_1 > 0$ as the marginal costs of favoritism on the politician's future (thus the relative marginal cost $\gamma \overset{def}{\equiv} \frac{\gamma_2}{\gamma_1} \geq 1$), and $P_{22}(0) > P_{12}(0)$.[11]

$$P_{11}(x_1) = \gamma_1 x_1 + P_{11}(0), \quad P_{12}(x_1) = -\gamma_1 x_1 + P_{12}(0) \ \ (= 1 - P_{11}(x_1)),$$
$$P_{21}(x_2) = \gamma_2 x_2 + P_{21}(0), \quad P_{22}(x_2) = -\gamma_2 x_2 + P_{22}(0) \ \ (= 1 - P_{21}(x_2)).$$

The politician chooses career-long sequences of the level of favoritism targeted towards its connected firm $x_{st} \in [0, \bar{x}]$, which produces $v(x_{st})$ for the firm per term t in state s, and $V_{s,t}$ in expected present value. We assume a simple sharing rule for the politician's kickback gain of $w(x_{st}) = \frac{1}{\rho} v(x_{st})$ each term, with the functional forms $w_1(x_1) = \sqrt{\beta_1 x_1}$ and $w_2(x_2) = \sqrt{\beta_2 x_2}$, with

[11] The transition can be thought of mainly, but not only, as electoral contests, and the transition probabilities as electoral success chances. By definition, $P_{11} + P_{12} = P_{21} + P_{22} = 1$. $P_{22}(0) > P_{12}(0)$ reflects the incumbency advantage in Congress elections (Erikson, 1971, Lee, 2008).

$\beta_2 \geq \beta_1 > 0$ as measures of power (thus the relative power $\beta \overset{def}{\equiv} \frac{\beta_2}{\beta_1} \geq 1$).[12] Besides $w(x_{st})$, the politician's other benefits from holding position s is denoted r_s, with $r_2 > r_1 > 0$. Those benefits accumulate to the expected present value $W_{s,t}$, which is his maximand. The firm's differential value of this relationship, $\Delta V_t \overset{def}{\equiv} V_{2,t} - V_{1,t}$, is the main focus of our empirical estimations.

Denote the politician's corresponding quantity as $\Delta W_t \overset{def}{\equiv} W_{2,t} - W_{1,t}$. The Bellman equations from the politician's optimization problem yield the following recursive dynamic:

$$\Delta W_t = \Delta r + \Delta w_t + \delta \Delta \tilde{P}_t \Delta W_{t+1}, \tag{1}$$

$$\Delta V_t = \Delta v_t + \delta \Delta \tilde{P}_t \Delta V_{t+1}, \tag{2}$$

with $t \in \{1, \ldots, T-1\}$, and $\Delta \tilde{P}_t \overset{def}{\equiv} P_{11,t} - P_{21,t} = P_{22,t} - P_{12,t} \geq 0$. Under standard functional form assumptions,[13] Proposition A2 in Appendix A confirms the existence and uniqueness of the equilibrium, as well as the First Order Conditions that determine it.

We focus on the case the politician always prefers higher office, so $\Delta W_t > 0 \; \forall t \leq T$ (e.g., when Δr is sufficiently large). The FOCs yield the following solution for $t \in \{1, \ldots, T-1\}$, which allows the calculation of the full path of favoritism (together with equations (1) and (2)):

$$\begin{aligned} x^*_{1,t} &= \frac{\beta_1}{(2\delta\gamma_1)^2} \Delta W^{*\,-2}_{t+1}, & x^*_{2,t} &= \frac{\beta_2}{(2\delta\gamma_2)^2} \Delta W^{*\,-2}_{t+1}, \\ \Delta v^*_t = \rho \Delta w^*_t &= \frac{\rho B}{2\delta} \Delta W^{*\,-1}_{t+1} \;\; \forall t < T, & \textit{with } B &\overset{def}{\equiv} \frac{\beta_2}{\gamma_2} - \frac{\beta_1}{\gamma_1} = (\beta - \gamma)\frac{\beta_1}{\gamma_2}, \\ x^*_{1,T} &= x^*_{2,T} = \bar{x}, & \Delta V^*_T &= \Delta v^*_T = \sqrt{\bar{x}}(\sqrt{\beta_2} - \sqrt{\beta_1}). \end{aligned} \tag{3}$$

Per-period favoritism x_s is decreasing in the politician's relative value of high office in the next period ΔW_{t+1}, and given ΔW_{t+1}, x_s is increasing in power β_s, but decreasing in scrutiny γ_s. The net present value of favoritism from a higher position, ΔV^*_t, follows a more nuanced pattern as stated below:

Proposition 1 *(i) If power trumps scrutiny, in that $\beta \geq \gamma$, then the connected firm draws higher net present benefit when the politician attains higher office, namely $\Delta V^*_t \geq 0$.*

(ii) If scrutiny trumps power, in that $\beta < \gamma$, and T is big enough, then there exists a time $\bar{t}$ before which there is an adverse effect of higher position on the net present value of favoritism: $\Delta V^*_t < 0 \; \forall t < \bar{t}$. After $\bar{t}$, ΔV_t is positive and increasing in t.

[12] The functions $w(\cdot)$ and $v(\cdot)$ may represent different forms of benefits, such as the firm's new or better contracts, support for the firm when under financial distress, and illicit private payment or political contribution to the politician. In many cases, favoritism involves favor trading with other political and government actors, which is by nature hard to observe. On this topic, see Karlan et al. (2009) for a model of favor trading on networks, and Do et al. (2017) on favoritism by officials without direct authority through favor trading.

[13] For Proposition A2, it suffices that $w(\cdot)$ and $v(\cdot)$ are increasing, concave, and differentiable, and P_{22} and P_{12} (P_{21} and P_{11}) are decreasing (increasing) convex functions of x.

Intuitively, the relative balance between power and scrutiny B is key to the adverse effect of higher position. When it tilts towards scrutiny, in each period the firm would benefit *less* when the politician attains a higher position ($\Delta v_t^* < 0$) and chooses to reduce favoritism to preserve his career. However, by the end of his career, as electoral concerns ease, the net present value of higher position ΔV_t^* increases towards its terminal value Δv_T^*, which is positive. Over the politician's career, ΔV_t^* follows a loosely upward longterm trend,[14] as it is negative at an early stage, but becomes positive and increasing in late career. We will show robust evidence of the adverse effect of higher position in section 5, and illustrate this career-long trend in section 6.

Next are the comparative statics with respect to the key parameters of power and scrutiny, which will be tested in corresponding comparative situations in sections 6 and 7.

Proposition 2 *When scrutiny trumps power, in presence of the adverse effect of higher position ($\Delta V_t < 0$), its magnitude increases with B's magnitude ($B < 0$), e.g., when:*

- *β_2 decreases and/or β_1 increases,*
- *both increase while their ratio β remains the same,*
- *γ_2 increases and/or γ_1 decreases,*
- *both decrease while their ratio γ remains the same.*

Appendix A provides the proofs of Propositions 1 and 2.

3 Empirical methodology and data description

3.1 Identification of the differential value of political connections

We bring section 2's predictions about the differential value of political connections, ΔV to an empirical setting surrounding elections to the U.S. Congress. Those important events shape politicians' career prospects that can be broadly mapped to the high and low positions described in the theory. As the net present value V of a firm's connection to a politician is priced into its stock price, short-term changes in the stock price correspond to changes in V. It follows naturally that we can use event-study methods to associate electoral results with the changes in V over time.

[14] The upward trend is only 'loosely' so, as one cannot establish the monotonicity of ΔV_t when it is negative, although the monotonicity is more pronounced when $\Delta \tilde{P}_t$ is closer to 1 (i.e., strong incumbency advantage). As the career becomes very long (large T), going backward towards $t = 0$, ΔV_t converges to a fixed negative value.

Time-series identification and CARs. In preparation for this approach, we obtain daily stock data from the Center for Research in Security Prices (CRSP), and compute the Cumulated Abnormal Returns (CARs) on a firm's stock around the election day. We follow conventional event study methods (Campbell et al., 1997, c. 4) to calculate abnormal returns in a single-factor model estimated from the pre-event window from day -315 to day -61, counting from the election day (always a trading day).[15] CARs are summed from abnormal returns over the 7-day window from day -1 to day 5 (other pre- and post-election event windows are also considered in placebo and robustness checks). They reflect the stock market's expectation of changes to a firm's value, which maps directly to changes in V, assuming no other event takes place at the same time.

Cross-sectional identification with RDD. The time-series identification still faces three key empirical challenges. First, a politician's electoral success can be endogenous, so that the estimated effect could reflect (i) a reverse causation channel from the firm's performance to the politician's victory or defeat, or (ii) an omitted variable bias when connected firms and politicians are affected by the same unobservable factor, such as a shift in public opinion. Second, as election days are determined and known in advance, there can be other concurrent events that confound the estimates of abnormal returns. Third, time variations in stock prices depend crucially on the market's prediction of event probability, which is not independently observable for lack of a prediction market on individual Congress elections (see discussions in Fisman, 2001, Snowberg et al., 2011). In particular, if the distribution of investors' beliefs of the probability of a politician's winning chance is biased, market reactions to electoral results will carry such biases, making it impossible to identify the true effect on changes in V.[16]

We thus combine the usage of CARs with a cross-sectional identification based on the Regression Discontinuity Design (RDD) of close elections (Hahn et al., 2001, Lee and Lemieux, 2010, de la Cuesta and Imai, 2016). As the vote shares between the top two candidates in each election tend to the threshold of 50%, the electoral outcome of a win or a loss approaches a random draw between the two. At this threshold, in expectation the distributions of any characteristics, observable or unobservable, are identical between winners and losers. Their comparison thus estimates an Average Treatment Effect of the differential value of connection to a politician in high versus low positions,

[15] Our results are not sensitive to the method of estimation of abnormal returns, such as using multiple factor models by Fama and French (1993) and Carhart (1997).

[16] To illustrate this point, suppose that the market value of connection to a candidate is \$100 in case he wins, and zero otherwise. Prior to the election, if the market believes he already has a winning probability of 65%, pre-election connection is already priced by the market at \$65. An event study of election wins would report the post-event market reaction to a realized win of only \$100-\$65=\$35.

conditional on the vote shares being fixed at 50%. Thanks to the equivalence to a random draw, this RDD strategy is immune to the three aforementioned problems of event-study methods.[17]

3.2 Implementation of RDD

In practice, to estimate the discontinuity effect at exactly the threshold of 50%, RDD specifications use data points within a distance from this threshold, while accounting for separate functions of the vote shares on both sides of the threshold. We follow Lee and Lemieux (2010) in designing our main specification to estimate the differential value of Congress connection to firms:

$$CAR_{idt} = \beta Win_{pt} + \delta_W VS_{pt} \mathbb{1}_{\{VS_{pt} \geq 50\%\}} + \delta_L VS_{pt} \mathbb{1}_{\{VS_{pt} < 50\%\}} + \varepsilon_{idpt}. \quad (4)$$

Each observation is a combination of politician p, director d, firm i, and election year t such that (i) politician p is a close-election top-two candidate in election year t, (ii) director d is on the board of firm i in year t, and (iii) politician d and director d are connected as former classmates in the same university degree program (details in subsection 4.2). Each observation thus represents a connection between a close-election top-two candidate and a connected firm's director (through a specific university program) for a given election year.[18]

CAR_{idt} is the firm's CAR from day -1 to day 5 around the connected politician's election. WL_{pt} is an indicator equal to one if politician p wins in election year t (i.e., if the running variable VS_{pt} exceeds the 50% threshold), and zero otherwise. Controls include a first order polynomial of VS_{pt}, separately for winning and defeated candidates.[19] Standard errors are clustered at the politician level to avoid the potential downward bias of standard error estimates when the error terms are autocorrelated among firms connected to the same politician (Bertrand et al., 2004).[20]

This strategy estimates the causal effect of having a connected politician in Congress versus out of Congress on the firm's value, which corresponds exactly to the differential value of Congress connection ΔV as discussed in the model.

[17] The key RDD assumption in close elections is that of imprecise control, i.e., both sides of an election cannot manipulate with precision the result of the election (Lee, 2008, Lee and Lemieux, 2010). While its realistic nature has been debated (Caughey and Sekhon, 2011), de la Cuesta and Imai (2016) summarizes arguments and evidence in favor of its validity (e.g., support of balanced attributes at the threshold by Eggers et al., 2015).

[18] Essentially, this baseline sample construction weighs politician-firm connections by the number of directors facilitating the respective connections. Using alternative sample construction at politician by firm level yields quantitatively similar results (Table A4).

[19] Controlling for higher-order (second to fifth) polynomials of vote shares yields qualitatively similar results, with higher order coefficients not statistically different from zero (Table 2). We thus follow Gelman and Imbens's (2019) warning against using higher order polynomials of the running variable when higher order coefficients are not statistically significant.

[20] Our results are robust to alternative clustering schemes, such as clustering by director, firm, or two-way clustering by politician and firm (Table A4).

Test of RDD's internal validity. The RDD identification assumption implies that the distribution of any predetermined variable is smooth around the threshold. This implication can be tested on observables, using the same RDD specification as in equation (4) with each predetermined observable on the left hand side (Lee and Lemieux, 2010). Table A3 reports this test on a wide range of predetermined politician, director, firm, and state characteristics at the 50% vote share threshold. Among the 49 variables considered, only three discontinuities are statistically significant at 10% level, no more frequent than what would occur by chance. We thus find no evidence against the RDD's internal validity in our setting.[21]

Measure of connection. We choose to focus on politician-director connections through their university alumni networks, following Cohen et al. (2008). It is commonly seen that networks among alumni from the same educational institution play an important role in fostering connections and cooperations. For example, in the U.S., gifts towards those institutions, largely coming from their alumni, amount to 15% of % 390 Billion of all charitable donations (**?**). There is plenty of evidence that this type of networks helps connect businessmen and influence corporate and individual decisions, such as in Cohen et al. (2008), Lerner and Malmendier (2013), Nguyen (2012), Shue (2013), Fracassi (2017).

Regarding arrangements of favoritism considered in this paper, alumni networks can be very useful in enforcing cooperative behaviors and strengthening mutual trust under the threat of social punishment and ostracization from the network, when no legal recourse is possible. Based on Karlan et al.'s (2009) prediction, favor exchange is facilitated by high *network closure*, which is likely the case of alumni networks.

In our setting, a firm is considered connected to a politician in an election year if at least one of its directors and the politician both graduated from the same university program *within one year* of each other. We will also consider a politician's full alumni network by relaxing the restriction on graduation years, resulting in a much larger sample (subsection 8.1).[22]

There could be doubts about the realistic nature of connections between pairs of classmates, as most people have only a small number of real friends even among classmates (Leider et al., 2009). As classmate connections imperfectly measure real friendships, the measurement error will produce an attenuation bias that reduces the absolute size of the estimate and its statistical significance.

[21] Regarding external validity, Lee and Lemieux (2010) interprets the RDD estimate of β as a Weighted Average Treatment Effect (WATE) of being connected to a winner, where each candidate?s weight is his ex ante likelihood to be in a close gubernatorial election, thus nontrivial for most candidates.

[22] This sample also allows us to address university-specific time-invariant homophily by comparing the effect of political connection among classmate-connected firms and that among alumni-only-connected firms (subsection 8.2).

Indeed, we do find that the magnitude of our key estimate decreases when we relax the restriction on the same program or the graduation years (subsection 8.1). This suggests that the effect of real friendships can then be even larger than that found in this paper. Besides, even mere acquaintances among classmates can be essential in the development of relationships after college or graduate school by providing mutual trust, common ground in communication, and common access to the same social network. Former classmates are also likely to later develop a strong connection, even if they were not close friends at school.

Homophily. The RDD framework allows us to identify the links between firms and elected congressmen as an almost-random treatment. However, the full networks of classmates and alumni, including firms' links to both elected congressmen and defeated candidates, still have to be taken as exogenously given. That is, while our empirical design rules out direct reverse causality, it does not directly address homophily (McPherson et al., 2001), whereby unobserved shared characteristics influence same school attendance by politicians and businessmen, as well as their future outcomes. For example, a politician and a director may be both interested in military studies, and decided to join a university that specializes in military studies; years later, the election of the former has the potential to affect the latter's firm value through new defense policies, without passing through the social network. While the RDD still correctly identifies the effect of "political connection" defined by former classmate links, it is harder to claim that the effect works through social network mechanisms. In subsection 8.2, we propose a simple solution: using university-by-election year fixed effects to capture university-specific, time-invariant homophily, which is expected to have similar effect on alumni-connected as on classmate-connected firms. As is turns out, the results from this exercise imply that our benchmark $\widehat{\beta}$ cannnot be explained by homophily alone, or that homophily is not a first order concern in our context.

4 Data description

4.1 Data sources and construction

Close elections. We obtain Congress election results from the Federal Election Committee (FEC) website. We calculate the margin of votes between the top two candidates in each election, and limit the sample to elections in which this margin is below 5%,[23] i.e., when the vote shares between the top two candidates are between 48.5% and 52.5%. The sample contains 128

[23]Sensitivity tests using alternative sample restrictions ranging from 1% to 5% vote margin, and including those suggested by Calonico et al.'s (2014) procedure, produce quantitatively similar results.

close elections during the period between 2000 and 2008.[24]

Politicians. We construct a unique dataset of the education and career of top two candidates in the considered elections through a long process of hand-collecting biographical records of close-election candidates using Lexis-Nexis biographies, which contain active and inactive biographies from Who's Who publications. Our scope of search includes biographies in (i) Who's Who in American Politics, (ii) Member Biographical Profiles – Current Congress, (iii) World Almanac of U.S. Politics, and (iv) The Almanac of American Politics. For each candidate, Who's Who biographies provide a brief vita, including the candidate's employment history, all undergraduate and graduate degrees attained, the year in which those degrees were awarded, and the awarding institution. For biographies unavailable in Who's Who, especially for defeated candidates, we search the Library of Congress Web Archives which cover multiple versions of Congress election candidates' websites archived at different moments during the electoral campaign. This comprehensive process allows us to collect sufficient data for 92% of the politicians on our search list.

Directors. We obtain biographical information and past education history for directors and senior company officers from BoardEx. The dataset includes board directors and senior company officers for active and inactive firms from 2000 onwards, together with comprehensive information on their employment history, educational background (including degrees attained, graduation years, and awarding institutions), remuneration, and their participation in social and charity organizations. Our sample includes 55,353 board directors in 6,771 U.S. publicly listed firms covered in BoardEx between 2000 and 2008.

Firm and stock data. We match our data with stock data from the Center for Research in Security Prices (CRSP), and obtain information on firm characteristics and financial performance from Compustat. Section 3 describes the calculation of our main outcome of interest, the CAR around election events, which maps directly to changes in the firm's value of connection.

4.2 Baseline sample

Our final baseline sample includes 1,792 observations at the politician-by-director-by-firm-by-election year level, covering 126 close elections, 170 politicians, 1,171 directors, and 1,268 firms between

[24] We avoid the period after the Supreme Court's decision in *Citizens United vs. FEC*, which changed fundamentally the way firms could contribute to electoral campaigns.

2000 and 2008 (Table 1). These 126 close elections cover a total of 40 U.S. states and have an average win/loss margin of 2.54%. Among them, there are 23 Senate elections, 103 House elections, and 66 elections for which both top two candidates are included in the baseline sample.

Table 1: Baseline Sample's Descriptive Statistics

Election year	2000	2002	2004	2006	2008	2002-2008
No. of close elections	25	23	14	36	28	126
% of close elections	89.3%	88.5%	87.5%	92.3%	93.3%	90.6%
% of all congressional elections	5.3%	4.9%	3.0%	7.7%	6.0%	5.4%
No. of Senate elections	8	4	5	3	3	23
No. of House elections	17	19	9	33	25	103
No. of states covered	17	17	13	25	20	40
Avg. win/loss margin	2.36%	2.79%	3.12%	2.23%	2.62%	2.54%
No. of politicians	39	32	22	57	42	170
% of all election candidates	1.6%	1.5%	1.0%	2.6%	1.9%	2.2%
No. of winning candidates	18	17	12	33	21	101
No. of defeated candidates	21	15	10	24	21	91
Avg. no. of connected directors	7.41	6.81	6.73	7.79	7.14	7.29
Avg. no. of connected firms	9.05	8.13	8.64	10.32	8.90	9.19
No. of connected directors	236	218	148	434	296	1,171
% of corresponding firms' directors	15.3%	12.8%	13.6%	14.7%	12.8%	13.9%
Avg. no of connected politicians	1.22	1.00	1.00	1.02	1.01	1.05
Avg. firms per director	1.22	1.22	1.30	1.32	1.26	1.27
No. of connected firms	276	250	185	528	355	1,268
% of all listed firms	3.8%	3.9%	3.1%	8.9%	6.2%	12.8%
% of total market value	8.9%	10.2%	6.7%	18.4%	6.8%	10.2%
Avg. no. of connected politicians	1.28	1.04	1.03	1.11	1.05	1.11
Avg. no. of connected directors	1.05	1.07	1.04	1.09	1.05	1.07
No. of academic institutions	39	31	23	58	43	117
No. of politician × director × firm × election year observations	358	267	193	595	379	1,792

Notes: This table reports the descriptive statistics of the baseline sample used in this paper, which consists of 1,792 observations at the politician-by-director-by-firm-by-election year level. Close congressional elections are those with margins of votes of less than 5%. Politicians and directors are considered connected if they were enrolled in the same university, campus, and degree program combination within one year of each other. See subsection 4.1 for more details.

Among the corresponding 170 politicians, 20 experience multiple close elections during 2000-2008, translating into a total of 101 winning candidates and 91 defeated candidates. These 170 politicians are connected to 1,171 directors in 1,268 firms through 117 academic institutions. On average, each politician is connected to 7.3 directors and 9.2 firms in a close-election year. Undergraduate study is the most prevalent type of connection between directors and politicians: 72.3% of politicians and 87.1% of directors are connected through their undergraduate studies, having graduated from the same school in the same university within one year of each other (Table A1). The next most common types of connection are law and business school programs, while only very few politicians and directors are connected through the remaining Cohen et al.'s (2008) degree

categories.

On average, each firm in our sample is connected to 1.1 close-election politicians through 1.1 directors in an election year.These firms cover a wide range of geographies and industries, with headquarters in 49 U.S. states and operations in 65 SIC 2-digit industries. They are on average larger than firms in the Compustat universe (Table A2).

5 Value of Congress-level connection to firms

While existing literature has shown that firms benefit from political connections, section 2's model suggests that it is not always the case that such benefit increases with the power of the politicians, as one would have extrapolated. Given the presence of checks and balances and politicians' career concerns, whether friends in higher places bring greater values to firms is indeed an empirical question. We thus begin our empirical analysis by estimating the *average* differential value to firms when their political connections gain (or maintain) Congress seats ΔV, using the full sample of all close elections between 2000 and 2008. Table 2 relates stock price cumulated abnormal returns (CAR) of connected firms around the election day to the connected politician's election result using the baseline RDD specification (equation 4). Panel A reports the benchmark estimates with CAR calculated for the 7-day period between days -1 and 5, with the event day 0 being the election day.

Column 1 reports the baseline RDD specification in which we control for a first order polynomial of vote shares separately for winners and losers. The resulting estimate indicates that connections to the winners in close congressional elections generate stock price reactions that are on average 2.8% *below* those generated by connections to the losers, implying that V_2 is 2.8% lower than V_1.[25] This effect is statistically significant at 1% level and robust to controlling for a third order polynomial of vote shares (column 2). More importantly, it is also unaffected by "irrelevant covariates," including politician characteristics and election year fixed effects in column 3, director characteristics and university fixed effects in column 4, and firm characteristics and industry fixed effects in column 5.

As discussed in Section 3, the RDD identification guarantees that election outcome is as good as randomly assigned around the 50% vote share threshold, therefore, the inclusion of any additional control variable calculated before the election event should not significantly alter the estimate of the treatment effect.[26] This in indeed what we find: the estimates reported in columns 3 to 5,

[25]The absolute size of the effect is equal to 26% of the standard deviation of CARs in our sample. In comparison to other event studies, Faccio (2006) reports an average effect of 1.43% on CARs for worldwide firms experiencing an event of new political connection, while Goldman et al. (2009) show an effect on CARs of 8.97% in difference between Republican-connected and Democrat-connected firms in the event of the 2000 presidential election.

[26]Table A3 shows that the instances of statistically significant differences between winners and losers, and between

Table 2: Added Value of Congress-Level Connection to Firms Using RDD

Panel A. Average differential value of Congress-level connection to firms

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent variable: CAR(-1, 5)						
Specification	Benchmark	High-order	Additional controls			Winner/loser subsamples	
Winner	-0.028***	-0.033***	-0.025***	-0.028**	-0.026**		
	(0.008)	(0.012)	(0.009)	(0.012)	(0.011)		
Mean						-0.013**	0.014**
						(0.006)	(0.006)
Politician sample						Winners	Losers
3rd order polynomials		X					
Politician controls			X				
Director controls				X			
Firm controls					X		
Election year FEs			X				
University FEs				X			
Industry FEs					X		
Observations	1,792	1,792	1,792	1,792	1,537	966	826
Politicians	170	170	170	170	163	94	88
Directors	1,171	1,171	1,171	1,171	1,036	695	587
Firms	1,268	1,268	1,268	1,268	1,097	800	691

Notes: This panel reports the benchmark average differential value of Congress-level connection to firms ΔV using the baseline RDD specification (equation 4, column 1). Column 2 additionally controls for a third order polynomial of vote shares (separately for winners and losers). Column 3's politician controls include gender, age, age^2, party affiliation, incumbency dummy, Senate election dummy, ln(total campaign contribution), and ln(number of contributors). Column 4's director controls include gender, age, age^2, executive director dummy, and director tenure. Column 5's firm controls include age, age^2, ln(total assets), ln(total sales), ln(employment), capital expenditure/assets, return on assets, book leverage ratio, market-to-book ratio, and Tobin's Q. Columns 6 and 7 report average CAR(-1, 5) among firms connected to winners and firms connected to losers, after controlling for vote shares. All standard errors are clustered by politician.
*** denotes statistical significance at 1% level, ** 5% level, * 10% level.

all of which statistically significant at at least 5% level, are very close to the baseline effect in column 1. Put differently, in the baseline RDD specification with only controls for vote shares, the estimated value of political connections is not confounded by any politician-, director-, firm-, year-, university-, or industry-specific unobservables.[27] Columns 6 and 7 further show that average CARs, after controlling for vote shares, among firms connected to winners and those connected to losers are symmetric, implying that pre-election, the market has assigned close-to-equal probabilities of winning to both eventual winners and losers (hence the symmetric market updates post-election). This again is consistent with the identifying assumption guaranteed by RDD that winners and losers are equal in all aspects pre-election, and so are their connected firms.

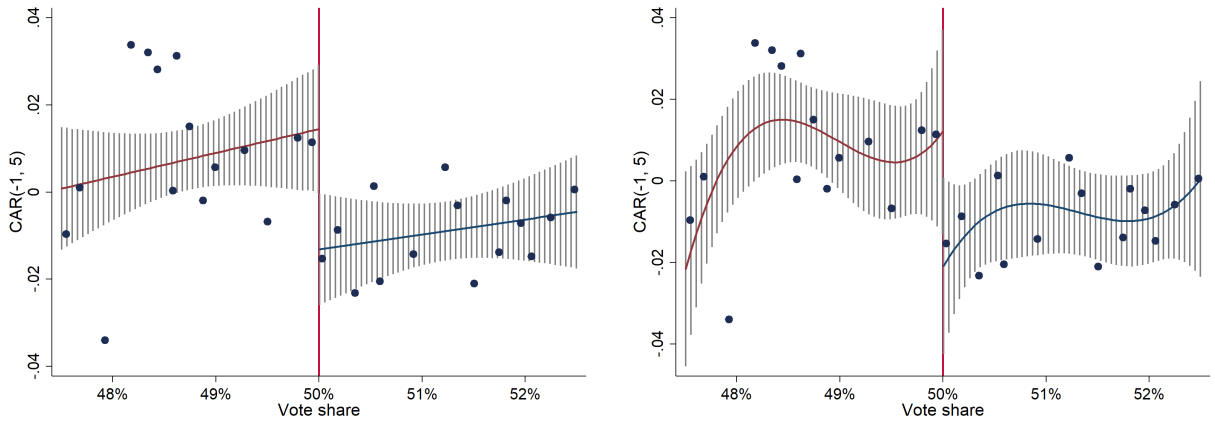
Figure 1 shows the visible discontinuity in connected firm's cumulative abnormal returns at the

their connected directors and firms, across pre-election observable characteristics, are as frequent as randomly drawn.

[27] In the presence of homophily in the formation of the school network that we consider, controlling for university fixed effects may substantially affect the main estimate. In reality, column 4's estimate is almost exactly the same as the benchmark effect, suggesting that network homophily is relatively unimportant to our treatment and not the factor behind the reported negative estimate of the value of political connections. We also present further tests for homophily in subsection 8.2.

50% vote share threshold, the magnitude of which corresponds to the benchmark estimates in Panel A (columns 1 and 2). To examine if this discontinuity is sensitive to our baseline sample choice, we run a series of sensitivity tests using alternative sample restrictions ranging from 1% to 5% election vote margin. Figure A1 shows that all of the resulting coefficients are quantitatively similar to our benchmark estimate, as would be expected in an RDD. Furthermore, our results are also robust to using alternative observation units, clustering schemes, or kernel weights, as reported in Table A4.

Figure 1: Discontinuity of Market Reaction at 50% Vote Share Threshold



A. Linear fit B. Cubic fit

Notes: This figure plots the estimated discontinuity in connected firms' fitted cumulative abnormal returns (CARs) between days -1 and 5 at the 50% vote share threshold and their 95% confidence intervals. Subfigure A fits separate linear functions of vote shares on either side of the threshold, as described in equation 4, and shows the discontinuity estimate of -2.8% (column 1 of Panel A of Table 2). Analogously, subfigure B uses third-order polynomials of vote shares, yielding an estimate of -3.3% (column 2 of Panel A of Table 2). 15 dots on each side of the threshold represent approximately equal-sized bins of observations.

Alternative event windows. Panel B investigates the impact of election outcome on CARs calculated in various windows before and after the election event. As expected from the close election design, we find no differences in pre-election CARs between firms connected to eventual winners and those connected to eventual losers, either during the 7-day pre-election window (column 1, Figure A2) or in the day right before the election (column 2).[28] Columns 3 to 6 shows the evolution of market reaction to election outcome during different event windows, including the baseline (-1, 5) window in column 4 and alternative (-1, 1), (0, 5), and (1, 5) windows in columns 3, 5, and 6 respectively. Interestingly, while the market does react immediately in the first day after the election (column 3), the larger part of the adjustment occurs between day 1 and day 5 (column

[28]Similar to columns 6 and 7 of Panel A, these results also suggest that in a close election, the eventual outcome has not been predicted by the market prior to the event.

6). We can consequently create a portfolio on day 1 after the event, having known all election results, shorting on firms connected to closely elected politicians and longing on those connected to closely defeated ones, with equal weights on firm connections. Over (1, 5), this portfolio yields a risk-free return of 1.9%. Finally, column 6 reports an insignificant estimate for the (6, 20) event window, suggesting that the market has fully priced in election outcome news after day 5.

Panel B. Effect of Congress-level connection on firm value in different event windows

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent variable: CAR						
	Pre-election		Around-election			Post-election	
Event window	(-7, -1)	(-2, -1)	(-1, 1)	(-1, 5)	(0, 5)	(1, 5)	(6, 20)
Winner	0.002	-0.004	-0.016**	-0.028***	-0.019**	-0.019**	0.016
	(0.011)	(0.006)	(0.006)	(0.008)	(0.010)	(0.008)	(0.021)
Observations	1,777	1,777	1,792	1,792	1,792	1,792	1,792
Politicians	169	169	170	170	170	170	170
Directors	1,161	1,161	1,171	1,171	1,171	1,171	1,171
Firms	1,254	1,254	1,268	1,268	1,268	1,268	1,268

Notes: This panel reports the effect of Congress-level connection on firm's cumulative abnormal returns (see subsection 4.1) in different event windows using the baseline RDD specification (equation 4). These include pre-election event windows in columns 1 and 2, around-election event windows in columns 3-5, and post-election event windows in columns 6 and 7. All standard errors are clustered by politician.
*** denotes statistical significance at 1% level, ** 5% level, * 10% level.

In summary, Table 2 provides evidence that firms connected to the winner in a close election to the U.S. Congress between 2000 and 2008 experience significant loss in firm value, as compared with firms connected to the loser. This implies that on average, friends in higher places bring *less* value to connected firms (i.e., V_2 is lower than V_1), likely because of greater scrutiny of politicians at the federal level and the politicians' own electoral concerns, as illustrated by Section 2's model. Our subsequent analyses investigate whether the empirical evidence is consistent with this interpretation.

6 The relevance of scrutiny and career concerns

Scrutiny. Table 3 reports the change in a politician's presence on local media following his win or loss. Media presence is calculated as the number of search hits for the politician's name on his state's newspapers as gathered in Newslibrary.com, normalized by the number of search hits for the neutral keyword "September."[29] The outcome variable is the difference of media presence between the year after the election and the year before. On average, elected congressmen experience an increase in media attention (column 1), while defeated candidates experience a reduction of similar

[29]To avoid misclassification, we pay particular attention to politicians having common first and last names, as done in Campante and Do (2014).

magnitude (column 4). The difference between these opposite changes, estimated using the baseline RDD specification, is large and statistically significant (column 7).[30] More interestingly, the increase among winners is driven solely by challengers as they receive a jump in media attention only after becoming congressmen (column 2). Incumbent winners, on the other hand, only maintain the high level of newspaper mention they already received before the election (column 3). Symmetrically, the reduction in media mention among defeated candidates is driven by incumbents losing their Congress seats (column 6), while that experienced by challenger losers is much smaller in magnitude (column 5). Together, the evidence confirms considerably higher level of media scrutiny of politicians at federal level (i.e., $\gamma_2 > \gamma_1$), as discussed in Section 2.

Table 3: Evidence of Greater Scrutiny of Winners Post-Election

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent variable: Change in media mention (-1, 1)						
Politician sample	All winners	Challenger winners	Incumbent winners	All losers	Challenger losers	Incumbent losers	All candidates
Mean	0.037***	0.057***	0.002	-0.036***	-0.013**	-0.071***	
	(0.009)	(0.014)	(0.006)	(0.011)	(0.005)	(0.026)	
Winner							0.113***
							(0.029)
Difference		*0.056****			*0.058***		
		(0.015)			*(0.026)*		
Observations	101	64	37	91	56	35	192
Politicians	94	64	32	88	54	35	170

Notes: This table reports the average change in media mention of the politician between year 1 and year -1, separately for winner and losers. Media mention is measured by the normalized hit rate from a search for the politician in local newspapers (as gathered in Newslibrary.com). Each observation is an politician p in election year t (politician p is a close-election top-two candidate in election year t). Column 1 considers all winners; column 2 – challenger winners; and column 3 – incumbent winners. Column 4 considers all losers; column 5 – challenger losers; and column 6 – incumbent losers. Column 7 employs an RDD specification similar to that in equation 4 on the full sample of all politician-by-election year's, using the same change in media mention of politician as the dependent variable. All standard errors are clustered by politician.
*** denotes statistical significance at 1% level, ** 5% level, * 10% level.

Our theory suggests that tougher scrutiny, which discourages politicians from favoritism, implies lower benefits received by connected firms. This yields several predictions that are tested in Table 4. First, ΔV is expected to be smaller in states with weaker institutional checks and balances (smaller γ_1 implies larger V_1), or in states where voters have lower interest in state politics (larger γ_2/γ_1 implies smaller ΔV). In columns 1 and 2, we use average log distance to capital city (ALD), which measures population concentration around the state capital city in 1970, as a proxy for state-level institutional quality, and compare states with below and above median population concentration.

[30] Appendix Table A5 shows that there is practically no pre-election difference in media presence between winners and losers in the considered close elections. Post-election, the media presence difference comes immediately in the first two years, for challengers and incumbents alike.

As shown by Campante and Do (2014), higher concentration around state capital (lower ALD) implies better media coverage of state politics, therefore tougher scrutiny and stronger checks and balances. This measure is also highly persistent over time, and arguably not directly affected by reverse causation or unobservable determinants of state-level institutional quality (that also determine the value of political connections). This allows us to interpret the observed variation in the value of political connections across states ($\widehat{\Delta V}$ of -3.8% among low ALD states in column 1 versus that of -2.0% among high ALD states in column 2) as being caused by the differences in institutional quality. Similarly, columns 3 and 4 distinguish between states with below and above median relative interest in state politics, as measured by the difference in voter turnouts for federal and for state elections (larger difference suggests lower interest in state politics).[31] Consistent with our prediction, the estimated differential value of being connected to an elected congressman $\widehat{\Delta V}$ is both more negative and more statistically significant among states with weak checks and balances (-3.9% in column 1), or among states with weak interest in state-level politics (-4.4% in column 3), as V_1 is likely larger under lax scrutiny at the state level.

Second, as V_i decreases with scrutiny γ_i ($i \in \{1, 2\}$), $|\Delta V|$ is expected to be larger when γ_1 and γ_2 are proportionally smaller. That is, when scrutiny is lax, politicians are more inclined to engage in favoritism regardless of whether they are in federal or state politics, resulting in larger absolute difference (in either direction) between V_2 and V_1. We use two different measures, voters' political interest (columns 5 and 6) and voters' media exposure (columns 7 and 8), to proxy for general scrutiny level. Both measures are calculated from the American National Election Studies (ANES) over 2000-2008, which asks respondents to rank their interest in congressional election outcome,[32] and report the media channels they use to follow election news.[33]. As expected, we find that $\widehat{\Delta V}$ is largest in magnitude (i.e., most negative) in states where the average voter has little political interest (-4.4% in column 5), or limited exposure to election information (-5.7% in column 7). On the other hand, it is not statistically different from zero in the remaining states (columns 6 and 8). Finally, columns 9 and 10 employ a more direct measure of corruption by state, based on the number of search hits on Exalead.com for the term "corruption" near the name of the main city in each state, normalized by the number of search hits for the name of that main city (following Saiz

[31] Voter turnout in each election is calculated as the number of total popular votes (from David Leip's Atlas of U.S. Presidential Elections, http://uselectionatlas.org), divided by the state's voting-age population (from U.S. Census).

[32] Voters' political interest is calculated as the share of respondents responding to the question *"How much would you say that you personally care(d) about the way the election to the Congress came out?"* with "very much" or "pretty much" (as opposed to "not very much" or "not at all") during the 2000-2008 period.

[33] Voters' media exposure is calculated as the share of respondents following election news via either television, newspaper, or radio during the 2000-2008 period.

Table 4: Effect by Degree of Scrutiny at Different Levels

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Dependent variable: CAR(-1, 5)									
Proxy for	γ_1		$\gamma = \gamma_2/\gamma_1$		γ_1, γ_2 (keeping γ fixed)					
	ALD		Turnout difference		Political interest		Media exposure		Corruption	
State sample	High	Low	Large	Small	Low	High	Limited	Strong	High	Low
Winner	-0.039***	-0.021*	-0.044***	-0.012	-0.045***	-0.013	-0.057***	-0.015	-0.056***	-0.008
	(0.013)	(0.011)	(0.011)	(0.015)	(0.012)	(0.012)	(0.015)	(0.010)	(0.014)	(0.011)
Difference	*-0.019*		*-0.032**		*-0.031**		*-0.042***		*-0.048****	
	(0.017)		*(0.018)*		*(0.017)*		*(0.018)*		*(0.018)*	
Observations	875	917	767	846	879	874	840	913	860	932
Politicians	96	74	62	86	88	79	87	80	97	73
Directors	621	603	532	571	622	589	582	633	607	633
Firms	717	708	623	676	724	700	674	737	684	763

Notes: This table reports how the differential value of Congress-level connection to firms ΔV varies by the degree of scrutiny at state (γ_1) and federal (γ_2) levels, using the baseline RDD specification (equation 4). Columns 1 and 2 compare subsamples of states with above and below median average log distance (ALD) to capital city (Campante and Do, 2014); high ALD implies low γ_1. Columns 3 and 4 compare subsamples of states with above and median difference in voter turnouts for federal (averaged over presidential years 2000, 2004, and 2008) and for state (averaged over non-presidential election years between 1998 and 2008) elections; large voter turnout difference implies large γ. Columns 5 and 6 compare subsamples of states with below and above median level of political interest, calculated as the share of ANES respondents reporting strong interest in congressional election outcome during the 2000-2008 period; low level of political interest implies small γ_1 and γ_2. Columns 7 and 8 compare subsamples of states with below and above median in media exposure around election time, calculated as the share of ANES respondents following election news via either television, newspaper, or radio during the 2000-2008 period; limited media exposure implies small γ_1 and γ_2. Columns 9 and 10 compare subsamples of states with above and below corruption level, measured as the number of search hits on Exalead.com for the term "corruption" near the name of the main city in each state, normalized by the number of search hits for the name of that main city; high corruption level implies small γ_1 and γ_2. All standard errors are clustered by politician.
*** denotes statistical significance at 1% level, ** 5% level, * 10% level.

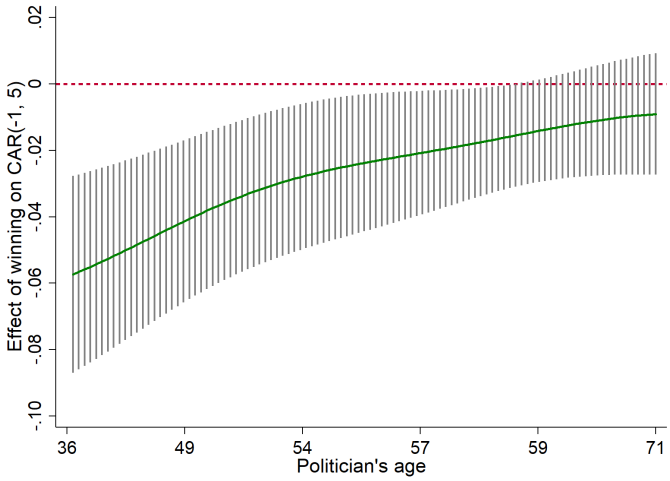
and Simonsohn's (2008) approach of "downloading wisdom from online crowds").The result again unambiguously support our prediction: the negative differential value of connections to elected congressmen is larger and more statistically significant in more corrupt states (-5.6% in column 9).

In sum, Table 4 provides ample evidence that the quality of checks and balances at both state and federal levels, as measured by population concentration, voter turnout, political interest, media exposure, or corruption level, is an important determinant of the amount of benefits firms receive from their political connections. This, together with Table 3's observation that congressmen receive considerably greater media attention, strongly supports tougher scrutiny as the key reason behind the negative average treatment effect of being connected to congressional election winners, as reported in Table 2.[34]

Career concerns. However, as scrutiny matters because of politicians' electoral concerns, its effect on favoritism varies with the politician's seniority. As discussed in details in Section 2,

[34]On the other hand, we do not find $\widehat{\Delta V}$ to vary with firm's distance to DC, suggesting that greater geographical distance between firms and connected congressmen is not a key channel behind this treatment effect (Table 7).

Figure 2: Effect by Politician's Age



Notes: This figure plots semi-parametric estimates of differential value of Congress-level connection to firms ΔV as a function of the connected politician's age (the X-axis), together with their 95% confidence intervals. The point estimate at each value of politician's age is obtained from the baseline RDD regression (equation 4), weighted by a Gaussian kernel function of politician's age around that particular value with a bandwidth equal to 20% of the range of politician's age (details in appendix B.1). All standard errors are clustered by politician.

younger politicians with stronger career concerns are less likely to engage in corruption under greater scrutiny. This implies that for the same set of parameters, ΔV is smaller for younger politicians, and that the sample's negative average $\widehat{\Delta V}$ (Table 2) is driven by those politicians.[35] Table A7 shows that this is indeed the case, as evidenced by the statistically significant positive coefficient of the interaction between the treatment (i.e., winning the election) and the politician's age in column 1, and the upward sloping curve of the treatment effect as a function of the politician's age in Figure 2.

7 Determinants of potential benefits to firm

The previous section highlights the role of scrutiny (γ's) and career concerns in determining ΔV, while keeping fixed the potential benefits of political connections (β's) to firms. In this section, we turn to studying how these potential benefits vary with firm, director, politician, and relationship characteristics, and their implications on ΔV. Our model suggests that, similar to γ's, β_1 and β_2 could affect ΔV in two different ways: first, through their relative magnitudes (ΔV is increasing in β_2/β_1), and second, through their absolute magnitudes ($|\Delta V|$ is increasing in β_2 and β_1, keeping

[35] At the extreme, an older politician nearing retirement, with no career concerns, brings more benefits to his connected firms when he is better positioned to do so, regardless of scrutiny level. For such politician, V_2 is greater than V_1 (under the reasonable assumption that elected congressmen are more powerful than defeated candidates), implying a positive value of ΔV.

Table 5: Effect by Politician's Prior Experience

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent variable: CAR(-1, 5)						
Politician sample	Challengers	Incumbents	State	No pol. exp.	House	Senate	All
Winner	-0.034***	-0.013	-0.048***	-0.021	-0.010	0.086***	-0.044***
	(0.011)	(0.014)	(0.013)	(0.019)	(0.016)	(0.017)	(0.012)
W × Pol.'s experience							0.017**
							(0.008)
Difference	*-0.021*			*-0.027*	*-0.038**	*-0.134****	
	(0.017)			*(0.023)*	*(0.020)*	*(0.021)*	
Observations	1,199	593	590	565	508	129	1,792
Politicians	115	64	61	47	58	12	170
Directors	838	440	448	376	372	103	1,171
Firms	961	517	518	488	438	127	1,268

Notes: This table reports how the differential value of Congress-level connection to firms ΔV varies by the politician's prior experience, using the baseline RDD specification (equation 4). Column 1 considers the subsample of all challengers and column 2 – incumbents. Column 3 considers the subsample of politicians with immediate prior position in state politics; column 4 – politicians with no prior experience in either state politics or Congress; column 5 – politicians with prior experience in the House (but not state politics or the Senate); and column 6 – politicians with prior experience in the Senate. Column 7 interacts the treatment with the politician's level of experience, which ranges from 0 to 3 and corresponds to the subsamples in columns 3 (level of experience = 0) to 6 (level of experience = 3). Row *Difference* reports the difference in $\widehat{\Delta V}$ between columns 1 and 2, and between column 3 and columns 4 to 6. All standard errors are clustered by politician.
*** denotes statistical significance at 1% level, ** 5% level, * 10% level.

β_2/β_1 fixed).

Table 5 reports how ΔV varies with the politician's type and level of experience. Columns 1 and 2 first compare the differential values of connections to challengers versus incumbents in Congress elections. One would expect β_2 to be quite small for challengers, but considerably larger for incumbents whose β_2 can be much larger thanks to their empowerment and entrenchment in Congress. The theory would then predict that it is more likely to find a negative differential value among challengers than incumbents, which corresponds to the findings in columns 1 and 2 (the difference between their estimates is sizeable and statistically significant).

We also consider the politician's prior political position, divided in four categories: a position in state-level politics, no political experience, or previous experience in the House or in the Senate. Those positions listed in an increasing order of the value of β_2/β_1. Indeed, coming from state politics, one should expect β_1 to be relatively large and β_2 to be small. In contrast, those who have already been in Congress should naturally enjoy a very large β_2 (likely larger in the Senate than the House), but a small β_1. In between, we can place the candidates without any political experience. Based on this order, the pattern of the estimated differential effect matches with the theoretical predictions, as shown in columns 3 to 7. From columns 3 to 6, the estimate increases from strongly negative to less negative, not statistically significant, to even a positive estimate among senators.

When we combine those estimates in a specification with an interaction term with the order among those cases in column 7, the coefficient of the interaction term is positive and statistically significant at 5%.

Table 6 further explores how β_2/β_1 and ΔV vary with firm and state characteristics. While our main result shows that on average firms benefit less from connections to politicians in higher positions (i.e., Congress) (Table 2), this is less likely to be true for large, national firms which stand to benefit more from federal-level connections (as larger β_2 implies larger V_2 and ΔV), and vice versa for smaller firms operating mostly at the state level (as larger β_1 implies larger V_1 and smaller ΔV). That is, as β_2/β_1 is likely increasing in firm size, so is ΔV, as evidenced by the positive and statistically significant interaction between the treatment (i.e., being connected to a winning candidate) and firm market value in column 1. Consistent with this intuition, column 2 shows that the differential value of being connected to a congressman is positive at 2.0% for the largest firms (i.e., the larger half of S&P 500 firms), for which federal-level connections are more meaningful than state-level ones. On the other hand, "local" firms, those with headquarters in or near the politician's state,[36] lose out the most when their local political connections move to Congress (-4.7% in column 4).[37]

Local political connections are also likely more beneficial to firms (larger β_1) in states with more regulations, where there is greater potential for politicians to granted benefits to connected firms on a discretionary basis. This implies smaller differential value of higher-office connections ΔV, as V_1 is already large. To distinguish between states with more and less regulations, we use the 1999 state-level regulation index from Clemson University's Report on Economic Freedom, which combines information on labor and environmental regulations and regulations in specific industries such as insurance. As expected, the negative and statistically interaction between the treatment and state regulation index (column 5) indicates that $\widehat{\Delta V}$ is more negative where there are more regulations (-4.3% in column 6, significant at 1% level), yet not statistically different from zero vice versa (column 7). Furthermore, the gradient of this difference is more pronounced among the "local" firms, to which state level regulations and thus related benefits from local political connections are more relevant (interaction term of -8.3% in column 8, compared to that of -4.7%

[36] A firm is considered as "local" if its headquarter is in the politician's state or within 500 kilometers of the state's capital city. Varying this 500 kilometer cutoff does not affect the qualitative findings.

[37] Alternatively, the treatment's positive interaction with firm size in column 1 could also reflect the heterogeneity in how important a single political connection is to the firm. As larger firms are likely connected to many politicians, the benefits of each connection may represent only a small fraction of the firms' value, which translates into a smaller (in magnitude, i.e., less negative) treatment effect. However, this alone cannot explain the positive and statistically significant treatment effect among very large firms as reported in column 2.

Table 6: Effect by Benefits of Connection to Firm

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: CAR(-1, 5)							
Firm/state sample	All firms	Very large firms	Smaller firms	Local firms	All states	High reg. states	Low reg. states	Local firms
Winner	-0.027***	0.020*	-0.034***	-0.047**	-0.028***	-0.043***	-0.014	-0.042*
	(0.008)	(0.011)	(0.009)	(0.021)	(0.008)	(0.011)	(0.010)	(0.022)
W × ln(Market value)	0.012**							
	(0.005)							
W × State reg. index					-0.047***			-0.083*
					(0.017)			(0.050)
Difference		*0.054***				*-0.029**		
		(0.014)				*(0.015)*		
Observations	1,792	204	1,588	450	1,792	894	898	450
Politicians	170	74	170	117	170	89	81	117
Directors	1,171	147	1,092	359	1,171	644	610	359
Firms	1,268	132	1,148	374	1,268	735	730	374

Notes: This table reports how the differential value of Congress-level connection to firms ΔV varies by the benefits of state- (β_1) and federal-level (β_2) connection to the firm, using the baseline RDD specification (equation 4). Column 1 interacts the treatment (i.e., being connected to a winning candidate) with firm size, measured by ln(market value). Columns 2 and 3 compare subsamples of large national firms and non national firms. A firm is classified as national if its market value above the median of S&P 500 firms; national firms likely have large β_2. Column 4 considers the subsample of local firms. A firm is classified as local if its headquarter is in the politician's state or within 500 kilometers of the state's capital; local firms likely have large β_1. Column 5 interacts the treatment with the number of state-level regulations, measured by state regulation index in 1999; large number of state-level regulations implies large β_1. Columns 6 and 7 compare subsamples of states with above-median and below-median state regulation index. Column 8 interacts the treatment with state regulation index among the subsample of local firms, for which state characteristics are more relevant. All standard errors are clustered by politician.
*** denotes statistical significance at 1% level, ** 5% level, * 10% level.

in column 5).

Table 7 turns to examining how ΔV varies with the absolute magnitude of the connection's potential benefits β_1 and β_2. Our theory predicts that as β_1 and β_2 are proportionally larger, so are V_1, V_2, and thus also $|\Delta V|$. That is, we expect firms connected to winning candidates to experience greater loss in value when the potential benefits (both before and after the election) of such connections are larger. These in turns depend on the firm's ability to extract value from its political connection, as influenced by factors such as the firm's governance quality, the politician's willingness to engage in favoritism, or the strength of the relationship.

In columns 1 to 4, we measure firm's governance quality using board size and shares of institutional block ownership in the year before the election, as is standard in the corporate finance literature.[38] Consistent with our hypothesis, better governed firms, those can better utilize their political connections, suffer much greater loss when such connections move up to Congress (loss of

[38] *Add citations from corporate finance literature backing board size and institutional block shares as measures for governance quality.* In addition, using alternative measures of corporate governance quality, such as number of institutional block owners or total institutional shares, also yields qualitatively similar results.

Table 7: Effect by Strength of Firm-Politician Relationship

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Dependent variable: CAR(-1, 5)									
Proxy for	β_1, β_2 (keeping β fixed)								Firm's DC	
	Board size		Inst. block shares		State's trust level		Pol.'s campaign		distance	
Sample	< 10	≥ 10	Large	Small	High	Low	Large	Small	Far	Near
Winner	-0.049***	0.004	-0.047***	0.012	-0.042***	-0.012	-0.040***	-0.017	-0.027**	-0.026**
	(0.017)	(0.013)	(0.017)	(0.015)	(0.011)	(0.011)	(0.010)	(0.012)	(0.010)	(0.012)
Difference	*-0.053***		*-0.059***		*-0.029**		*-0.023*		*-0.002*	
	(0.022)		*(0.024)*		*(0.015)*		*(0.016)*		*(0.016)*	
Observations	713	514	528	546	865	888	895	897	880	912
Politicians	121	114	23	129	84	83	82	97	88	82
Directors	570	382	415	438	635	563	647	643	600	626
Firms	594	377	419	426	728	658	752	735	718	713

Notes: This table reports how the differential value of Congress-level connection to firms ΔV varies by the firm's ability to extract value from its political connection, using the baseline RDD specification (equation 4). Columns 1 and 2 compare subsamples of firms with board size of below and at least median (10) number of directors; small board size implies large β_1 and β_2. Columns 3 and 4 compare subsamples of firms with at least and below median (20%) institutional block shares; large institutional block shares implies large β_1 and β_2. Columns 5 and 6 compare subsamples of politicians from states with at least and below median generalized trust, calculated as the share of ANES respondents in the state responding positively to the standard trust question during the 2000-2008 period; higher generalized trust implies large β_1 and β_2. Columns 7 and 8 compare subsamples of politicians with at least and below median ($1.3 millions) total campaign contributions; large campaign contributions implies large β_1 and β_2. Columns 9 and 10 compare subsamples of firms whose headquarters are at least or below 1000 kilometers from Washington DC. All standard errors are clustered by politician.
*** denotes statistical significance at 1% level, ** 5% level, * 10% level.

4.9% among firms with below-median board size in column 1 and 4.7% among firms with above-median institutional block shares in column 3, compared to the average loss of 2.8% among all firms). The corresponding change in market value experienced by firms with weaker governance, on the other hand, are not statistically different from zero (columns 2 and 4). Columns 5 and 6 split the politician sample by the size of their total campaign contributions, with the assumption that politicians getting or accepting larger contributions are also those more able and willing to "pay back" to their contributors.[39] Similarly, columns 7 and 8 distinguish between politicians coming from low and high generalized trust states, as measured by the trust question in ANES over the 2000-2008 period.[40] In our context, trust level between politicians and directors (which should correlate with the generalized trust prevailing in their states) is a proxy for the strength of their relationships, especially considering the delicate nature of their transactions. We again find that firms having likely deeper relationships with their political connections lose more market value when those politicians get elected to higher offices (columns 5 and 7), while those having weaker

[39] Dataf on total campaign contributions that a candidate receives in an election come from the FEC.

[40] A state's generalized trust level is calculated as the share of respondents in the state responding to the standard trust question *"Generally speaking, would you say that most people can be trusted, or that you can't be too careful in dealing with people?"* with "most people can be trusted" (as opposed to "can't be too careful" or "other, depends").

relationships experience insignificant change in firm value (columns 6 and 8). On the other hand, the loss in firm value associated with connected politician's move to Congress is the same for firms headquartered close to DC (column 10) and those farther away (column 9). That is, geographical distance to DC has little effect on the relationships between firms and politicians, consistent with greater scrutiny, not greater distance, being the key reason behind the negative differential value of higher-office connections.

8 Discussions

8.1 Identifying connections based on educational institutions

As discussed in subsection 4.1, while two individuals' going to the same university at the same time is a good proxy for their being connected later in life (Cohen et al., 2008, Nguyen, 2012, Fracassi, 2017), and the best one we have in this context, the former is not a perfect measure for the latter. Given the presence of measurement error, our $\widehat{\Delta V}$ estimate likely suffers from attenuation bias, which should decrease with the quality of our connection measure.

Table 8: Effect by Quality of Politician-Director Connection Measure

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Dependent variable: CAR(-1, 5)								
	Same institution definition			Graduation year difference				Total enrollment	
Network sample	Strict	Baseline	Loose	2 year	3 year	4 year	Alumni	Top 15	Others
Winner	-0.036***	-0.028***	-0.024***	-0.018**	-0.015**	-0.014**	-0.005	-0.012	-0.031***
	(0.009)	(0.008)	(0.008)	(0.008)	(0.007)	(0.007)	(0.006)	(0.022)	(0.009)
Observations	1,809	1,792	1,920	3,009	4,143	5,284	27,394	273	1,519
Politicians	159	170	176	183	193	197	219	30	148
Directors	1,149	1,171	1,267	1,815	2,398	2,922	9,027	186	988
Firms	1,252	1,268	1,338	1,812	2,215	2,527	4,257	219	1,097

Notes: This table reports how the *estimated* value of Congress-level connection to firms $\widehat{\Delta V}$ varies with the quality of the politician-director connection measure, using the baseline RDD specification (equation 4). In the baseline definition, a politician-director pair is considered connected if they graduated from (i) the same university, campus, and degree program combination (ii) at most one year apart (column 2). Columns 1 and 3 vary the same institution definition, from requiring that each politician-director pair be enrolled in the same university, campus, school, and degree program combination (column 1) to only same university and degree program combination (column 3). Columns 3-8 vary the restriction on graduation years, from difference of at most one year (columns 1-3) to up to four years (column 6) to more than four years (i.e., same alumni network but not necessary overlapping, column 7). Column 8 and 9 compare subsamples of universities that are in and outside of the top 15 (among the universities represented in our baseline sample) in total enrollment (as recorded on http://www.matchcollege.com/top-colleges). All standard errors are clustered by politician.
*** denotes statistical significance at 1% level, ** 5% level, * 10% level.

Indeed, Table 8 shows that the magnitude of $\widehat{\Delta V}$ (the loss in firm value associated with connected politician's move to Congress) decreases steadily as we increasingly relax the definition of politician-director connection, from requiring each pair graduate from the same university, campus,

school, and program combination (column 1) to only same university and program combination (column 3), and from at most one year apart (columns 1-3) to up to four years apart (column 6). At the extreme, when connection is defined based on the full alumni network, without requiring any overlap between the politician and the director, $\widehat{\Delta V}$ is close to zero and not statistically significant (column 7). Consistent with this pattern, we also find that $\widehat{\Delta V}$ is not statistically different from zero among politician-director pairs overlapping at very large universities (column 8), where the chance that they actually know one another is slim.

However, it is also possible that politicians and directors are connected only after they are in positions to bring each other mutual benefits, and their shared alma maters may act as a catalyst. This explains the pattern in Table A9 that the estimated loss in firm value is most salient among brand-name universities (such as Harvard University and other Ivy League schools), where politicians' and directors' strong ties to their alma maters facilitate their future networking and reconnection (columns 1 and 5). The effect is also large among the three most represented universities in our director sample (column 3),[41] and more interestingly, it exists within not only the classmate but also the alumni networks of these strong-tie universities (columns 7-9).

8.2 Addressing homophily as an alternative mechanism

As discussed in subsection **??**, our empirical design takes the classmate connections between politicians and directors as exogenously given. This raises the concern about homophily, whereby both same school attendance and linked future outcomes of politicians and businessmen are driven by their shared characteristics (McPherson et al., 2001). Under the presence of homophily, it is possible that the (correctly) identified effect of being connected to an elected congressman is driven by these shared characteristics instead of the suggested mechanism of direct classmate connection.

However, if that is the case, we would expect a politician's win to have the same effect on his classmates' firms as well as those of other alumni (assuming that homophily is university specific and time invariant).[42] To put differently, within the same election year, the homophily effect should be the same for all firms connected to the same university through its alumni network, and thus can be absorbed by a full set of university-by-election year fixed effects θ_{st} (s is the common alma mater of the corresponding politician-director pair). The following specification formalizes this intuition by comparing the effect of close election outcome on firms connected to the running candidates

[41] They are Harvard University, Stanford University, and the University of Pennsylvania, which happen to be the home institutions of the top three U.S. business schools.

[42] Therefore, that $\widehat{\Delta V}$ is not statistically different from zero among firms connected to the running politicians through the alumni network (Table 8, column 7) already suggests that homophily is not a first order concern.

through the classmate network (the baseline sample, for which $Class_{dp} = 1$), and those connected only through the alumni network (for which $Class_{dp} = 0$), controlling for a full set of θ_{st}:

$$CAR_{idt} = \gamma Win_{pt} \times Class_{dp} + \beta Win_{pt} + \rho Class_{dp} + f(VS_{pt}, Class_{dp}) + \theta_{st} + \varepsilon_{idpt}.^{43} \quad (5)$$

In the above specification, the coefficient of interest γ captures the difference in ΔV associated with classmate-connected firms and that with alumni-only-connected ones, after partialling out the common effects of all contemporaneous elections linked to the corresponding alma mater (i.e., the homophily effect). Estimating this specification on the sample of all close elections' alumni-connected firms yields $\widehat{\gamma}$ of -3.3%, statistically significant at 1% level (Table A10, column 1), very similar to the benchmark $\widehat{\Delta V}$ of -2.8% identified in Table 2. We also further restrict the estimation sample to only politician-director pairs that are at most 10 years or 5 years apart in school to allow for slowly-varying homophily, which produces quantitatively similar $\widehat{\gamma}$'s (columns 4 and 5). These results suggest that the change in firm value associated with connected politician's move to Congress cannot be explained by homophily alone but comes mostly from direct classmate connection.

8.3 Effects on real outcomes

Consistent with our main results that Congress-level connections are less beneficial to firms, columns 1 and 2 of Table 9 reports that firms connected to elected congressmen have reduced activities in the corresponding state in the year following the election, as measured by firm's presence on local media,[44] relative to those connected to defeated candidates. Furthermore, directors connected to elected congressmen, whose connections are now less valuable to their firms, are also more likely to leave the firms after the election, based on results from both a Cox proportional hazard model (in which the hazard event is the director's leaving the firm after the election) (column 5) and an RDD specification (in which the outcome variable is whether the director leaves the firm within three years of the election) (column 6). On the other hand, there is no difference in employment between winner-connected and loser-connected firms, both before and after the election (columns 3 and 4), implying that the loss in firm value among higher-connected firms is not due to firms' being asked to (inefficiently) increase hiring to support their political connections (as suggested by

[43] $f(VS_{pt}, Class_{ipt})$ includes the full interaction between VS_{pt} and $Class_{dp}$, separately for each side of the winning threshold. That is, $f(VS_{pt}, Class_{dp}) = \delta_W VS_i \mathbb{1}_{\{VS_i \geq 50\%\}} + \delta_L VS_i \mathbb{1}_{\{VS_i < 50\%\}} + \psi_W VS_i \mathbb{1}_{\{VS_i \geq 50\%\}} Class_{dp} + \psi_L VS_i \mathbb{1}_{\{VS_i < 50\%\}} Class_{dp}$.

[44] Similar to a politician's media presence (Table 3), a firm's media presence is calculated as the number of search hits for the firm's name on the corresponding state's newspapers as gathered in Newslibrary.com, normalized by the number of search hits for the neutral keyword "September." The resulting hit rate proxies for the firms activities within the state in the search period. At the national level, this variable is remarkably correlated with changes in firm's sales, investments, R&D, employment, and cash flows.

Shleifer and Vishny, 1994).

Table 9: Effects of Congress-Level Connection on Firm's Real Outcomes

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable	**Local media mention**		**ln(employment)**		**Director leaving firm**	
	Year 0	Year 1	Year 0	Year 1	Hazard	Within 3yrs
Model	RDD with lagged dependent variable				Cox	RDD
Winner	-0.003	-0.014*	0.001	0.000	0.245*	0.109*
	(0.006)	(0.008)	(0.039)	(0.032)	(0.136)	(0.061)
Observations	1,782	1,786	1,684	1,664	1,763	1,413
Politicians	170	170	170	170	169	136
Directors	1,168	1,169	1,120	1,105	1,156	906
Firms	1,266	1,266	1,193	1,176	1,251	1,015

Notes: This table reports the effect of close election outcome on connected firms' and directors' real outcomes. Columns 1-4 use the baseline RDD specification (equation 4) with additional lagged dependent variable control. The dependent variable in columns 1 and 2 is media coverage of firm, as measured by the normalized hit rate from a search for the firm in local newspapers, in the year of the election (year 0) and the year following the election (year 1) respectively. The dependent variable in columns 3 and 4 is firm's ln(employment) in years 0 and 1 respectively. Column 5 employs a Cox proportional hazard model with the hazard event being the director's leaving the firm after the election, with controls for vote shares (separately for each side of the winning threshold) and the director's tenure at the firm at year 0. Column 6 uses the baseline RDD specification (equation 4) with (i) the dependent variable being an indicator the director's leaving the firm within three years of the election and (ii) an additional control for the director's tenure at the firm at year 0. Column 6's sample included election years 2000, 2002, 2004, and 2006, so that at least three years after each election are fully observed. All standard errors are clustered by politician.
*** denotes statistical significance at 1% level, ** 5% level, * 10% level.

8.4 Market's attention and trading volume

A different concern arises regarding whether classmate connections are salient enough for investors, so that they can price changes around elections into connected firms' stocks. However, our framework does not require that such information on connections and election outcomes is widely held by potential investors. A few investors who follow related firms, including but not restricted to insiders, may be sufficient to create the stock price impact. If those connections receive investors' attention because of the election, we should expect an abnormal increase in their trading volume around the election day, especially since close elections' results are unpredictable *ex ante*.

Indeed, we find evidence of abnormal trading volume (Campbell and Wasley, 1996) of stocks of firms connected to close-election candidates around the corresponding election day. Using a market model from day -315 to day -61 before each event to calculate the abnormal daily trading volume around the election day, we find that stocks in our sample are traded significantly more around the event, with 5.21% cumulative abnormal volume during the (-5,-1) window, and 2.22% cumulative abnormal volume during the (-1, 5) window, both statistics significant at 1%.

9 Concluding remarks

This paper investigates whether political connections from the social network of directors and politicians can bring more or less value to the firm when the politician gets elected to Congress. Our intuitions point to a potentially ambiguous effect, nuanced by the balance between the politician's power to give favors to firms and the scrutiny he faces as he attains a higher position. If this balance tilts towards scrutiny, as one would expect in the U.S., we expect to find a negative effect: an adverse effect of a connected politician's promotion to Congress on the firm's value.

We use the RDD of close elections to estimate the differential value of connection to a politician elected to the U.S. Congress. Overall, the estimate shows a robust, economically and statistically significant impact of connection on cumulative abnormal return of -2.8% surrounding the election date. The effect varies with the balance of power versus scrutiny in the same way predicted by the theoretical intuitions.

Those findings lead to the bigger question of institutional design. If resources to monitor politicians are limited, and favoritism is broadly considered undesirable, but all the more so from higher positions, then there is clearly an argument to focus more monitoring on politicians at higher level. American institutions that place congressmen under a lot more scrutiny than, say, state-level officials, may already reflect this trade-off.

Finally, a note of caution on generalizing the empirical results for several reasons. First, while our estimate is a WATE across all politicians, we acknowledge that some politicians may naturally have higher chances of competing in a close election, and correspond to larger weights in the WATE. Our interpretation is therefore more informative about those politicians than some others who expectedly win (or lose) by large margins. Second, extrapolations before and after this period, or towards other types of political connections, require careful consideration. Third, we also stop short of inferring potential effects on general welfare. These topics are natural targets for future research in this line of work.

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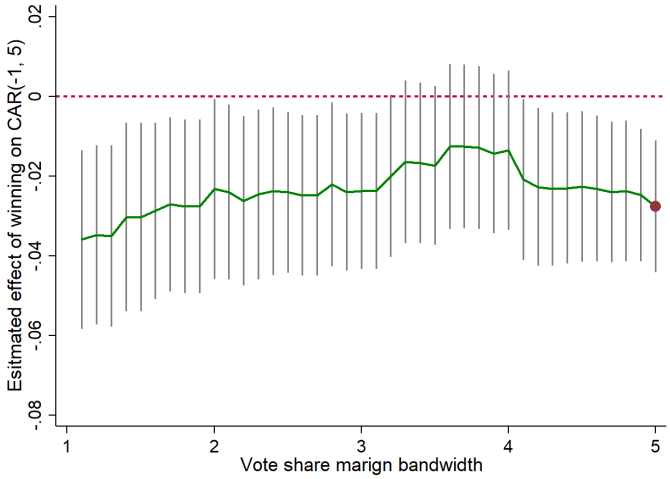
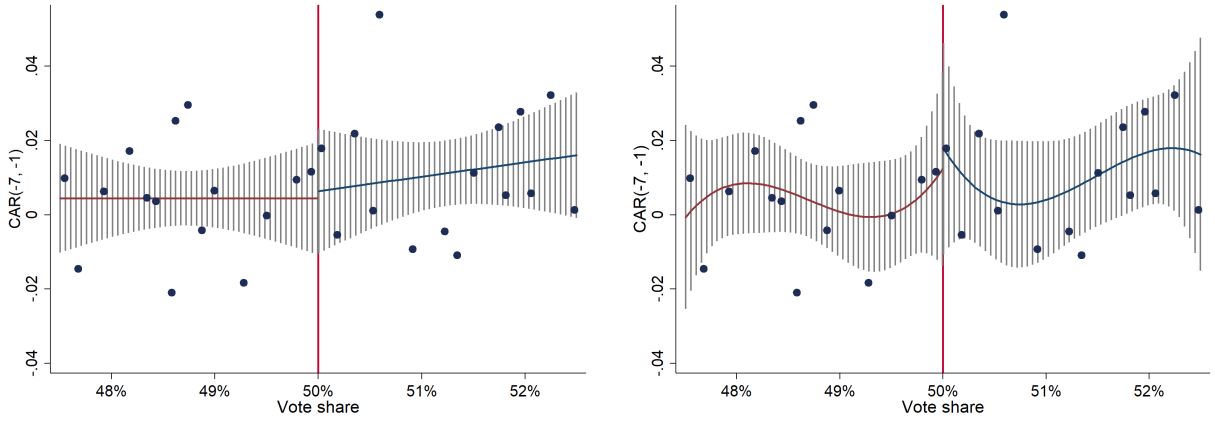
Figure A1: Sensitivity Tests Using Alternative Sample Restrictions



Notes: This figure plots RDD estimates of firms' differential value of Congress connection, as well as their 95% confidence intervals, for different values of the bandwidth used in the RDD specification in from equation 4.

Figure A2: No Discontinuity in Pre-Election Market Reaction

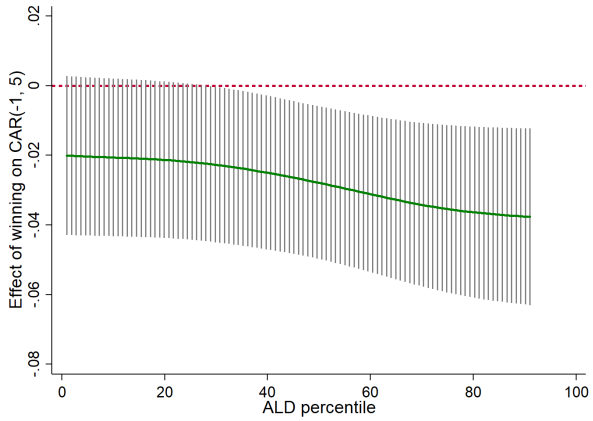


A. Linear fit

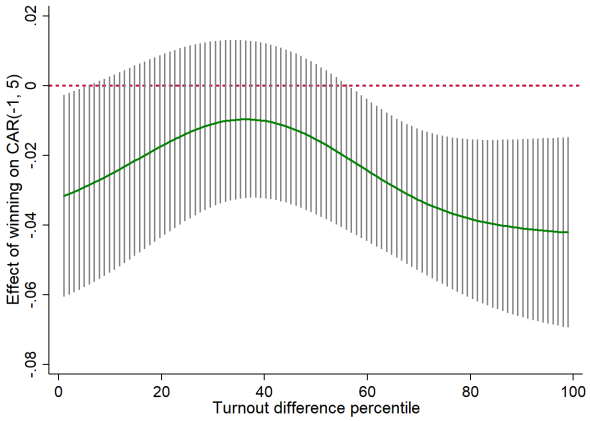
B. Cubic fit

Notes: This figure plots the estimated discontinuity in connected firms' fitted cumulative abnormal returns (CARs) between days -7 and -1 at the 50% vote share threshold and their 95% confidence intervals. Subfigure A fits separate linear functions of vote shares on either side of the threshold, as described in equation 4, and shows the discontinuity estimate of 0.2% (column 1 of Panel B of Table 2). Analogously, subfigure B uses third-order polynomials of vote shares, yielding an estimate of 0.6%. Both estimates are not statistically different from zero. 15 dots on each side of the threshold represent approximately equal-sized bins of observations.

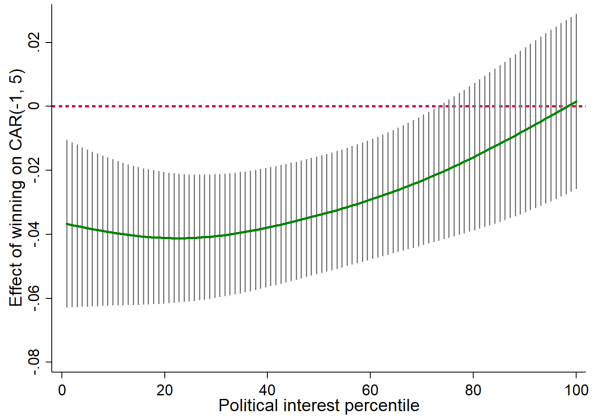
Figure A3: Effect by Degree of Scrutiny



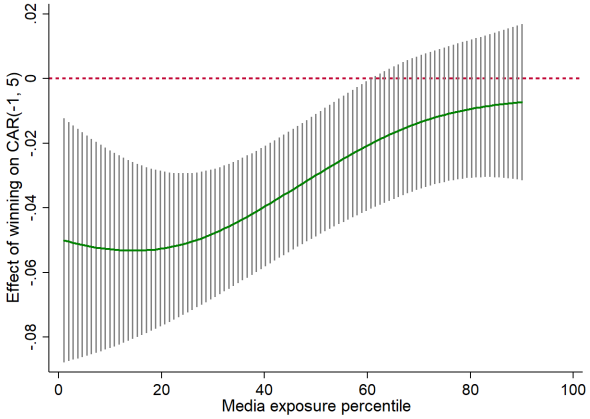
A. State's ALD to capital city



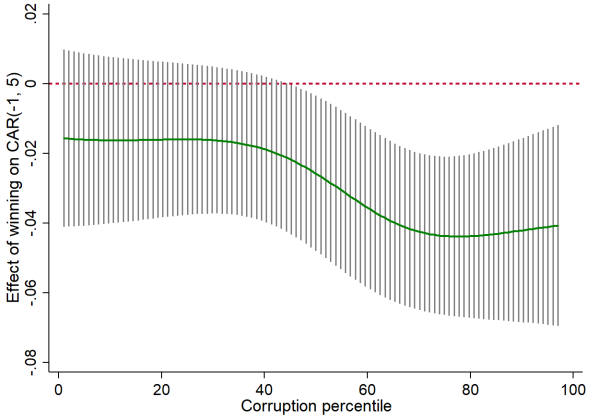
B. State-level difference in voter turnouts



C. Voters' political interest



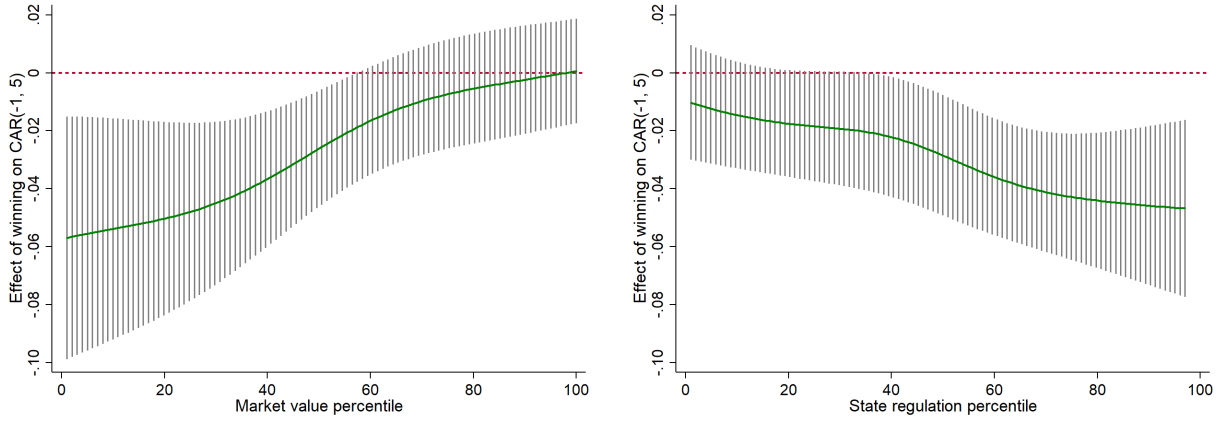
D. Voters' election media exposure



E. State's corruption level

Notes: This figure plots semi-parametric estimates of differential value of Congress-level connection to firms ΔV as a function of proxies for the degree of scrutiny at state and federal levels (the X-axis), together with their 95% confidence intervals. The point estimate at each value of the X-axis variable is obtained from the baseline RDD regression (equation 4), weighted by a Gaussian kernel function of the X-axis variable around that particular value with a bandwidth equal to 20% of the range of the X-axis variable (details in appendix B.1). All standard errors are clustered by politician. The X-axis variable in each subfigure are as described in Section 6 and notes to Table 4.

Figure A4: Effect by Benefits of Connection to Firm

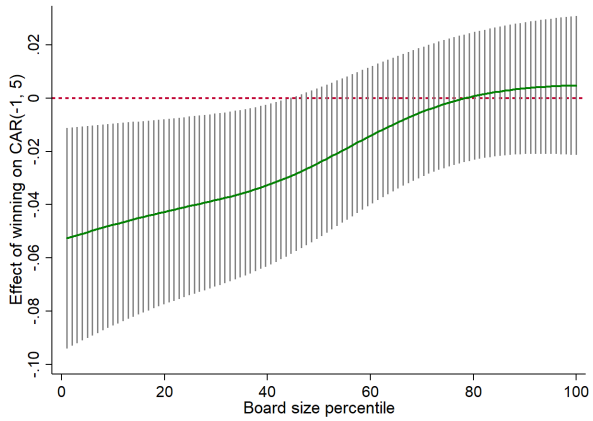


A. Firm's market value

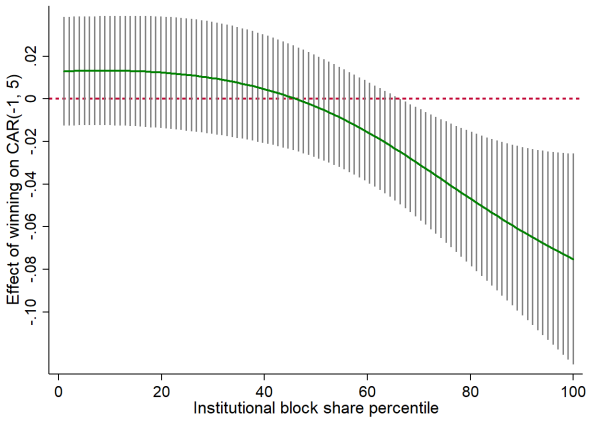
B. State's regulation index

Notes: This figure plots semi-parametric estimates of differential value of Congress-level connection to firms ΔV as a function of proxies for the benefits of state- and federal-level connection to the firm (the X-axis), together with their 95% confidence intervals. The point estimate at each value of the X-axis variable is obtained from the baseline RDD regression (equation 4), weighted by a Gaussian kernel function of the X-axis variable around that particular value with a bandwidth equal to 20% of the range of the X-axis variable (details in appendix B.1). All standard errors are clustered by politician. The X-axis variable in each subfigure are as described in Section 7 and notes to Table 6.

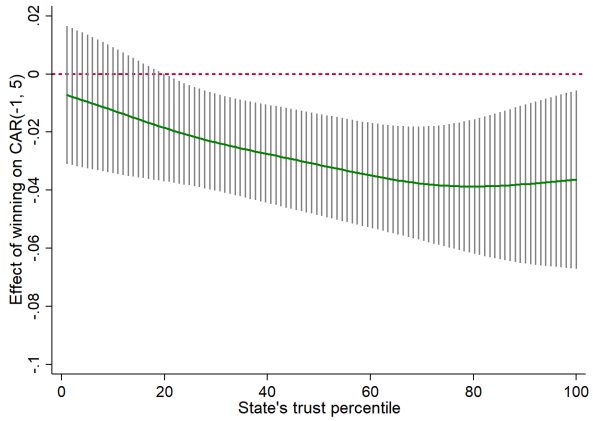
Figure A5: Effect by Strength of Firm-Politician Relationship



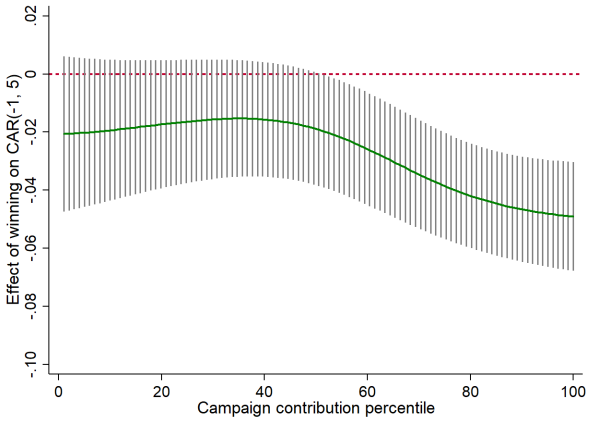
A. Firm's board size



B. Firm's institutional block shares



C. State's generalized trust level



D. Politician's total campaign contribution

Notes: This figure plots semi-parametric estimates of differential value of Congress-level connection to firms ΔV as a function of proxies for the strength of the relationship between firms and politicians (the X-axis), together with their 95% confidence intervals. The point estimate at each value of the X-axis variable is obtained from the baseline RDD regression (equation 4), weighted by a Gaussian kernel function of the X-axis variable around that particular value with a bandwidth equal to 20% of the range of the X-axis variable (details in appendix B.1). All standard errors are clustered by politician. The X-axis variable in each subfigure are as described in Section 7 and notes to Table 7.

Table A1: Distribution of Degree Program and Graduation Year

Degree program	Politicians	Directors	Conn. pairs	Graduation year	Politicians	Directors	Conn. pairs
Business school	5.9%	4.7%	4.4%	< 1950	0.5%	0.2%	0.2%
Medical school	0.5%	0.1%	0.1%	1950-1959	4.7%	3.6%	3.4%
General graduate	8.2%	3.8%	3.5%	1960-1969	22.5%	34.2%	38.2%
Ph.D.	1.4%	0.5%	0.5%	1970-1979	42.4%	43.5%	40.6%
Law school	11.8%	3.8%	3.5%	1980-1989	22.5%	14.7%	13.8%
Undergraduate	72.3%	87.1%	88.0%	≥ 1990	7.3%	3.8%	3.7%

Notes: This table reports the distribution of degree program and graduation year among connected politician-director pairs in our baseline sample. A politician and a director are considered connected if they graduated from the same university, campus, and degree program combination within one year of each other. All academic degrees are classified into one of the above six program categories, following Cohen et al. (2008).

Table A2: Baseline Firms' Characteristics Compared to Compustat Firms

Sample	Baseline sample			Compustat universe		
	Mean	Median	Std. dev.	Mean	Median	Std.dev.
Firm's age (year)	18.91	13.00	15.63	15.30	11.00	13.16
Market value ($ million)	6,367	656.4	27,541	3,548	290.1	16,661
Common equity ($ million)	2,013	234.3	8,210	1,347	127.2	6,301
Market-to-book ratio	2.925	2.183	27.19	4.684	1.950	92.31
Total assets ($ million)	11,613	719.2	76,819	8,141	379.9	70,219
Sales ($ million)	3,773	390.3	13,143	2,627	188.5	11,976
Employment (thousand)	12.91	1.400	40.07	9.080	0.775	38.09
Capital expenditure/assets	233.8	13.23	982.4	187.9	7.743	1,040
Return on assets (%)	-4.087	2.631	39.08	-4.976	1.612	49.54
Book leverage ratio	0.372	0.336	0.744	0.344	0.301	10.80
Tobin's Q	2.363	1.495	3.731	2.422	1.394	4.623

Notes: This table reports the characteristics of the 1,268 firms in our baseline sample and compares them to firms in the Compustat universe (which include all firms within Compustat in 2000, 2002, 2004, 2006, and 2008).

Table A3: RDD Randomness Checks

Panel A. Politician characteristics

Sample		Politician × Election year				Baseline			
Dependent variable		Winner	S.E.	*Mean*	Obs.	Winner	S.E.	*Mean*	Obs.
1	D: Gender = Male	0.072	(0.116)	*0.781*	192	0.094	(0.119)	*0.842*	1,792
2	Age at election year (year)	-1.638	(2.290)	*52.83*	192	2.837	(2.090)	*54.70*	1,792
3	D: Attended big-name university	-0.032	(0.121)	*0.245*	192	-0.210	(0.231)	*0.496*	1,792
4	D: Senate election candidate	0.049	(0.114)	*0.203*	192	0.094	(0.229)	*0.304*	1,792
5	D: Incumbent candidate	-0.100	(0.136)	*0.375*	192	-0.173	(0.194)	*0.331*	1,792
6	D: Party affiliation = Democrat	0.009	(0.138)	*0.526*	192	0.351*	(0.184)	*0.581*	1,792
7	D: Same party as chamber majority	0.182	(0.142)	*0.484*	192	-0.156	(0.221)	*0.489*	1,792
8	D: Same party as presidency	0.045	(0.141)	*0.469*	192	-0.183	(0.203)	*0.400*	1,792
9	D: Experience in state politics	-0.156	(0.136)	*0.333*	192	-0.171	(0.196)	*0.329*	1,792
10	Level of prior experience	-0.080	(0.294)	*1.146*	192	-0.280	(0.422)	*1.098*	1,792
11	Local media presence in election year	-0.005	(0.076)	*0.146*	192	-0.033	(0.056)	*0.146*	1,792
12	Total campaign contribution	-0.507	(0.810)	*2.246*	192	0.122	(1.565)	*2.596*	1,792
13	Number of contributors	-128.5	(128.6)	*576.8*	192	-318.2	(203.2)	*564.7*	1,792
14	Number of connected directors	1.628	(2.362)	*7.286*	192	1.147	(5.530)	*16.76*	1,792
15	Number of connected firms	2.786	(3.100)	*9.193*	192	3.618	(7.689)	*22.38*	1,792

Panel B. Director characteristics

Sample		Director × Politician × Year				Baseline			
Dependent variable		Winner	S.E.	*Mean*	Obs.	Winner	S.E.	*Mean*	Obs.
16	D: Gender = Male	-0.018	(0.037)	*0.916*	1,399	-0.032	(0.041)	*0.903*	1,792
17	Age at election year (year)	2.583	(2.127)	*54.32*	1,399	2.278	(2.046)	*54.54*	1,792
18	Number of years since graduation	2.966	(2.152)	*31.62*	1,399	2.989	(2.140)	*31.82*	1,792
19	D: Link via big-name university	-0.142	(0.213)	*0.420*	1,399	-0.159	(0.219)	*0.438*	1,792
20	D: Link via big-size university	0.101	(0.095)	*0.158*	1,399	0.072	(0.096)	*0.152*	1,792
21	D: Link via undergraduate program	0.033	(0.062)	*0.869*	1,399	0.064	(0.070)	*0.867*	1,792
22	Number of related firms	0.112	(0.078)	*1.281*	1,399	0.553*	(0.313)	*1.672*	1,792
23	D: Executive director (avg.)	-0.058	(0.050)	*0.206*	1,399	-0.070	(0.046)	*0.179*	1,792
24	Tenure in firm at election year (avg.)	-0.973	(0.721)	*4.627*	1,399	-0.856	(0.683)	*4.511*	1,792

Panel C. Firm characteristics

Sample		Firm × Politician × Year				Baseline			
Dependent variable		Winner	S.E.	*Mean*	Obs.	Winner	S.E.	*Mean*	Obs.
25	Age at election year (year)	1.849	(1.696)	*18.92*	1,759	1.989	(1.693)	*18.91*	1,786
26	Lagged market value ($ billion)	2.203	(3.993)	*6.457*	1,689	2.175	(3.922)	*6.367*	1,716
27	Lagged common equity ($billion)	0.925	(0.976)	*2.040*	1,715	0.915	(0.954)	*2.013*	1,742
28	Lagged market-to-book ratio	1.972	(2.182)	*2.914*	1,652	2.103	(2.120)	*2.935*	1,679
29	Lagged total assets ($ billion)	-0.855	(8.733)	*11.77*	1,716	-0.748	(8.555)	*11.61*	1,743
30	Lagged total sales ($ billion)	2.521	(2.088)	*3.812*	1,714	2.542	(2.038)	*3.773*	1,741
31	Lagged total employment (thousand)	4.537	(3.693)	*13.04*	1,686	4.667	(3.599)	*12.91*	1,713
32	Lagged capital expenditure/assets	0.003	(0.006)	*0.044*	1,638	0.002	(0.006)	*0.044*	1,663
33	Lagged return on assets	-0.032	(0.036)	*-0.039*	1,714	-0.039	(0.037)	*-0.041*	1,741
34	Lagged book leverage ratio	-0.020	(0.104)	*0.372*	1,708	-0.018	(0.102)	*0.372*	1,735
35	Lagged Tobin's Q	0.288	(0.351)	*2.355*	1,652	0.338	(0.351)	*2.363*	1,679
36	Lagged board size	-0.109	(0.543)	*9.469*	1,210	-0.145	(0.545)	*9.453*	1,227
37	Lagged institutional block shares	0.007	(0.020)	*0.226*	1,061	0.008	(0.020)	*0.227*	1,074
38	Local media presence in election year	0.017	(0.042)	*0.054*	1,759	0.015	(0.041)	*0.054*	1,786
39	D: Local firm	-0.087	(0.094)	*0.248*	1,765	-0.093	(0.096)	*0.251*	1,792
40	Distance to state capital (km)	146.2	(168.7)	*1,509*	1,765	168.1	(169.6)	*1,500*	1,792
41	Distance to Washington D.C. (km)	524.6	(387.4)	*1,241*	1,726	492.7	(389.8)	*1,241*	1,753
42	Number of connected directors	-0.270	(0.176)	*1.126*	1,765	-0.265	(0.173)	*1.124*	1,792

Panel D. State characteristics

Sample		State × Politician × Year				Baseline sample			
Dependent variable		Winner	S.E.	*Mean*	Obs.	Winner	S.E.	*Mean*	Obs.
43	Average log distance to capital city	-0.026	(0.026)	*0.300*	189	0.020	(0.039)	*0.304*	1,753
44	Difference in voter turnouts	-0.006	(0.010)	*0.180*	167	-0.014	(0.014)	*0.183*	1,613
45	Voters' political interest	0.011	(0.023)	*1.675*	189	0.033	(0.034)	*1.679*	1,753
46	Voters' election media exposure	0.002	(0.004)	*0.974*	189	0.001	(0.004)	*0.974*	1,753
47	State's corruption level	0.181*	(0.104)	*0.259*	192	0.169	(0.169)	*0.225*	1,792
48	State's regulation index in 1999	0.073	(0.133)	*6.148*	192	-0.058	(0.185)	*6.151*	1,792
49	State's generalized trust level	0.010	(0.036)	*0.482*	189	-0.000	(0.057)	*0.474*	1,753

Notes: This table reports the differences between closely elected and defeated candidates and between their connected directors, firms, and states, using the baseline RDD specification (equation 4) with different dependent variables.
*** denotes statistical significance at 1% level, ** 5% level, * 10% level.

Table A4: Robustness Checks for Value of Congress-Level Connection to Firms

Panel A: Alternative specifications

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: CAR(-1, 5)							
Specification	Alt. clusterings			Alt. obs. unit	Alt. kernels & samples			
Winner	-0.028***	-0.028***	-0.028***	-0.026***	-0.021**	-0.021**	-0.030***	-0.030***
	(0.010)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.011)	(0.011)
Clustering scheme	Firm	Director	Two-way					
Observation unit				Pol. × Firm				
Kernel function					Tri	Epa	Tri	Epa
Sample selection							CCT	CCT
Observations	1,792	1,792	1,792	1,765	1,792	1,792	597	1,792
Politicians	170	170	170	170	170	170	66	66
Directors	1,171	1,171	1,171	-	1,171	1,171	435	435
Firms	1,268	1,268	1,268	1,268	1,268	1,268	507	507

Panel B: Alternative CAR models

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable	**SCAR(-1, 5)**		**CAR(-1, 5)**					
Model	Baseline MM		Raw		FF		FFM	
Winner	-0.338***	-0.416***	-0.020	-0.043*	-0.024***	-0.026**	-0.027***	-0.028***
	(0.125)	(0.151)	(0.019)	(0.023)	(0.008)	(0.011)	(0.007)	(0.010)
University FEs		X		X		X		X
Observations	1,792	1,792	1,792	1,792	1,792	1,792	1,791	1,791
Politicians	170	170	170	170	170	170	170	170
Directors	1,171	1,171	1,171	1,171	1,171	1,171	1,171	1,171
Firms	1,268	1,268	1,268	1,268	1,268	1,268	1,267	1,267

Notes: This table reports the robustness checks for the benchmark average differential value of Congress-level connection to firms ΔV, which is estimated using the baseline RDD specification (equation 4) and reported in column 1 of Table 2. **Panel A:** Columns 1-3 cluster standard errors (i) by firm, (ii) by director, and (iii) two-way by politician and firm respectively. Each observation in column 4 is a combination of politician p, connected firm f, and election year t. Columns 5 and 6 use triangle and Epanechnikov kernel weights, and columns 7 and 8 use samples selected by Calonico et al.'s (2014) method with triangle and Epanechnikov kernel weights respectively. **Panel B:** Columns 1 and 2's use standardized CARs (CARs normalized by volatility during the event period) computed using the baseline market model as the dependent variable. Columns 3 and 4 use raw returns. Columns 5 and 6 use CARs computed based on the Fama and French's (1993) three-factor model. Columns 7 and 8 use CARs based on Fama and French's (1993) plus Carhart's (1997) momentum four-factor models. Columns 2, 4, 6, and 8 additionally include university fixed effects. Standard errors are clustered by politician unless noted otherwise.
*** denotes statistical significance at 1% level, ** 5% level, * 10% level.

Table A5: Greater Scrutiny of Winners Post Election

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: Media mention in local newspapers							
Time period	Year -1	Year 0	Year 1	Year 2	$\Delta(-1,1)$		Δ(pre, post)	
Politician sample	All politicians				Challengers	Incumbents	Challengers	Incumbents
Winner	-0.013	-0.005	0.099*	0.081*	0.096***	0.122***	0.079***	0.112**
	(0.050)	(0.076)	(0.053)	(0.044)	(0.032)	(0.044)	(0.027)	(0.050)
Observations	192	192	192	192	120	72	120	72
Politicians	170	170	170	170	115	64	115	64

Notes: The table reports the difference in media mention of winning and defeated politicians before and after the election, using an RDD specification similar to that in equation 4 with media mention of the politician as the dependent variable. Each observation is an politician p in election year t (politician p is a close-election top-two candidate in election year t). Media mention is measured by the normalized hit rate from a search for the politician in local newspapers (as gathered in Newslibrary.com), from year -1 (column 1) to year 2 (column 4). Columns 5-8's dependent variables are the changes in media mention of the politician between year 1 and year -1 (columns 5 and 6), and between pre-election (years -1 and 0) and post-election (years 1 and 2) election periods (columns 7 and 8). Columns 5 and 7 consider challenger politicians and columns 6 and 8 – incumbent politicians. All standard errors are clustered by politician.
*** denotes statistical significance at 1% level, ** 5% level, * 10% level.

Table A6: Effect by State Corruption Level

	(1)	(2)	(3)	(4)	(5)	(6)
	Dependent variable: CAR(-1, 5)					
Proxy for corruption	Search hits w. city name		Search hits w. state name		Conviction cases	
State sample	High	Low	High	Low	High	Low
Win/Lose	-0.056***	-0.008	-0.048***	-0.013	-0.044***	-0.015
	(0.014)	(0.011)	(0.012)	(0.012)	(0.013)	(0.011)
Difference	*-0.048****		*-0.035***		*-0.029**	
	(0.018)		*(0.017)*		*(0.017)*	
Observations	860	932	912	880	840	952
Politicians	97	73	102	68	89	81
Directors	607	633	649	605	602	635
Firms	684	763	734	724	689	751

Notes: This table reports how the differential value of Congress-level connection to firms ΔV varies by the degree of state corruption level, using the baseline RDD specification (equation 4). High corruption level implies small γ_1 and γ_2. Columns 1 and 2 measure corruption based on the number of search hits on Exalead.com for the term "corruption" near the name of the main city in each state, normalized by the number of search hits for the name of that main city. Columns 3 and 4 measure corruption based on the number of search hits on Newslibrary.com for the term "corruption" near the name of the state, normalized by the number of search hits for the name of that state. Columns 5 and 6 measure corruption based on the number of federal convictions for public corruption between 1976 and 2002, normalized by average population in the corresponding state during the same period (Glaeser and Saks, 2006). All standard errors are clustered by politician.
*** denotes statistical significance at 1% level, ** 5% level, * 10% level.

Table A7: Effect by Politician's Age

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: CAR(-1, 5)							
Politician sample	All	≤ 55	> 55	Age Q1	Age Q2	Age Q3	Age Q4	Age Q5
Winner	-0.029***	-0.049***	-0.016	-0.062***	-0.038	-0.025	-0.015	0.000
	(0.008)	(0.014)	(0.010)	(0.022)	(0.023)	(0.019)	(0.017)	(0.012)
W × Pol.'s age	0.003**							
	(0.001)							
Difference		*-0.033**						
		(0.016)						
Observations	1,792	861	931	379	412	312	360	329
Politicians	170	106	68	64	36	32	18	31
Directors	1,171	606	597	296	289	218	237	242
Firms	1,268	695	706	335	354	265	305	296

Notes: This table reports how the differential value of Congress-level connection to firms ΔV varies by the politician's age, using the baseline RDD specification (equation 4). Column 1 interacts the treatment (i.e., winning the election) with the politician's age. Columns 2 and 3 compare subsamples of younger (at most 55) and older (above 55) politicians. Columns 4 to 8 consider the subsamples of politicians in age quintile 1 to 5. All standard errors are clustered by politician.
*** denotes statistical significance at 1% level, ** 5% level, * 10% level.

Table A8: Effect in Subsamples of Challengers and Incumbents

Panel A: Subsample of challengers

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: CAR(-1, 5)							
	All	Prior experience	Election type		Party affiliation		President's party	
Politician sample	challengers	State politics	Senate	House	Democrat	Republican	Same	Different
Winner	-0.034***	-0.048***	-0.054*	-0.033**	-0.040***	-0.033	-0.025	-0.037***
	(0.011)	(0.013)	(0.029)	(0.015)	(0.012)	(0.020)	(0.020)	(0.011)
Observations	1,199	590	416	783	871	328	352	847
Politicians	115	61	27	88	74	41	40	76
Directors	838	448	310	567	640	236	267	618
Firms	961	518	381	673	742	302	332	734

Panel B: Subsample of incumbents

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dependent variable: CAR(-1, 5)							
	All	Prior experience	Election type		Party affiliation		President's party	
Politician sample	incumbents	Appropriations	Senate	House	Democrat	Republican	Same	Different
Winner	-0.013	0.074**	0.086***	-0.010	0.026	-0.026	-0.014	-0.025
	(0.014)	(0.027)	(0.017)	(0.018)	(0.029)	(0.017)	(0.020)	(0.022)
Observations	593	58	129	464	171	422	364	229
Politicians	64	9	12	52	21	43	44	21
Directors	440	40	103	338	131	311	270	175
Firms	517	47	127	401	152	384	332	207

Notes: This table reports the differential value of Congress-level connection to firms ΔV using the baseline RDD specification (equation 4), separately for firms connected to challenger candidates (Panel A) and firms connected to incumbent candidates (Panel B). Column 1 considers the subsample of all challengers (incumbents) and column 2 – challengers with immediate prior experience in state politics (Panel A) or incumbents in Appropriations Committees (Panel B). Columns 3 and 4 compare challengers (incumbents) in Senate and House elections; columns 5 and 6 – Democrat and Republican challengers (incumbents); and columns 7 and 8 – challengers (incumbents) belonging and not belonging to the same party as the contemporaneous President. All standard errors are clustered by politician.
*** denotes statistical significance at 1% level, ** 5% level, * 10% level.

Table A9: Effect by School Network Characteristics

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	Dependent variable: CAR(-1, 5)								
Network definition	At most one year apart						Alumni		
Network sample	Harvard	Others	Big nw.	Others	Ivy Lg.	Others	Harvard	Big nw.	Ivy Lg.
Winner	-0.057***	-0.024**	-0.055***	-0.024**	-0.034***	-0.023**	-0.024**	-0.024***	-0.013
	(0.011)	(0.009)	(0.012)	(0.009)	(0.012)	(0.011)	(0.009)	(0.008)	(0.008)
Difference	*-0.034***		*-0.031**		*-0.011*				
	(0.014)		*(0.014)*		*(0.015)*				
Observations	212	1,580	343	1,449	695	1,097	5,995	7,540	12,306
Politicians	22	161	26	157	40	151	24	28	45
Directors	142	1,031	244	929	390	783	803	1,521	2,634
Firms	175	1,132	297	1,033	493	864	1,025	1,656	2,370

Notes: This table reports how the value of Congress-level connection to firms ΔV varies with the university network characteristics, using the baseline RDD specification (equation 4). Columns 1 and 2 compare Harvard and non-Harvard networks. Columns 3 and 4 compare three most represented networks in our director sample (Harvard University, Stanford University, and the University of Pennsylvania) and the remaining networks. Columns 5 and 6 compare Ivy League and non-Ivy League networks. Columns 7-9 consider the full alumni network of Harvard University (column 7), column 3's top three universities (column 8), and Ivy League schools (column 9). All standard errors are clustered by politician.
*** denotes statistical significance at 1% level, ** 5% level, * 10% level.

Table A10: Controlling for Homophily

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Dependent variable: CAR(-1, 5)						
	Same institution definition			Year difference		Network sample	
Network sample	Baseline	Loose	Strict	10 years	5 years	Harvard	Big network
Winner × Classmate	-0.033***	-0.030***	-0.039***	-0.032***	-0.031***	-0.030**	-0.036**
	(0.010)	(0.009)	(0.009)	(0.010)	(0.011)	(0.011)	(0.014)
Winner	0.002*	0.001	0.001	0.009*	0.007	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.005)	(0.007)	(0.001)	(0.001)
University × Election year FEs	X	X	X	X	X	X	X
Observations	27,394	29,049	30,910	11,238	6,204	5,995	7,540
Politicians	219	221	219	215	196	24	28
Directors	9,027	9,408	8,769	5,192	3,330	803	1,521
Firms	4,257	4,323	4,254	3,441	2,731	1,025	1,656

Notes: This table compares the effect of close election outcome on firms connected to the running candidates through the classmate network and those connected only through the alumni network, using equation 5 which controls for a full set of university-by-election year fixed effects. Columns 1 and 3 vary the same institution definition (see notes to Table 8 for details). Columns 4 and 5 restrict the samples to only politician-director pairs that are at most 10 years (column 4) or 5 years (column 5) apart in school. Columns 6 and 7 consider the alumni network of Harvard University (column 7) and top three most represented universities in our director sample (Harvard University, Stanford University, and the University of Pennsylvania) (column 8). All standard errors are clustered by politician.
*** denotes statistical significance at 1% level, ** 5% level, * 10% level.

A Theoretical appendix

We resume the theoretical setting in section 2, first under a set of more general assumptions:

Assumption A1 *Assume that $w(\cdot)$ and $v(\cdot)$ are increasing, concave, and differentiable, and P_{22} and P_{12} (P_{21} and P_{11}) are decreasing (increasing) convex functions of x.*

The politician's dynamic problem can be written in the following Bellman equations, such that the politician chooses the optimal amounts $x^*_{s,t}$, $s \in \{1,2\}$, to maximize $W_{s,t}$, given the future expected values $W_{s',t+1}$, $s' \in \{1,2\}$, discount factor $\delta \in (0,1)$ and transition probabilities $P_{ss't}(x_{s,t})$.

$$\begin{aligned} W_{1,t} = &\max_{x_{1,t}}[r_1 + w_1(x_{1,t}) + \delta P_{11,t}(x_{1,t})W_{1,t+1} + \delta P_{12,t}(x_{1,t})W_{2,t+1}], \\ W_{2,t} = &\max_{x_{2,t}}[r_2 + w_2(x_{2,t}) + \delta P_{21,t}(x_{2,t})W_{1,t+1} + \delta P_{22,t}(x_{2,t})W_{2,t+1}]. \end{aligned} \tag{A1}$$

$$\begin{aligned} V_{1,t} = &\ v_1(x^*_{1,t}) + \delta P_{11,t}(x^*_{1,t})V_{1,t+1} + \delta P_{12,t}(x^*_{1,t})V_{2,t+1}, \\ V_{2,t} = &\ v_2(x^*_{2,t}) + \delta P_{21,t}(x^*_{2,t})V_{1,t+1} + \delta P_{22,t}(x^*_{2,t})V_{2,t+1}, \end{aligned} \tag{A2}$$

with $t \in \{1,2,\ldots,T\}$ and $W_{s,T+1} = V_{s,T+1} = 0$, $s \in \{1,2\}$. We consider a finite-horizon (non-stationary) problem to illustrate the evolution of the values of connections. The infinite-horizon, stationary problem, in which T is replaced by ∞ yields similar predictions on the comparative statics of ΔV with respect to the parameters of interest.

We further use the state-difference operator Δ to denote $\Delta\tilde{P}_t \overset{def}{\equiv} P_{11,t} - P_{21,t} = P_{22,t} - P_{12,t} \geq 0$, and take the differences between the equations in (A1) and (A2), and deduce equations (1) and (2) in section 2 as recited below for convenience:

$$\begin{aligned} \Delta W_t &= \Delta r + \Delta w_t + \delta \Delta\tilde{P}_t \Delta W_{t+1}, \\ \Delta V_t &= \Delta v_t + \delta \Delta\tilde{P}_t \Delta V_{t+1}. \end{aligned}$$

Proposition A2 *The model admits a unique equilibrium $(x^*_{s,t}, W_{s,t})_{t=1,\ldots,T, s\in\{1,2\}}$. In the last period $x^*_{s,T} = \bar{x}$, and for all $t < T$ the following first order conditions hold:*

$$\begin{aligned} w_1'(x^*_{1,t}) - \delta P'_{11,t}(x^*_{1,t})\Delta W_{t+1} = &\ 0, \\ w_2'(x^*_{2,t}) - \delta P'_{21,t}(x^*_{2,t})\Delta W_{t+1} = &\ 0. \end{aligned} \tag{A3}$$

Proof. Those first order conditions are derived directly from the optimization problem in equations (A1). Existence and unicity of $x^*_{s,t}$, given $W_{s,t+1}$ are obtained from the assumptions on $w_s(\cdot)$ and $P_{ss'}(\cdot)$. At the terminal point, future career no longer matters as $\Delta W_{T+1} = 0$, so $x^*_{1,T} = x^*_{2,T} = \bar{x}$. Backward induction then yields the unique solution $(x^*_{s,t}, W_{s,t})_{t=1,\ldots,T}$. ■

Section 2 further imposes the following assumptions to better illustrate the intuitions:

Assumption A3 *Additional parametric assumptions:*

$$P_{11}(x_1) = \gamma_1 x_1 + P_{11}(0), \qquad P_{12}(x_1) = -\gamma_1 x_1 + P_{12}(0),$$
$$P_{21}(x_2) = \gamma_2 x_2 + P_{21}(0), \qquad P_{22}(x_2) = -\gamma_2 x_2 + P_{22}(0);$$
$$w_1(x_1) = \sqrt{\beta_1 x_1} \geq 0, \quad w_2(x_2) = \sqrt{\beta_2 x_2} \geq 0; \quad \textit{with } \beta \overset{def}{\equiv} \tfrac{\beta_2}{\beta_1} \geq 1,\ \gamma \overset{def}{\equiv} \tfrac{\gamma_2}{\gamma_1} \geq 1,\ 0 < \gamma_1 < \gamma_2.$$

To proceed to the proofs of Propositions 1 and 2, we focus on the case $\Delta W_t > 0\ \forall t \leq T$ (when Δr is sufficiently large), i.e., the politician always prefers higher office.

Proof of Proposition 1. First, note that $\Delta v_t \geq 0$ iff power trumps scrutiny. Proposition A2 also implies that in the last period $\Delta V_T = \rho \Delta w_T(\bar{x}) > 0$. When power dominates in the first case, δv_t^* is positive in all periods following equation (3), hence the conclusion obtains immediately for ΔV_t.

In the second case, we apply backward induction using equation (A4) from $t = T$ down to $t = 1$. Since $\Delta v_t^* \leq 0$ when scrutiny dominates, and because $\delta \Delta \tilde{P}_t \in (0, 1)$, $\Delta V_t < \Delta V_{t+1}$ whenever $\Delta V_{t+1} > 0$. When the sequence ΔV_t eventually reachers below zero as t decreases to a value $\bar{t} - 1$ (which is inevitable when T is large enough), the monotonicity of ΔV_t no longer holds necessarily. However, for all $t < \bar{t}$, equation (A4) guarantees that $\Delta V_t < 0$. ■

Proof of Proposition 2. We focus on the case when scrutiny trumps power and an increase in $B < 0$ (i.e., a dencrease in its magnitude) in the four cases described in Proposition 2.[45] First, we expand the recursive solution formula of ΔW_t as follows:

$$\begin{aligned}\Delta W_t &= \Delta r + \frac{B}{2\delta \Delta W_{t+1}} + \delta \left[-\frac{B}{4(\delta \Delta W_{t+1})^2} + P_{22}(0) - P_{12}(0) \right] \Delta W_{t+1} \\ &= \Delta r + \frac{B}{4\delta \Delta W_{t+1}} + \delta \Delta \tilde{P}_0 \Delta W_{t+1} \quad \textit{with} \quad \Delta \tilde{P}_0 \overset{def}{\equiv} P_{22}(0) - P_{12}(0).\end{aligned}$$

As $B < 0$, the right hand side expression is increasing in both B and ΔW_{t+1}. Therefore, when B increases towards 0, the whole path $(\Delta W_t)_{t=1,\ldots,T}$ increases.

It gets more complicated to show the monotonicity of the path of $(\Delta V_t)_{t=1,\ldots,T}$ when B changes, since this sequence also depends directly on the sequence $(\Delta W_t)_{t=1,\ldots,T}$. To do so, we first write the solution formula of ΔV_t in a more tractable way:

$$\begin{aligned}\Delta V_t &= \frac{\rho B}{2\delta \Delta W_{t+1}} + \delta \left[-\frac{B}{4(\delta \Delta W_{t+1})^2} + \Delta \tilde{P}_0 \right] \Delta V_{t+1} \\ &= \frac{B}{2\delta \Delta W_{t+1}} \left[\rho - \frac{\Delta V_{t+1}}{2\Delta W_{t+1}} \right] + \delta \Delta \tilde{P}_0 \Delta V_{t+1} \quad . \end{aligned} \tag{A4}$$

[45] Because ΔW_T and ΔV_T depend directly on β_2 and β_1, a change in B does not guarantee a monotonic change in ΔW_T and ΔV_T. The comparative statics still hold separately with respect to changes in the β_s's and γ_s, but only approximately with respect to a change in B.

Next, note that the difference between ΔV_t and $\rho \Delta W_t$ is the discounted sum of the stream of Δr, with the discount factors being the products of the by-period discount factor $\delta \Delta \tilde{P}_t$. This statement is best proved by induction from $t = T$ down to $t = 0$. Indeed, denote recursively this difference as R_{t+1} in $\Delta V_{t+1} + R_{t+1} = \rho \Delta W_{t+1}$, we obtain $\Delta V_t + R_t = \rho \Delta W_{t+1}$ with $R_t = \Delta r_t + \delta \Delta \tilde{P}_t$. This recursive formula implies that R_t is a discounted sum of the stream of Δr.

Each discount factor $\delta \Delta \tilde{P}_t = \delta \left[-\frac{B}{4(\delta \Delta W_{t+1})^2} + P_{22}(0) - P_{12}(0) \right]$ decreases as B increases towards 0, since ΔW_{t+1} increases while $|B|$ decreases. Hence the compound products of those discount factors over $t \in \{k+1, \ldots, T\}$ decrease as well. Therefore, R decreases when B increases. Since $\Delta V_t = \rho \Delta W_t - R_t$, it follows that when B increases, ΔV_t increases even more than ΔW_t, therefore ΔV_t is increasing in B. ■

Remark that, as the whole path of $(\Delta V_t)_{t=1,\ldots,T}$ increases following an increase in B towards 0, it follows that the moment $\bar{t}$ through which ΔV_t switches sign (from negative before $\bar{t}$ to positive after $\bar{t}$) decreases. That is, ΔV_t switches sign earlier, thus the adverse effect of promotion on connected firm's value becomes less prevalent.

B Empirical methodology

B.1 Semi-parametric estimation of heterogeneous effects

Following Do et al. (2017), we modify equation 4's baseline RDD specification to examine the heterogeneous effects of having Congress-level connection on firm value as a function $\beta(\cdot)$ of a variable of interest x:

$$CAR_{idt} = \beta(x)Win_{pt} + \delta_W(x)VS_{pt}\mathbb{1}_{\{VS_{pt}\geq 50\%\}} + \delta_L(x)VS_{pt}\mathbb{1}_{\{VS_{pt}<50\%\}} + \varepsilon_{idpt}. \tag{A5}$$

The function $\beta(\cdot)$ is estimated from semi-parametric local linear regressions based on equation 4 at each percentile of x (the focal point). In each local regression, observations are weighted by a Gaussian kernel function of the percentile of x around the focal point, with a bandwidth equal to 20% of the total range (the shape of the estimated function $\beta(\cdot)$ remains robust to a broad range of cross-validated bandwidth).