Political Connections, Incentives and Innovation:
Evidence from Contract-Level Data[*]

Jonathan Brogaard, Matthew Denes and Ran Duchin

November 2015

Abstract

This paper studies the relation between firms' political influence and the allocation, design, and real outcomes of government contracts. To separate the treatment effect of corporate political influence from the selection of politically active firms, we focus on campaign contributions in close elections. We find that politically connected firms are more likely to win a contract, tend to receive larger contracts, with longer durations, weaker incentive structures, and fewer competing bids, and successfully renegotiate contract amounts and deadlines. Consequently, these firms have better operating performance and higher levels of innovation. The estimates provide some of the cleanest estimates to date that political influence matters for firms' access to, and terms of, government contracts, and subsequently enhances innovation and long-term performance.

JEL Classification: D72, O31, P16

Keywords: political economy, political connections, campaign contributions, innovation

I.   Introduction

The literature on political economy offers diverging evidence on the value of political connections. Several studies find that firm value increases when firms establish political connections (Roberts (1990), Fisman (2001), and Faccio (2006)) and decreases when they lose political connections (Faccio and Parsley (2009)). Other studies find that politically connected firms suffer from higher agency problems and have lower valuations (Coates (2012) and Yu and Yu (2012)). While the value of political connections has been studied extensively, we know relatively little about the channels through which such connections enhance or reduce value. This paper investigates one such channel, the allocation and design of government contracts, and evaluates their real outcomes.

An innovation in our paper is to use procurement contract-level data to study detailed contractual agreements awarded by the federal government to the private sector. The paper seeks to answer two questions. First, how does corporate political activism affect the allocation of government contracts and the contractual features of awarded contracts, including their incentive structure, duration, and renegotiation terms? Second, what are the implications for firms' output and value?

The focus on procurement contracts is motivated by several factors. First, these contracts capture substantial government spending ($409.8 billion a year on average, representing 38.9% of the total annual government expenditure). Second, this setting allows us to observe key information about the terms of each contract, including its incentive structure, duration, and subsequent renegotiation. Third, these contracts can be directly linked to individual firms over well-identified time intervals, generating both within-firm and across-firm variation in government spending.

We collect detailed data on procurement contracts between 2000 and 2012, which cover over $5.3 trillion in government spending. We hand-match the data to Compustat based on firm name and identify 1,223 firms that received a total of $1.3 trillion in government contracts during the sample period. The sample contains 104,661 contracts awarded to these firms. The average firm receives $214.4 million in a given year, with a mean duration of 1.3 years.

We measure corporate political activism using firms' campaign contributions to political candidates. This measure has two important advantages. First, it allows for a comparison of firms that contributed to a winning politician to firms that contributed to a losing politician, thus holding constant the firm's political activism through campaign contributions. Second, it allows for a separation between the formation of political connections and contract allocation, thus mitigating simultaneity concerns.

To separate the treatment effect of corporate political activism from the selection of politically active firms, we focus on campaign contributions in close elections. We compare the outcomes of firms connected to politicians who win a close election to those connected politicians who loss a close election. The identifying assumption is that there is randomness in the outcome of an ex-post close election (Lee (2008)). This setting is akin to a regression discontinuity design that isolates exogenous changes in firms' political influence. Specifically, our empirical analyses study how contributions to a political campaign in close elections affect contract allocation, design, and outcomes *after* the campaign is over and the candidate has either won or lost the close election.

We start by showing that, consistent with prior evidence (Goldman, Rocholl, and So (2013) and Tahoun (2014)), politically connected firms are more likely to receive government contracts. In particular, the estimates suggest that firms contributing to a winning politician in a

close election are 1.7% more likely to receive a contract. This effect is highly statistically significant and holds after controlling for firm-level characteristics, as well as unobservable time and industry effects.

The allocation of contracts to politically connected firms is consistent with several interpretations. One interpretation is that politically connected firms receive government benefits in the form of favorable contract allocations. This view is consistent with distortive rent extraction by politicians (Shleifer and Vishny (1994)) and firms (Krueger (1974) and Stulz (2005)). An alternative interpretation is that political connections provide government officials with valuable information, thereby mitigating information frictions and resulting in better allocation of government contracts (Downs (1957)).

A third possibility is that firms' political connections do not materially affect the efficacy of government contracts. Under this view, the terms of procurement contracts will mitigate any concerns about the inefficient allocation or use of federal capital. For example, these contracts may be designed to monitor and incentivize firms through structured payoff schedules, pay-for-performance, and penalties for low quality or untimely execution.

To investigate these possibilities, we provide novel evidence on the effect of political influence on the terms of government contracts. First, we examine the contracts' incentive structures by studying how they award firms for the quality and timeliness of providing products or services.[1] We find that firms contributing to a winning politician in a close election are 0.8% to 1.2% more likely to receive contracts with fewer incentives.

Second, firms contributing to a winning politician in a close election receive contracts with larger awards, later completion dates, and fewer competing bids. In particular, firms whose

---

[1] Contracts with types of "Fixed Price Incentive", "Fixed Price Award Fee", "Fixed Price Level of Effort", "Cost Plus Incentive", "Cost Plus Award Fee", and "Cost Plus Fixed Fee".

political influence increases through close elections receive contracts that are 6.7% larger at signing, on average. Further, they are 1.8% more likely to receive a longer deadline. Moreover, when contracts are renegotiated, these firms are 2.0% more likely to receive increases in the contract award and 1.8% more likely to receive extensions in contract completion dates. Finally, these firms are 1.3% to 1.8% more likely to win contracts with less competition.

Taken together, these findings are more consistent with the rent extraction view. They suggest that concerns about distortive political favoritism and rent extraction are not mitigated, and, in fact, exacerbated by the details of the contractual agreements that accompany government investment. In particular, not only are politically connected firms more likely to win government contracts, they also receive better terms, including longer deadlines, fewer restrictions and penalties, and more favorable renegotiations.

In subsequent analyses, we exploit cross-sectional variation in the influence of politicians. Specifically, we investigate campaign contributions to powerful politicians who win or lose in close elections. We define powerful politicians as members of the Committee on Appropriations, Budget or Energy, which play a key role in the allocation of procurement contracts. We find that connections to powerful politicians have stronger effects on the allocation, design, and renegotiations of government contracts. In particular, firms contributing to powerful politicians who win in close elections are 6.1% more likely to receive contracts, 3.9% more likely to win contracts with fewer incentives and 5.5% more likely to be awarded contracts with less competition. These effects are 3.3 to 4.2 times larger compared to the effects of an average politician who wins in a close election.

In our final set of results, we study the real outcomes of political influence and government contracts. First, we examine overall value implications. To overcome endogeneity

concerns, we use a two-stage least squares instrumentals variables approach. In the first stage, we estimate the effect of contributing to a winning politician in a close election on the likelihood of receiving a government contract. In the second stage, we estimate the effect of the first-stage predicted value on the operating performance of the firms, as measured by return on assets (ROA). Our findings show that firms contributing to a winning politician in a close election are 1.5% more likely to receive contracts, and consequently have 0.8% higher ROA. Interpreted broadly, these findings suggest that politically active firms benefit from the favorable allocations and contractual terms resulting from the increase in political influence around close elections.

Second, we investigate the ex-post channels through which political connections and government contracts affect firm value. Our research question is whether political influence and consequently government contracts spur private sector innovation. The focus on innovation is motivated by the stated goal of procurement contracts and government spending to spur innovation (Bayh-Dole Act (1980)). We measure innovation using the adjusted number of patents and patent citations. These measures are based on Griliches (1990), who finds that patents are a better measure of innovation than research and development expenditures and on Hall, Jaffe, and Trajtenberg (2006), who show that patent citations are a measure of the value of innovation.

We find that, on average, government spending fosters private sector innovation. Using a similar two-stage least square instrument variable approach, we find that receiving a procurement contract is associated with an increase in the scale and novelty of innovation, as measured by the adjusted number of patents and patent citations, respectively. On average, firm-level patent production increases by 5.8% in the four-year period after winning a contract and patent citations increase by 5.3%.

Overall, the results in this article document a strong relation between a firm's political connections and the allocation, design, and real outcomes of government contracts. Our findings suggest that connections improve firms' access to government investment through the allocation and terms of government contracts. Furthermore, these contracts spur firms to innovate and consequently increase their long-term performance and value.

Our paper contributes to prior research on the value of firms' political connections (Akey (2015), Cooper, Gulen, and Ovtchinnikov (2010), Chen, Parsley, and Yang (2013)). So far, empirical research has focused mostly on firms' access to capital. Prior work finds that politically connected firms have better access to capital (Cull and Xu (2005), Dinc (2005), Johnson and Mitton (2003), and Khwaja and Mian (2005)) and are more likely to be bailed out (Faccio, Masulis, and McConnell (2006) and Duchin and Sosyura (2012)). Our contribution lies in identifying the direct contractual mechanisms that govern the efficacy of both the allocation of government capital and its subsequent use for innovation and value creation. As such, our paper is also related to the growing literature that studies firm-level innovation and provides evidence on the relation between political connections and innovative activity (Ovtchinnikov, Reza and Wu (2014) and Kim (2015)). The focus on innovation is driven by recent studies, such as Kogan et al. (2012), which show that innovation is an important source of long-term economic growth.

II.   Data

The U.S. government commonly is a customer for firms. Contract-level data allow us to study how political connections affect contracting with the government and its long-term impact on firm value and innovation. This section details our novel dataset of contracts, which is hand-matched to political contributions, patents and financial variables.

A. Contracting with the U.S. Government

The U.S. government often enters into contracts with firms and individuals. A contract is initiated when an agency of the federal government determines that it requires a good or service. A contracting officer for the agency provides information about the contract on the Federal Business Opportunities website through a Request For Proposal. Firms have the opportunity to review the proposal and submit offers for the contract, which are then evaluated by agency employees. Contracting with the government has been increasingly unified, particularly with the creation of the Federal Acquisition Regulation in 1984. These regulations provide guidelines for many aspects of contracts, including bidding, competition and management (Feldman and Keyes (2011)).

The Federal Procurement Data System (FPDS) tracks procurement contracts of the federal government of the United States. This comprehensive system provides detailed information on nearly all federal contracts from about 65 different branches, departments and agencies of the federal government. The U.S. government began providing data on procurement contracts in 1978, though reporting is often incomplete prior to 2000 (Liebman and Mahoney (2013)). The Federal Funding Accountability and Transparency Act of 2006 led to the creation of the USAspending.gov website, which provides data from the FPDS starting in 2000. Specifically, the system reports comprehensive details on any contract with a transaction value of at least $2,500 ($25,000 prior to 2004). This study focuses on the contract award, length, type (such as incentive-based) and competition, in addition to renegotiation for award changes and extensions. While the FPDS includes data on classified contracts, it does not contain records on the U.S. Postal Service and certain legislative and judicial branches.

Table 1 summarizes the contracts observed in the sample, renegotiation of these contracts

and the industrial composition of recipient firms.

Insert Table 1 About Here

We restrict the sample to those contracts whose total award is at least $1 million. Panel A explores contract-level details at initiation. The sample consists of 104,661 contracts awarded to Compustat firms from 2000 to 2012. The average initial award of a contract is $4.2 million, with a mean total award of $12.8 million from contract signing to its completion. A contract typically lasts for just over a year and there is substantial variation in the length of a contract. Contracts with the government can vary in their type and we focus on two types of contracts. First, we study contracts that include incentives to induce a firm to complete the contract on time and with high quality, which comprises 19.9% of awards. For example, a "Cost Plus Award Fee" contract sets a fee at the contract signing that the agency can award based on an evaluation of the firm's performance (Feldman and Keyes (2011)). Second, we analyze contracts that use performance-based acquisition methods, which includes 19.2% of awards. These contracts specifically include a performance work statement with standards for measuring contract performance and compensate firms for meeting these standards (Federal Acquisition Regulation (2014)). The appendix details contracts with these features.

   After initiation, a firm can renegotiate a contract. Panel B of Table 1 details when and how renegotiation occurs. We observe changes to 75.9% of contracts and focus on modifications in the award and length of a contract. Over 800,000 contract level changes occur from 2000 to 2012 and the average contract has 7 modifications. The average award increase is $1.5 million and the mean reduction is just $0.4 million. Lastly, extensions of contract length are 0.7 years, on

average.

The government contracts with many industries and Panel C highlights the count and size of contracts by industry. Business equipment and manufacturing receive the most contracts both in terms of the number of contracts and their total value, summarized in the last column of the table. Business equipment collected $444.1 billion of government spending through 41,874 contracts, while manufacturing won $562.2 billion in 28,887 contracts. Overall, the dataset allows us to observe $1.3 trillion in contracts awarded to 1,223 firms.

B. Political Connections

Each election cycle provides firms with the opportunity to contribute to politicians. Firms allocate funding to candidates running for office in the U.S. Senate or House of Representatives using political action committees (PACs). In particular, a firm forms a PAC that contributes to a politician's election PAC, which finally distributes a firm's contribution to the politician's campaign. Firms can also donate to leadership PACs, which cannot use contributions on direct campaign expenses.[2]

The Federal Election Commission (FEC) provides detailed data on contributions and elections. We hand-match contributions from firms to our dataset. We additionally incorporate election data into our analysis. The FEC provides data on the outcomes of all U.S. Senate and House elections, including vote tallies by candidate. These data allow for contributions to be conditioned on election outcomes.

Lastly, political connections are formed based on firm-level contributions to candidates running for election in the Senate or House. Our identification strategy exploits exogenous

---

[2] We do not include Super PACs in our data, since it is against the law for contributions to these PACs to be used for a politician's campaign.

variation in political connections from close, general elections. For each election cycle, we construct the shock to a firm's political connectedness as follows:

$$Close\ elections_{it} = WinCount_{it} - LoseCount_{it}, \qquad (1)$$

where $WinCount_{it}$ is a count of the number of winning politicians in close, general elections that firm i is connected to in election cycle t and $LoseCount_{it}$ is a count of the number of losing politicians in close, general elections that firm i is connected to in election cycle t. Close elections are defined as a margin of victory of less than five percent (Lee (2008) and Akey (2015)). We study heterogeneity in political connections by looking at politicians that might exert greater influence in the allocation of contracts and the location of politicians relative to a firm's headquarters. Data on committee membership is provided by Charles Stewart.[3] We define powerful politicians as those politicians who are members of the Committee on Appropriations, Budget or Energy[4] in the Senate or the House. We define local politicians as those politicians from the state of a firm's headquarters and distant politicians as politicians not from the state of a firm's headquarters.

C. Measuring Innovation

Innovation is considered an important driver of long-term economic growth (Kogan et al. (2012)). The main proxy for firm-level innovation is patents. While research and development (R&D) expenditure is a firm's allocation of capital towards innovative activity, it does not capture the productive output of its investment. Griliches (1990) demonstrates that patenting activity is a better measure of research productivity than R&D spending. Further, Hall, Jaffe and

---

[3] See http://web.mit.edu/17.251/www/data_page.html.

[4] Depending on the house of Congress, the Committee on Energy is referred to as Resources, Transportation and Infrastructure, or Environment and Public Works Committee.

Trajtenberg (2005) highlight that patents alone do not indicate technological breakthroughs. Patent citations are a proxy of the value of a firm's innovations.

The United States Patent and Trademark Office (USPTO) issues patents and trademarks, in addition to providing comprehensive data on these forms of intellectual property. The NBER dataset, expanded by Kogan et al. (2012), is the source of data on firm-level patent activity in our sample. The count of patents and patent citations are subject to truncation bias. For the count of patents, Seru (2014) reports that the average time from application to granting of a patent is two years. Patent citations are prone to a similar effect, since patents are often not cited until several years after being granted. To correct for these biases in our sample, both the number of patents and patent citations are divided by their annual average for a particular patent's technology class. Technology class is a grouping of patents that is analogous to an industry classification. These variables are referred to as adjusted number of patents and adjusted patent citations.

D. Sample Summary

The sample includes all firms in Compustat between election years 2002 and 2010 and who contributed to a politician in a close election, excluding financial firms (SIC 6000-6999) and regulated utilities (SIC 4900-4999). Table 2 summarizes the firm characteristics, contracts, political contributions and patent activity of the sample.

Insert Table 2 about Here

We include the following firm characteristics as control variables, depending on the analysis. *Size* is the natural log of firm assets. *Profitability* is measured as earnings before interest, taxes

and depreciation over total assets of the firm. *Tangibility* is the ratio of net property, plant and equipment to total assets. *Book leverage* is the book value of debt over total assets. *Cash/Assets* is measured as cash and short-term investment divided by total assets. *Market-to-book* is the market value of the firm's equity and its book value of debt relative to the firm's assets. *HHI* is the Herfindahl-Hirschman Index of sales for the industry (at the SIC level). *Profitability*, *Book leverage* and *Market-to-book* are winsorized at the 1% level in each tail. The sample of firms contributing to a politician in a close election consists of 1,398 firm-election years. Panel A details firm characteristics. Firms are 28.2% levered and hold about 11.4% of their assets in cash and short-term investments.

Panel B summarizes contract data by firm-election year. *Contract indicator* equals one if a firm receives at least one contract in the year following an election. *Award amount* is the total amount of awards to a firm in a particular year. *Length* is the average contract length (in years). *Incentives* is the percent of contract awards with incentives, *Performance* is the percent of contract awards with performance-based awards and *Competition* is the percent of contract awards with competition, as defined in the appendix. *Bids* is the number of offers received for a contract. *Percent award change* is the average percent change in contract award and *Extension* is the average contract extension. Contracts are awarded in 34.5% of firm-election years and the average size of contracts awarded in a year is $790.3 million. Firms receive incentives in about 8.4% of contracts and 19.6% of contracts are competitive. The average length for a firm's contracts is over 1.2 years. Firms receive an average award increase of 7.6% and the mean extension is 0.7 years.

Political connections are detailed in Panel C. We use contributions from firm PACs to candidate PACs to proxy for political connections, as described in Section B above. *Close*

elections is the shock to firm's political connection during a general election. *Powerful connections* is *Close elections* for politicians who are a member of the Committee on Appropriations, Budget or Energy. *Distant connections* is *Close elections* for politicians outside of the state of the firm's headquarters. The median firm in a close election is connected to one winner. The average firm is connected to 0.5 powerful politicians and has 1.1 distant political connections.

Lastly, Panel D summarizes innovation. We measure innovative activity, using number of patents and patent citations. Additionally, we incorporate self-citations and patent originality as proxies for a patent's importance. Self-citations are defined as a firm's citations to its own patents and proxy for a firm's internal knowledge spillovers. Lastly, a patent's originality is defined by its citations to different technology classes. It is measured as one minus the Herfindahl-Hirschman Index of citations to technology classes. Specifically, *Number of patents* is the number of patents awarded to the firm in a year and *Patent citations* is the average citations per patent awarded in a year. *Self-citations* is the average citations to a firm's own patents per patent awarded in a year and *Originality* measures the diversity of citations made by a patent. These measures of innovation are adjusted by dividing by their annual-technology class average. The mean number of patents in the sample is 33.6 patents and the adjusted number of patents is 0.55. The distribution of patent counts is skewed right, as the median firm produces no patents in a year. Patent citations are a measure of a patent's innovative impact. The average number of patent citations per year is 0.53 and the adjusted number of patents is 0.34, with a distribution that is also skewed right. The average firm has 0.23 adjusted self-citations and an adjusted originality of 1.00.

III.   Political Connections, Contracts and Renegotiation

Sections III and IV present the main results in the paper. First, section III discusses our strategy for identifying the effect of political connections on allocation of contracts. Next, this section studies how connections influence contract-level characteristics, such as amount, length and incentives, in addition to renegotiation.

A. Identification Strategy

Political contributions are not random. Connected firms select politicians to donate to and these decisions might be correlated with unobserved firm heterogeneity. A main empirical challenge in studying how connections affect contract allocation is reverse causality. For example, in anticipation of winning contracts in the future, a firm might increase its contribution to politicians. Then, firm-level connections do not increase contracts, but instead contracts lead to increases in donations to politicians.

To overcome this empirical problem, we exploit close elections as a form of exogenous variation in the portfolio of a firm's connections. Specifically, we define close elections as general elections for the U.S. Congress from 2002 to 2010 when the margin of victory is less than five percent. Our approach is similar to Lee (2008) and Akey (2015). The identifying assumption is that firm's cannot perfectly predict the outcomes of elections when the ex-post margin of victory is less than five percent. Our measure of the shock to a firm's portfolio is defined in equation (1) above. Specifically, *Close elections* is a count of the number of winning politicians that a firm contributes to minus the number of losing politicians it donates to in an election cycle. We restrict our sample to firms contributing to at least one politician in a close election.

15

Our baseline specification is:

$$\Delta Y_{it} = \alpha + \beta \cdot Close\ elections_{it} + \gamma \Delta X_{it} + \mu_t + \eta_j + \varepsilon_{it}, \qquad (2)$$

where ΔY_{it} is the change in the outcome of interest in the four years after a close election compared to the four years prior to a close election and X_{it} is a vector firm characteristics including size and market-to-book. A concern might be that industry heterogeneity drives the relation between political connections and contract allocation. To alleviate this potential issue, we include industry fixed effects (η_j) to control for time-invariant industry heterogeneity in industry j.[5] Additionally, we include election-year fixed effects (μ_t) and standard errors are clustered by firm. The coefficient of interest is β and captures the marginal effect of an increase in a firm's connections by one politician.

Connections might vary in their importance. To study whether particular politicians exert more influence in the allocation of contracts, we focus on politicians who are members of the Committee on Appropriations, Budget or Energy in the Senate or the House. We repeat the analysis above and define $Powerful\ politicians_{it}$ as firm i's connections in close elections to powerful politicians in election cycle t. This allows us to evaluate the ability of committee members to influence the allocation of contracts to firms contributing to their campaign.

Local economic conditions might drive a firm's connectedness and the allocation of contracts to a region. Local politicians might tilt the provision of contracts towards local firms, confounding the interpretation of a causal effect of a firm's connectedness. To isolate this concern, we repeat the analysis above and study political connections relative to the location of a firm's headquarters. We define $Distant\ connections_{it}$ as firm i's connections in close elections to politicians outside of the state of the firm's headquarters in election cycle t. This measure

---

[5] Results are robust to specifications without industry fixed effects.

removes local politicians from the construction of the connectedness shock to examine if the effect is driven by a firm's location.

B.   Allocation of Contracts

This section presents the first set of results for the effect of political connections on the amount and length of contracts awarded by the U.S. federal government. We find that firms contributing to politicians are more likely to win contracts, win a greater number of contracts and that these contracts are larger. Further, we report that connected firms are more likely to receive later completion dates.

Insert Table 3 About Here

Table 3 details the results on how political connections affect contract amount and length. Each specification is estimated as in equation (2) above. Specifically, we focus on the sample of firms contributing to politicians in close elections, as defined by a margin of victory of less than five percent, in general elections from 2002-2010. Models (1) and (4) are probit specifications. Each dependent variable is measured as the change from four years before the close election to four years after the close election.

The first column reports the marginal effect of being connected to a winner in a close election. We find that firms donating to a winner in a close election are 1.7% more likely to receive an increase in contract awards in the following four years. The second column measures the change in the number of contracts from before a close election to afterwards. On average, a firm receives 4.6 more contracts after an exogenous increase in its political connections. Lastly, in column 3, we find that a connected firm receives a 6.7% increase in the amount awarded by a

contract at signing. Taken together, these results are consistent with prior studies (Goldman, Rocholl, and So (2013) and Tahoun (2014)), which document that connected firms are more likely to receive government contracts.

Our novel dataset on contracts allow us to study how the features of contracts change with political connections. Columns 4 and 5 of Table 3 are our first tests exploiting these unique aspects of our data. First, column 4 studies whether firms connected to winning candidates in close elections receive an increase in the duration of contracts, compared to those contracts awarded before the close election. We report that connected firms are 1.8% more likely to win contracts with longer durations. Additionally, we find in column 5 that connected firms win longer contracts on average. In addition to showing that political connections lead to larger contracts, this section shows that these connections affect the terms of contracts by increasing their duration.

C. Contract Design

In addition to affecting the allocation of contracts, do political connections influence contract design? The richness of our dataset allows for us to observe the type of each contract. In particular, we can view the incentive structure for every contract, whether it was competitive and how many bids it received. We find that firms connected to winning candidates in close elections receive contracts with fewer incentives and performance-based awards, and these contracts are less competitive.

For tests of contract design, we construct two measures of incentives and of competition. First, we define incentives as those contracts which award firms for timely completion and high quality. There are several types of contracts with incentives, which are described in the appendix.

We also examine contracts that use performance-based acquisition methods. These contracts award firms for meeting pre-specified project standards. For each measure, we study whether firms receive fewer contracts with these features when connected to a winning politician in a close election. The specifications include an indicator equaling one if, on average, a firm receives fewer contracts with either incentives or performance-based awards as a percent of total contracts after a close election. Second, we study if connections affect contract competition. Similarly, we construct an indicator for contract competition and, additionally, examine the number of bids on average after close elections. Each measure for these specifications compares the average four years prior to a close election to the four following years.

Insert Table 4 About Here

Table 4 reports the results of these models. Column 1 studies the effect of connections on contract-level incentives. We find that firms connected to a winning candidate in a close election are 1.2% more likely to subsequently win contracts with fewer incentives. Column 2 reports similar results for contract with performance-based awards. We show that connected firms are 0.8% more likely to win contracts with less performance-based compensation. Next, we turn our attention to contract competition. Column 3 examines whether politicians influence contract-level competition. We find that firms contributing to winning candidates 1.3% are more likely to win less competitive contract. This result is corroborated with bids, an ex-post measure of competitiveness. Column 4 reports that connected firms are 1.8% more likely to win contracts with fewer bids. Together these results portray a broader picture of the role of political influence in contracts. Beyond affecting the allocation of contracts, politicians alter the incentive structure

and competitiveness of federal spending.

D. Renegotiation

Contract changes after the initial signing are one further aspect that can be studied using our novel dataset. After a contract is signed between a firm and the federal government, it can be renegotiated or altered. Table 1, Panel B, highlights that renegotiation is frequently observed, with just under 76% of all contracts being adjusted. We focus on two prevailing forms of renegotiation: changes to a contract's award and deadline extensions. We find that renegotiation is an additional lever for connections to influence on behalf of connected firms, leading to increases in a contract's award and longer extensions.

Similar to section III.C, we measure contract changes around close elections. We first look at adjustments to a contract's award. We compare the average award in the four years after a close election to the four year prior. In addition to studying whether firms receive increases in award, we also estimate the award change. Next, we examine if connected firms receive longer extensions.

Insert Table 5 About Here

Table 5 reports the results on the role of political connection in contract renegotiation. Column 1 reports that connected firms in close elections are 2.0% more likely to receive an award increase in the four years following a close election, relative to the four prior years. Next, column 2 estimates the magnitude of the award change after signing. We find that a connection to a winning candidate in a close election leads to a 7.4% increase in the average award. Lastly,

column 3 studies the change to contract deadlines around close elections. We show that connected firms are 1.8% more likely to receive contract extensions. These results show that political connections affect both existing contractual agreements between firms and the federal government and the allocation and design of contracts as demonstrated above. This provides evidence on the expansive influence of political connections, extending from initial contract value and deadlines to contractual incentives, competition and renegotiation.

E. Powerful Politicians

The baseline results presented above document the marginal effect of a firm increasing its connectedness to a winning candidate in a close election. If the political connection measure is able to capture preferential treatment for firms, then we may be able to observe additional cross-sectional heterogeneity by studying politicians who might have more power over discretionary federal spending. We focus on politicians serving on the Committee on Appropriations, Budget or Energy (Resources, Transportation and Infrastructure, or Environment and Public Works Committees, depending on the house of Congress) in the Senate or the House. These committees arguably offer their members substantial influence over the allotment of federal expenditures. For the sample, we repeat the analysis for contract allocation, design and renegotiation. We find considerable increases in the role of these powerful politicians in the same aspects of contracting.

Insert Table 6 About Here

Panel A of Table 6 reports the specifications for contract allocation. This analysis narrows its focus to powerful politicians in the same sample. We find that a connected firm is

6.1% more likely to receive an increase in contracts. This effect is statistically significant and economically meaningful, particularly compared to the estimate of 1.7% from Table 3, Column 1. Columns 2 and 3 report a more than doubling of the effects for number of contracts awarded and the size of these contracts compared to the baseline specifications. Turning to contract duration, we find that firms contributing to a winning powerful politician in a close election are 5.6% more likely to receive contracts with longer durations. This is a relatively large effect, compared to a 1.8% estimate in the sample of all politicians in close elections. The first panel shows that there is heterogeneity in the influence of politicians and finds evidence that politicians on powerful committees wield greater discretion in the allocation of contracts.

The analysis of the role of powerful politicians on contract design is reported in Panel B of Table 6. We find that powerful politicians adjust contract-level incentives. In particular, connected firms are 3.9% more likely to receive fewer contracts with incentives, compared to 1.2% in the overall sample of close elections. This effect is statistically significant and economically meaningful and is more than three times larger than the baseline effect. While we find a positive coefficient for performance, it is not statistically significant. Next, we examine the two measures of contract competition. We show that firms contributing to powerful politicians are 5.5% more likely to receive contracts with less competition and 6.7% more likely to win contracts with fewer bids. Both estimates are more than a three times increase in magnitude relative to the effects reported in Table 4. These results provide evidence that powerful politicians affect contract design and that this effect is quite large relative to the average estimates.

Table 6, Panel C provides the specifications for the effect of powerful politicians on contract renegotiation. We find that connected firms in close elections are 6.0% more likely to

renegotiate for increases in contract awards, which is statistically significant and economically meaningful. Column 1 of Table 5 reports an average effect of 2.0%, demonstrating that politicians considerably increase the likelihood of firms successfully renegotiating. We show that the estimate on the effect of powerful connections on award changes is positive, but it is not statistically significant. In the last model, we report that firms connected to powerful committee members are 4.5% more likely to win contract extensions.

Building on the initial set of findings, the results in this section offer a more extensive view of the far-reaching effects of political connections. We show that powerful politicians are involved in similar aspects of contracts, from allocation to design and subsequent renegotiation. The estimates suggest that this role is substantially larger relative to the average politician in a close election. We find that politicians on committees having discretionary sway in federal spending have a two to three times larger average effect.

F. Distant Connections

Local connections might allocate contracts, and adjust their terms, in favor of local firms, which could confound a causal interpretation of political connections. These politicians might not influence the provision of contracts because of the connections, but rather because of the firm's location. To alleviate this concern, we repeat the analysis above excluding connections in the state of a firm's headquarters. This measure aims to remove the effect of local politicians from the construction of the shock to a firm's political connections. We find nearly the same results for contract allocation, design and renegotiation. This suggests that our effects are not driven by the location of a firm relative to a politician.

Insert Table 7 About Here

Table 7, Panel A, reports the results from the models on contract allocation. We find largely identical results compared to our baseline models in Table 3. Column 1 finds that a firm connected to a distant candidate winning in a close election is 1.7% more likely to win more contracts following the election. This is the same as found in Column 1 of Table 3. We examine the specifications for the number of contracts and award amount, obtaining quite similar estimates as the full sample of politicians in close elections. The role of distant connections in contract allocation is largely the same compared to the baseline estimates, suggesting that local factors do not drive these findings.

In Panel B of Table 7, we study the effect of distant connections on contract design. We examine the influence of these politicians on the incentive structure and competition in contracts. Columns 1 and 2 find that firms connected to distant winners in close elections are 1.3% more likely to receive contracts with incentives and 0.8% more likely to win awards with performance-based awards. These estimates are nearly identical to those in Table 4, for the main models. Columns 3 and 4 report that firms connected to distant politicians are 1.4% more likely to receive contracts with less competition and 1.8% more likely to win contracts with fewer bids. These results provide further evidence that local favoritism does not drive our results.

Next, we repeat the analysis on contract renegotiation in Table 7, Panel C. Columns 1 and 2 report that firms connected to distant politicians are 1.9% more likely to receive increases in contract awards and these awards increase by 6.9%. Column 3 shows that firms contributing to distant candidates winning in a close election are 1.7% more likely to renegotiate for deadline extensions. These findings are nearly the same as those in the baseline models. Taken together,

we find no evidence that local politicians favor local firms and report similar, and often identical, results for distant connections.

IV.   Innovation, Performance, and Value

In this section, we study the link between political connections and real economic outcomes from receiving government contracts: firm performance and innovative activity. First, we discuss our identification strategy for analyzing these results. We begin by providing evidence on both long-term stock market-based and accounting-based measures of performance. Next, we provide evidence on the scale and novelty of innovation, as measured by the number of patents and patent citations.

A. *Identification Strategy for the Effects of Contracts*

Section 3 demonstrated that political connections alter the allocation, design and renegotiation of contracts. Now, we ask whether receiving contracts affects firm-level outcomes. Innovation and winning federal contracts are likely to be endogenously determined. To identify the effect of winning a contract on firm-level performance and innovation, we use an instrumental variable (IV) approach, employing connections to politicians in close elections as an instrument for receiving contracts from the government. The empirical specification for the tests in this section is:

$$Y_{it} = \alpha + \beta \cdot Contracts^*_{it} + \gamma X_{it} + \mu_t + \eta_j + \varepsilon_{it}, \qquad (3)$$

where Y is the outcome of interest, $Contracts^*_{it}$ is the predicted value from the first-stage regression and X is a vector of firm characteristics often including size, profitability, tangibility, book leverage, cash holdings, market-to-book, and the Herfindahl-Hirschman Index. All of the

models control for unobserved, time-invariant industry heterogeneity (η_j), in addition to year fixed effects (μ_t). The main coefficient of interest is β, which captures the effect of contracts on the outcome variable.

To satisfy the identification assumptions of this empirical design, close elections and contracts must be significantly correlated (relevance) and close elections must be uncorrelated with the error term of the true model (exclusion). We can empirically test the relevance restriction by testing whether firms connected to politicians receive a statistically significant change in contracts. Table 9, Column 1 reports the first stage results for the IV specification. We find that a firm connected to a candidate in a winning election is 1.5% more likely to receive an increase in contracts in the following four years. The partial F-test statistic is 13.3, suggesting that the instrument is not weak. Since we cannot observe the true model, we cannot test the exclusion restriction. For this restriction to be violated, contributions to politicians in close elections would need to affect the outcome of interest beyond its effect through the firm-level political connection, those observable variables included in the model, year fixed effects and time-invariant, unobserved industry heterogeneity. Since close elections are random, it is likely that the exclusion restriction is satisfied.

B. *Long-Term Value and Performance*

First, we turn our attention to long-term firm value and performance. In particular, we study the long-term performance and value of firms after receiving government contracts. We consider both market-based and accounting-based measures of performance and value.

We begin by studying the buy-and-hold abnormal returns (BHAR) after firms receive contracts from the government. A firm's BHAR is defined as:

$$BHAR_{it} = \prod_{j=1}^{J}(1 + r_{i,t+j}) - \prod_{j=1}^{J}(1 + r_{benchmark,t+j}), \qquad (4)$$

where $r_{i,t+j}$ is the return for firm i in period $t+j$, $r_{benchmark,t+j}$ is the benchmark return for firm i in period $t+j$, and J is the holding period. We use several benchmarks in calculating the BHARs. First, we measure the benchmark return as the industry average return (based on the two-, three- and four-digit SIC levels). Second, we match firms in close elections based on size and market-to-book ratios. Specifically, each firm in a close election is matched to the firm with the nearest market-to-book ratio whose size is within 30% of its own size. Third, we restrict the size and market-to-book matching to the same industry (at the two-level SIC). Fourth, we estimate a four-factor model, which includes the value-weighted CRSP market return, small minus big (SMB), high minus low (HML) and momentum. Lastly, we also estimate a five-factor model, including the same factors as the four-factor model and the Pastor and Stambaugh (2003) liquidity factor.

Insert Table 8 About Here

To estimate the differences between firms receiving contracts, we follow the identification strategy detailed above in equation (3). We regress BHARs on an indicator if a firm receives an increase in contracts, instrumented by close elections. We find that the buy-and-hold returns for firms receiving contracts are consistently positive. These findings are statistically significant for industry benchmark models and economically meaningful across all BHAR measures and estimation periods. For example, relative to firms in the same industry (at the two-digit SIC level), firms receiving contracts earn higher one-year returns of 1.6% and four-

year returns of 4.0%. Across all BHAR measures, the average one-year increase in returns is 1.3% and the average four-year boost in returns is 2.7%.

Next, we study firms' long-term performance as measured by their return on assets (ROA). Panel B of Table 8 reports the results of estimating equation (3), using close elections as an instrument for receiving contracts. The dependent variable in these specifications is a forward average of ROA. Column 1 examines the effect of winning a contract on ROA in one year. We find that an increase in contracts through a firm's connections to a winning politician leads to a 0.008 increase in ROA in the following year. This is a large increase relative to the sample mean of 0.025. Columns 2 to 4 report the results of average ROA in the following two to four years. We find that the effect of contracts on ROA persists, but slightly decreases, over the ensuing four years. These findings indicate that government contracts are an important channel through which political connections affect firm value and performance.

Taken together, the results in this section suggest that contracts have positive long-term consequences for firms receiving contracts, conditional on being a connected firm. We find that firms earn higher long-term returns and ROA increases over the following four years. In the next section, we provide evidence on one potential mechanism through which contracts foster long-term performance: the scale and novelty of the innovation activity undertaken by firms that win these contracts.

C. Innovation

In this section, we study the effect of contracts on firm innovation. First, we examine the scale of innovation by looking at patenting activity after receiving an increase in contracts. Next, we look at the effect of federal spending on the novelty of innovation, as proxied by patent citations. To

identify how contracts influence innovation, we use equation (3) above, which use close elections as an instrument for contracts.

Insert Table 9 About Here

Table 9 reports the results of contracts and patent production, including the first-stage results from the IV specification. We find that our instrument is relevant, as suggested by results in the previous section, and evidence of contracts leading to an increase in patenting activity. Column 1 reports the first-stage estimates from the IV models. We show that the close elections are statistically significant and economically meaningful. A firm connected to a politician in a close election is 1.5% more likely to receive an increase in contracts in the following four years. Column 2 reports the effect on average patenting activity in the four years after receiving an increase in contracts. We find that an increase in contracts through a firm's connections to a winning politician leads to a 0.032 increase in average patents during the following four years. This is 5.8% increase relative to the sample mean. Columns 3 and 4 split innovative activity in the first two years after receiving an increase in contracts and three to four years afterwards. We find a slightly larger effect of 0.040 in two years immediately after a firm receives contracts, which is a 7.3% increase relative to the sample mean. The average effect in three to four years is 0.023, which is a 4.8% increase relative to the sample mean. These results show receiving contracts from the government leads to higher firm-level patent creation.

Insert Table 10 About Here

While patent production is a straightforward measure of innovation, patent citations may

be a better proxy for the value of innovation. Table 10 studies the effect of contracts on patent novelty, as measured by patent citations. We examine three different proxies of patent novelty: overall citations, self citations and originality. Column 1 shows that contracts lead to an increase in the overall novelty of innovative activity. We find that receiving more contracts through a firm's connection to a winning candidate in a close election leads to a 0.018 increase in average patent citations during the following four years. This is a 5.3% increase relative to the sample mean. Column 3 reports on the effect of contracts on self citations, which is a measure of knowledge creation within a firm. We find a 0.012 increase in self citations, which is a 5.1% increase relative to the sample average. Lastly, we examine the effect of contracts on patent originality, which is a measure of the diversity of citations made by a patent. We show that contracts increase originality by 0.030, which is a 3.0% increase relative to the sample mean. Taken together, these results find evidence that, in addition to increasing patenting activity, contracts lead to more novel innovation.

Interpreted broadly, the findings in this section suggest that the effect of political connections on the allocation, design and renegotiation of contracts have real effects. We find that value and performance increases when firms receive more contracts from the government. Additionally, we report that contracts lead to higher levels of innovative activity, as measured by both the scale and novelty of firms' patents.

V.   Conclusion

Using hand-collected data on government contracts awarded to public firms, this article investigates how political connections alter the allocation, design, and outcomes of government contracts. We find that political connections enhance firms' access to government contracts by

increasing the likelihood of receiving a contract and by improving the terms of the awarded contracts. Firms receive larger awards with longer durations. Further, politicians weaken the incentive structure and competition within contracts and connected firms renegotiate successfully for increases in the award and extensions.

Additionally, we document the subsequent effects of receiving contracts. We find that long-term value and performance increases, using close elections as an instrument. We also show that contracts lead to increases in patent production and citations. Overall, we offer new evidence on the channels through which political connections affect firms' value and economic behavior.

Appendix

Section A of this appendix describes the variables examined in the paper. Section B details the matching procedure for linking contract data to Compustat firms.

A. Variable definitions

This section defines the main variables of the paper and their construction, providing the Compustat definition where applicable. U.S. federal contract data is from the Federal Procurement Data System (FPDS) and retrieved from USAspending.gov. We restrict the sample to those contracts whose total award, including any modifications after signing, is at least $1 million. We define a unique contract based on the combination of the PIID (unique FPDS identifier), DUNS number and department of the federal agency, and drop any contract with 100 or more modifications after signing. Additionally, we drop contracts with a negative or zero initial award or if, at the initial signing of the contract, the current completion date is earlier than the date of the initial award.

Patent data is provided by Kogan et al. (2012), which builds on the NBER patent data matched to Compustat firms. The underlying patent data is provided by the United States Patent and Trademark Office (USPTO). Campaign contributions and election data is from the Federal Election Commission.

The table details the definition and construction of the main variables of the paper.

Variable Name	Description	Source
Contract Increase	A binary variable equaling one if a firm receives an increase in the contract award in the four years following a close election compared to the four years preceding a close election.	FPDS through USASpending.gov
Contract Count	Change in the number of contracts awarded in the four years following a close election compared to the four years preceding a close election.	FPDS through USASpending.gov

Variable Name	Description	Source
Award Amount	Natural log of contracts awarded (in millions of dollars) in the four years following a close election compared to the four years preceding a close election	FPDS through USASpending.gov
Length Increase	A binary variable equaling one if a firm receives an increase in the average time to complete a contract (in years) in the four years following a close election compared to the four years preceding a close election	FPDS through USASpending.gov
Length	Change in the average time to complete a contract (in years) in the four years following a close election compared to the four years preceding a close election	FPDS through USASpending.gov
Incentives	A binary variable equaling one if a firm receives contracts with fewer incentives in the four years following a close election compared to the four years preceding a close election. Incentive contracts are defined as those contracts whose type is "Fixed Price Incentive", "Fixed Price Award Fee", "Fixed Price Level of Effort", "Cost Plus Incentive", "Cost Plus Award Fee", and "Cost Plus Fixed Fee".	FPDS through USASpending.gov
Performance	A binary variable equaling one if a firm receives contracts with fewer performance-based awards in the four years following a close election compared to the four years preceding a close election. Performance contracts are defined as those contracts whose acquisition method is "Performance Based".	FPDS through USASpending.gov
Competition	A binary variable equaling if a firm receives contracts with less competition in the four years following a close election compared to the four years preceding a close election. Contracts are defined to be competed if the extent of competition is "Full and Open".	FPDS through USASpending.gov
Bids	A binary variable equaling one if a firm receives contracts with fewer bids in the four years following a close election compared to the four years preceding a close election	FPDS through USASpending.gov
Award Increase	A binary variable equaling one if a firm receives an increase in renegotiated contracts awarded in the four years following a close election compared to the four years preceding a close election.	FPDS through USASpending.gov

Variable Name	Description	Source
Award Change	Natural log of renegotiated contracts awarded (in millions of dollars) in the four years following a close election compared to the four years preceding a close election.	FPDS through USASpending.gov
Extension	A binary variable equaling one if a firm receives an extension in the time to complete a contract in the four years following a close election compared to the four years preceding a close election.	FPDS through USASpending.gov
Close elections	A count of the number of winners that a firm contributes to during an election cycle minus the number of losers in close elections, where a close election is defined as a margin of victory of less than 5%.	Federal Election Commission
Powerful politicians	A count of the number of winners that a firm contributes to during an election cycle minus the number of losers in close elections, where a close election is defined as a margin of victory of less than 5%, to connections serving on the Committee on Appropriations, Budget or Energy (depending on the house of Congress, referred to as Resources, Transportation and Infrastructure, or Environment and Public Works Committees) in the Senate or the House.	Federal Election Commission
Distant connections	A count of the number of winners that a firm contributes to during an election cycle minus the number of losers in close elections, where a close election is defined as a margin of victory of less than 5%, for out-of-state political connections.	Federal Election Commission
Number of patents (adjusted)	Patents awarded in a year divided by its annual-technology class average.	Kogan et al. (2012) and NBER Patent Data
Patent citations (adjusted)	Patent citations in a year divided by its annual-technology class average.	Kogan et al. (2012) and NBER Patent Data
Self citations (adjusted)	Self citations is the average citations to a firm's own patents per patent awarded in a year divided by its annual-technology class average.	Kogan et al. (2012) and NBER Patent Data
Originality (adjusted)	Originality measures the average diversity of citations made by patents in a year divided by its annual-technology class average.	Kogan et al. (2012) and NBER Patent Data

Variable Name	Description	Source
Size	Total (book) assets.	Compustat (*at*)
Profitability	Measure of firm profitability using earnings before interest, taxes and depreciation (EBITDA) over assets.	Compustat (*oibdp / at*)
Tangibility	Ratio of net property, plant and equipment to firm size.	Compustat (*ppent / at*)
Book leverage	Book value of debt over assets.	Compustat ((*dlc + dltt*) / *at*)
Cash / Assets	Ratio of cash and short-term investment to size.	Compustat (*che / at*)
Market-to-book	Ratio of market value to book value.	Compustat ((*at − ceq + (prcc_f*csho*)) / *at*)
HHI	Herfindahl-Hirschman Index based on sales for an industry, defined at the four-digit SIC level.	Compustat

B. Matching contracts to Compustat firms

In this section, we detail the matching procedure to combine U.S. federal government contracts from FPDS with Compustat. The FPDS data does not contain a unique identifier that can be matched directly to common unique identifiers, such as GVKEY or PERMNO. The data does contain the parent company name for each vendor. We use this field to match the FPDS with Compustat company names based on the following process. For each firm in Compustat, we compute the Levenshtein distance between the company name in Compustat and each parent company name in FPDS, after removing punctuation and common characters and phrases. The Levenshtein distance is a method of computing the difference between two strings. This distance is approximately a count of the number of edits necessary to change one string into the other string. The Levenshtein ratio is calculated as $(1 − L/S)$, where L is the Levenshtein distance and S is the length of the longest word. This process computes the Levenshtein distance and ratio for 13,867 Compustat names, each matched with 528,056 parent company names in FPDS. We keep all matches above a Levenshtein ratio of 0.95 and the next closest match after this cutoff. We

hand check each match of a Compustat company name with an FPDS parent company name to decide whether it is appropriate. We determine this based on name similarity, Hoover's database (which provides company information by DUNS number) and internet searches. This leads to 16,138 matches between Compustat company names and FPDS parent company names.

References

Akey, Pat, 2015, Valuing campaign contribution connections using close congressional elections, *Review of Financial Studies,* Forthcoming.

Bayh-Dole Patent and Trademark Amendments Act of 1980, Pub. L. No. 96-517 (Dec. 12, 1980).

Chen, Hui, David Parsley and Ya-Wen Yang, 2015, Corporate lobbying and firm performance, *Journal of Business Finance & Accounting*, 42(3-4), 444-481.

Coates, John C. IV, 2012, Corporate politics, governance, and value before and after *Citizens United*, *Journal of Empirical Legal Studies*, 9(4), 657-696.

Cooper, Michael J., Huseyin Gulen and Alexei V. Ovtchinnikov, 2010, Corporate political contributions and stock returns, *Journal of Finance*, 65(2), 687-724.

Cull, Robert and Lixin Colin Xu, 2005, Institutions, ownership, and finance: the determinants of profit reinvestment among Chinese firms, *Journal of Financial Economics*, 77(1), 117-146.

Dinç, I. Serdar, 2005, Politicians and banks: Political influences on government-owned banks in emerging countries, *Journal of Financial Economics*, 77(2), 453-479.

Downs, Anthony, 1957, An economic theory of political action in a democracy, *Journal of Political Economy*, 65(2), 135-150.

Duchin, Ran and Denis Sosyura, 2012, The politics of government investment, *Journal of Financial Economics*, 106(1), 24-48.

Faccio, Mara, 2006, Politically connected firms, *American Economic Review*, 96(1), 369-386.

Faccio, Mara and David C. Parsley, 2009, Sudden deaths: taking stock of geographic ties, *Journal of Financial and Quantitative Analysis*, 44(3), 683-718.

Faccio, Mara, Ronald W. Masulis and John McConnell, 2006, Political connections and corporate bailouts, *Journal of Finance*, 61(6), 2597-2635.

Federal Acquisition Regulation, 2014, 48 C.F.R. § 37.600-4.

Federal Funding Accountability and Transparency Act, 2006, S. 2590.

Feldman, Steven W. and W. Noel Keyes, 2011, *Government Contracts in a Nutshell*. St. Paul: West Publishing Co.

Fisman, Raymond, 2001, Estimating the value of political connections, *American Economic Review*, 91(4), 1095-1102.

Goldman, Eitan, Jörg Rocholl and Jongil So, 2013, Politically connected boards of directors and the allocation of procurement contracts, *Review of Finance*, 17(6), 1-32.

Griliches, Zvi, 1990, Patent statistics as economic indicators: A survey, *Journal of Economic Literature*, 28(4), 1661, 1707.

Hall, Bronwyn H., Adam Jaffe and Manuel Trajtenberg, 2005, Market value and patent citations, *The RAND Journal of Economics*, 36(1), 16-38.

Johnson, Simon and Todd Mitton, 2003, Cronyism and capital controls: Evidence from Malaysia, *Journal of Financial Economics*, 67(2), 351-382.

Khwaja, Asim Ijaz and Atif Mian, 2005, Do lenders favor politically connected firms? Rent provision in an emerging financial market, *Quarterly Journal of Economics*, 120(4), 1371–1411.

Kim, Taehyun, 2015, Does a firm's political capital affect its investment and innovation?, *Working paper*.

Kogan, Leonid, Dimitris Papanikolaou, Amit Seru and Noah Stoffman, 2015, Technological innovation, resource allocation and growth, *Working paper*.

Krueger, Anne, 1974, The political economy of the rent-seeking society, *American Economic Review*, 64(3), 291-303.

Lee, David S., 2008, Randomized experiments from non-random selection in U.S. House elections, *Journal of Econometrics*, 142(2), 675-697.

Liebman, Jeffrey B. and Neale Mahoney, 2013, Do expiring budgets lead to wasteful year-end spending? Evidence from federal procurement, *NBER Working Paper* 19481.

Ovtchinnikov, Alexei V., Syed Walid Reza and Yanhui Wu, 2014, Political activism and firm innovation, *Working paper*.

Pastor, Lubos and Robert F. Stambaugh, 2003, Liquidity risk and expected stock returns, *Journal of Political Economy*, 111(3), 642-685.

Roberts, Brian E., 1990, A dead senator tells no lies: Seniority and the distribution of federal benefits, *American Journal of Political Science*, 34(1), 31-58.

Seru, Amit, 2014, Firms boundaries matter: Evidence from conglomerates and R&D activity, *Journal of Financial Economics*, 111(2), 381-405.

Shleifer, Andrei and Robert W. Vishny, 1994, Politicians and firms, *Quarterly Journal of Economics*, 109(4), 995-1025.

Stulz, Rene, 2005, Presidential address: The limits of financial globalization, *Journal of Finance*, 60(4), 1595-1638.

Tahoun, Ahmed, 2014, The role of stock ownership by US members of Congress on the market for political favors, *Journal of Financial Economics*, 111(1), 86-110.

Yu, Frank and Xiaoyun Yu, 2011, Corporate lobbying and fraud detection, *Journal of Financial and Quantitative Analysis*, 46(6), 1865-1891.

Table 1: Contracts

This table provides summary statistics for contracts from the U.S. federal government to all firms in Compustat from 2000 to 2012, excluding financial firms (SIC 6000-6999) and regulated utilities (SIC 4900-4999). Panel A summarizes the sample of contracts at initiation, Panel B details contract renegotiations and Panel C highlights contracts by industry at the Fama-French 12-industry level (excluding financial firms and regulated utilities). In Panel A, *Initial award* is the contract award at signing (in millions of dollars) and *Total award* is the total contract award (in millions of dollars), including any award changes. *Length* is the initial length of the contract (in years). *Incentives* is a binary variable equaling one if a contract has incentives, *Performance* is a binary variable equaling one if a contract has performance-based awards and *Competition* is a binary variable equaling one if a contract is competed. *Bids* is the number of offers received for a contract. In Panel B, *Renegotiation indicator* equals one if a contract is renegotiated and *Contract changes* is the number of changes to a contract. *Percent award change* is the total change in the award after signing relative to the total contract award (in percent). *Award increase* is the increase of a renegotiated contract (in millions of dollars) and *Award decrease* is the decrease of a renegotiated contract (in millions of dollars), both conditional on an award increase or decrease. *Extension* is the change in the completion date of a contract (in years). In Panel C, *Average contract* is the mean contract total award (in millions of dollars) and *Total contracts* is the total amount of contracts awarded to the industry (in millions of dollars). The appendix provides additional information on variable definitions.

Panel A: Initiation

Variable	Number of observations	Mean	Median	Minimum	Maximum	Standard deviation
Initial award	104,661	4.200	1.354	0.000	3,373.880	23.550
Total award	104,661	12.751	2.810	1.000	10,006.420	87.960
Length	104,661	1.147	0.945	0.000	6.882	1.236
Incentives	104,661	0.199	0.000	0.000	1.000	0.400
Performance	104,661	0.192	0.000	0.000	1.000	0.394
Competition	104,661	0.527	1.000	0.000	1.000	0.499
Bids	104,661	4.570	1.000	1.000	51.000	9.208

Panel B: Renegotiation

Variable	Number of observations	Mean	Median	Minimum	Maximum	Standard deviation
Renegotiation indicator	104,661	0.759	1.000	0.000	1.000	0.427
Contract changes	104,661	7.151	3.000	0.000	99.000	11.727
Percent award change	104,661	42.803	41.897	-20.036	99.871	41.039
Award increase	69,816	1.468	0.566	0.006	19.903	2.844
Award decrease	34,291	-0.354	-0.078	-6.228	0.000	0.874
Extension	79,213	0.714	0.534	-2.830	6.882	0.978

Panel C: Industry Comparison

Industry	Number of contracts	Average contract	Minimum	Maximum	Standard deviation	Total contracts
Consumer nondurables	3,820	6.083	1.000	277.79	11.332	23,235
Consumer durables	1,365	21.358	1.000	1,451.21	84.805	29,154
Manufacturing	28,887	19.462	1.000	10,006.42	139.281	562,192
Oil, gas and coal	663	37.576	1.001	6,805.09	286.364	24,913
Chemicals and allied products	609	10.508	1.003	153.30	19.777	6,400
Business equipment	41,874	10.606	1.000	2,651.19	43.175	444,124
Telephone and television	2,199	5.669	1.000	882.24	23.760	12,466
Wholesale, retail and services	7,089	7.452	1.000	504.15	25.348	52,826
Healthcare and drugs	1,339	17.823	1.000	1,327.66	109.564	23,865
Other	16,816	9.241	1.000	6,062.15	69.800	155,390

Table 2: Summary Statistics

This table reports summary statistics for firm-level characteristics, contracts, political contributions and innovation for all firms in Compustat between election years 2002 and 2010 and who contributed to a politician in a close election, excluding financial firms (SIC 6000-6999) and regulated utilities (SIC 4900-4999). Panel A details firm characteristics, Panel B summarizes contracts, Panel C highlights political connections and Panel D reports on innovation. *Size* is the natural log of firm assets. *Profitability* is measured as earnings before interest, taxes and depreciation over total assets of the firm. *Tangibility* is the ratio of net property, plant and equipment to total assets. *Book leverage* is the book value of debt over total assets. *Cash/Assets* is measured as cash and short-term investment divided by total assets. *Market-to-book* is the market value of the firm's equity and its book value of debt relative to the firm's assets. *HHI* is the Herfindahl-Hirschman Index of *Sales* for the industry (at the SIC level). *Profitability*, *Book leverage* and *Market-to-book* are winsorized at the 1% level in each tail. *Contract indicator* equals one if a firm receives at least one contract during a given year. *Award amount* is the total amount of awards (in millions of dollars) to a firm in a particular year. *Length* is the average contract length (in years). *Incentives* is the percent of contract awards with incentives, *Performance* is the percent of contract awards with performance-based awards and *Competition* is the percent of contract awards competed. *Bids* is the number of offers received for a contract. *Percent award change* is the average percent change in contract award and *Extension* is the average contract extension. *Close elections* is a count of the number of winners that a firm contributes to during an election cycle minus the number of losers in close elections, where a close election is defined as a margin of victory of less than 5%. *Powerful politicians* is defined as *Close elections* to connections serving on the Committee on Appropriations, Budget or Energy (depending on the house of Congress, referred to as Resources, Transportation and Infrastructure, or Environment and Public Works Committees) in the Senate or the House. *Distant connections* is defined as *Close elections* to connections to politicians in a different state than the firm's headquarter. *Number of patents* is the number of patents awarded to the firm in a year and *Patent citations* is the average citations per patent awarded in a year. *Number of patents (adjusted)* represents *Number of patents* divided by its annual-technology class mean and, similarly, *Patent citations (adjusted)* represents *Patent citations* divided by its annual-technology class mean. *Self citations* is the average citations to a firm's own patents per patent awarded in a year and *Originality* measures the diversity of citations made by a patent. The respective adjusted variables are divided by their annual-technology class average. The appendix provides additional information on variable definitions.

Panel A: Firm Characteristics

Variable	Number of observations	Mean	Median	Minimum	Maximum	Standard deviation
Size	1,398	8.768	8.858	0.885	13.587	1.635
Profitability	1,398	0.125	0.134	-0.459	0.436	0.477
Tangibility	1,398	0.318	0.256	0.000	0.922	0.229
Book leverage	1,390	0.282	0.255	0.000	3.635	0.225
Cash/Assets	1,397	0.114	0.074	0.000	0.940	0.122
Market-to-book	1,398	1.815	1.502	0.691	20.928	1.137
HHI	1,398	0.322	0.256	0.057	1.000	0.230

Panel B: Contracts

Variable	Number of observations	Mean	Median	Minimum	Maximum	Standard deviation
Contract indicator	1,398	0.345	0.000	0.000	1.000	0.476
Award amount	483	790.251	43.033	1.000	19,329.147	2,137.478
Length	483	1.226	0.916	0.000	27.332	1.857
Incentives	483	8.382	0.000	0.000	100.000	18.151
Performance	483	13.033	0.000	0.000	100.000	26.058
Competition	483	19.648	0.000	0.000	100.000	30.299
Bids	483	4.193	2.167	1.000	51.000	6.904
Percent award change	483	7.593	3.279	-100.000	98.205	13.949
Extension	483	0.652	0.552	-0.321	3.942	0.718

Panel C: Political Connections

Variable	Number of observations	Mean	Median	Minimum	Maximum	Standard deviation
Close elections	1,398	1.263	1.000	-9.000	24.000	3.155
Powerful politicians	1,398	0.536	0.000	-2.000	7.000	1.078
Distant connections	1,398	1.111	1.000	-9.000	25.000	3.046

Panel D: Innovation

Variable	Number of observations	Mean	Median	Minimum	Maximum	Standard deviation
Number of patents	1,398	33.581	0.000	0.000	2,803.000	162.951
Number of patents (adjusted)	1,398	0.554	0.000	0.000	16.685	1.338
Patent citations	1,398	0.525	0.000	0.000	18.375	1.398
Patent citations (adjusted)	1,398	0.339	0.000	0.000	9.000	0.790
Self citations	1,398	0.075	0.000	0.000	6.071	0.320
Self citations (adjusted)	1,398	0.230	0.000	0.000	9.843	0.754
Originiality	1,398	0.167	0.000	0.000	0.894	0.250
Originality (adjusted)	1,398	1.001	0.000	0.000	35.989	2.640

Table 3: Political Connections and Contracts

This table examines how political connections affect the amount and length of contracts awarded by the U.S. federal government. *Contract Increase* equals one if a firm receives an increase in the contract award in the four years following a close election compared to the four years preceding a close election. *Contract Count* is the change in the number of contracts awarded in the four years following a close election compared to the four years preceding a close election. *Award Amount* is the natural log of contracts awarded (in millions of dollars) in the four years following a close election compared to the four years preceding a close election. *Length Increase* equals one if a firm receives an increase in the average time to complete a contract (in years) in the four years following a close election compared to the four years preceding a close election. *Length* is the change in the average time to complete a contract (in years) in the four years following a close election compared to the four years preceding a close election. *Close elections* is a count of the number of winners that a firm contributes to during an election cycle minus the number of losers in close elections, where a close election is defined as a margin of victory of less than 5%. *Size* is the natural log of firm assets. *Market-to-book* is the market value of the firm's equity and its book value of debt relative to the firm's assets. *Market-to-book* is winsorized at the 1% level in each tail. All control variables are measured as the change in the average in the four years following a close election compared to the four years preceding a close election. Industries are defined at the two-digit SIC level for probit specifications and otherwise at the three-digit level. All models include year and industry fixed effects and an intercept term. Probit specifications (models 1 and 4) report marginal effects at *Close elections*= 1 and at the mean for control variables. Standard errors are reported in parentheses and clustered at the firm level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Dependent variable	Contract Increase	Contract Count	Award Amount	Length Increase	Length
Model	(1)	(2)	(3)	(4)	(5)
Close elections	0.017***	4.564***	0.065***	0.018***	0.010**
	(0.004)	(1.584)	(0.025)	(0.004)	(0.005)
ΔSize	0.050	14.128	0.182	0.066	0.069
	(0.049)	(13.323)	(0.280)	(0.047)	(0.095)
ΔMarket-to-book	-0.001	0.362	0.035	0.018	0.016
	(0.024)	(3.650)	(0.095)	(0.019)	(0.020)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Pseudo-R^2	0.176	0.076	0.194	0.085	0.092
Observations	1,192	1,398	1,398	1,186	1,398

Table 4: Contract Design

This table examines how political connections affect the design of contracts received from the U.S. federal government. *Incentives* equals one if a firm receives contracts with less incentives in the four years following a close election compared to the four years preceding a close election. *Performance* equals one if a firm receives contracts with less performance-based awards in the four years following a close election compared to the four years preceding a close election. *Competition* equals one if a firm receives contracts with less competition in the four years following a close election compared to the four years preceding a close election. *Bids* equals one if a firm receives contracts with less bids in the four years following a close election compared to the four years preceding a close election. *Close elections* is a count of the number of winners that a firm contributes to during an election cycle minus the number of losers in close elections, where a close election is defined as a margin of victory of less than 5%. *Size* is the natural log of firm assets. *Market-to-book* is the market value of the firm's equity and its book value of debt relative to the firm's assets. *Market-to-book* is winsorized at the 1% level in each tail. All control variables are measured as the change in the average in the four years following a close election compared to the four years preceding a close election. Industries are defined at the two-digit SIC level. All models include year and industry fixed effects and an intercept term. Probit specifications (all models) report marginal effects at *Close elections*= 1 and at the mean for control variables. Standard errors are reported in parentheses and clustered at the firm level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Dependent variable	Incentives	Performance	Competition	Bids
Model	(1)	(2)	(3)	(4)
Close elections	0.012***	0.008**	0.013***	0.018***
	(0.004)	(0.003)	(0.004)	(0.005)
ΔSize	-0.021	-0.019	0.045	0.051
	(0.043)	(0.033)	(0.042)	(0.055)
ΔMarket-to-book	-0.003	-0.046**	0.017	-0.004
	(0.015)	(0.019)	(0.015)	(0.021)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Pseudo-R^2	0.109	0.110	0.081	0.077
Observations	947	964	1,181	1,192

Table 5: Renegotiation

This table explores how political connections affect contract renegotiation. *Award Increase* is an indicator variable equaling one if a firm receives an increase in renegotiated contracts awarded in the four years following a close election compared to the four years preceding a close election. *Award Change* is the natural log of renegotiated contracts awarded (in millions of dollars) in the four years following a close election compared to the four years preceding a close election. *Extension* equals one if a firm receives an extension in the time to complete a contract in the four years following a close election compared to the four years preceding a close election. *Close elections* is a count of the number of winners that a firm contributes to during an election cycle minus the number of losers in close elections, where a close election is defined as a margin of victory of less than 5%. *Size* is the natural log of firm assets. *Market-to-book* is the market value of the firm's equity and its book value of debt relative to the firm's assets. *Market-to-book* are winsorized at the 1% level in each tail. All control variables are measured as the change in the average in the four years following a close election compared to the four years preceding a close election. Industries are defined at the two-digit SIC level for probit specifications and otherwise at the three-digit level. All models include year and industry fixed effects and an intercept term. Probit specifications (models 1 and 3) report marginal effects at *Close elections* =1 and at the mean for control variables. Standard errors are reported in parentheses and clustered at the firm level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Dependent variable	Award Increase	Award Change	Extension
Model	(1)	(2)	(3)
Close elections	0.020***	0.071***	0.018***
	(0.004)	(0.025)	(0.006)
ΔSize	0.038	0.285	0.002
	(0.051)	(0.276)	(0.053)
ΔMarket-to-book	0.016	0.069	0.004
	(0.014)	(0.085)	(0.018)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
R-squared	0.197	0.158	0.085
Observations	1,192	1,398	1,197

Table 6: Powerful Politicians

This table studies how powerful connections affect contract allocation, design and their renegotitation. Panel A repeats the analysis from Table 3 on contract award and length. *Contract Increase* equals one if a firm receives an increase in the contract award in the four years following a close election compared to the four years preceding a close election. *Contract Count* is the change in the number of contracts awarded in the four years following a close election compared to the four years preceding a close election. *Award Amount* is the natural log of contracts awarded (in millions of dollars) in the four years following a close election compared to the four years preceding a close election. *Length Increase* equals one if a firm receives an increase in the average time to complete a contract (in years) in the four years following a close election compared to the four years preceding a close election. *Length* is the change in the average time to complete a contract (in years) in the four years following a close election compared to the four years preceding a close election. Panel B repeats the analysis from Table 4 studying contract design. *Incentives* equals one if a firm receives contracts with less incentives in the four years following a close election compared to the four years preceding a close election. *Performance* equals one if a firm receives contracts with less performance-based awards in the four years following a close election compared to the four years preceding a close election. *Competition* equals one if a firm receives contracts with less competition in the four years following a close election compared to the four years preceding a close election. *Bids* equals one if a firm receives contracts with less bids in the four years following a close election compared to the four years preceding a close election. Panel C repeats the analysis from Table 5 on contract renegotiation. *Award Increase* is an indicator variable equaling one if a firm receives an increase in renegotiated contracts awarded in the four years following a close election compared to the four years preceding a close election. *Award Change* is the natural log of renegotiated contracts awarded (in millions of dollars) in the four years following a close election compared to the four years preceding a close election. *Extension* equals one if a firm receives an extension in the time to complete a contract in the four years following a close election compared to the four years preceding a close election. *Powerful politicians* is a count of number of the winners that a firm contributes to during an election cycle minus the number of losers in close elections, where a close election is defined as a margin of victory of less than 5%, for powerful politicians, as defined in the Table 2 and in the appendix. *Size* is the natural log of firm assets. *Market-to-book* is the market value of the firm's equity and its book value of debt relative to the firm's assets. *Market-to-book* is winsorized at the 1% level in each tail. All control variables are measured as the change in the average in the four years following a close election compared to the four years preceding a close election. Industries are defined at the two-digit SIC level for probit specifications and otherwise at the three-digit level. All models include year and industry fixed effects and an intercept term. Probit specifications (Panel A, models 1 and 4; Panel B, all models; Panel C, models 1 and 3) report marginal effects at *Close elections*=1 and at the mean for control variables. Standard errors are reported in parentheses and clustered at the firm level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: Allocation of Contracts

Dependent variable	Contract Increase	Contract Count	Award Amount	Length Increase	Length
Model	(1)	(2)	(3)	(4)	(5)
Powerful politicians	0.061***	12.023**	0.190***	0.056***	0.024
	(0.014)	(5.698)	(0.071)	(0.015)	(0.020)
ΔSize	0.050	14.582	0.187	0.068	0.070
	(0.052)	(13.176)	(0.280)	(0.050)	(0.094)
ΔMarket-to-book	-0.002	0.641	0.038	0.019	0.016
	(0.025)	(3.600)	(0.096)	(0.020)	(0.020)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.1791	0.075	0.194	0.085	0.091
Observations	1,192	1,398	1,398	1,186	1,398

Panel B: Contract Design

Dependent variable	Incentives	Performance	Competition	Bids
Model	(1)	(2)	(3)	(4)
Powerful politicians	0.039***	0.010	0.055***	0.067***
	(0.013)	(0.011)	(0.013)	(0.016)
ΔSize	-0.024	-0.021	0.046	0.052
	(0.046)	(0.035)	(0.045)	(0.058)
ΔMarket-to-book	-0.003	-0.046**	0.017	-0.004
	(0.016)	(0.020)	(0.017)	(0.022)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
R-squared	0.111	0.103	0.087	0.083
Observations	947	964	1,181	1,192

Panel C: Renegotiation

Dependent variable	Award Increase	Award Change	Extension
Model	(1)	(2)	(3)
Powerful politicians	0.060***	0.108	0.045***
	(0.013)	(0.078)	(0.015)
ΔSize	0.038	0.290	0.002
	(0.057)	(0.276)	(0.055)
ΔMarket-to-book	0.016	0.072	0.005
	(0.016)	(0.085)	(0.018)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
R-squared	0.194	0.155	0.081
Observations	1,192	1,398	1,197

Table 7: Distant Connections

This table provides a robustness test by exploring distant political connections, defined as connections outside of the state of the firm's headquarters. Panel A repeats the analysis from Table 3 on contract award and length. *Contract Increase* equals one if a firm receives an increase in the contract award in the four years following a close election compared to the four years preceding a close election. *Contract Count* is the change in the number of contracts awarded in the four years following a close election compared to the four years preceding a close election. *Award Amount* is the natural log of contracts awarded (in millions of dollars) in the four years following a close election compared to the four years preceding a close election. *Length Increase* equals one if a firm receives an increase in the average time to complete a contract (in years) in the four years following a close election compared to the four years preceding a close election. *Length* is the change in the average time to complete a contract (in years) in the four years following a close election compared to the four years preceding a close election. Panel B repeats the analysis from Table 4 studying contract design. *Incentives* equals one if a firm receives contracts with less incentives in the four years following a close election compared to the four years preceding a close election. *Performance* equals one if a firm receives contracts with less performance-based awards in the four years following a close election compared to the four years preceding a close election. *Competition* equals one if a firm receives contracts with less competition in the four years following a close election compared to the four years preceding a close election. *Bids* equals one if a firm receives contracts with less bids in the four years following a close election compared to the four years preceding a close election. Panel C repeats the analysis from Table 5 on contract renegotiation. *Award Increase* is an indicator variable equaling one if a firm receives an increase in renegotiated contracts awarded in the four years following a close election compared to the four years preceding a close election. *Award Change* is the natural log of renegotiated contracts awarded (in millions of dollars) in the four years following a close election compared to the four years preceding a close election. *Extension* equal one if a firm receives an extension in the time to complete a contract in the four years following a close election compared to the four years preceding a close election. *Distant connections* is a count of the number of winners that a firm contributes to during an election cycle minus the number of losers in close elections, where a close election is defined as a margin of victory of less than 5%, for out-of-state political connections. *Size* is the natural log of firm assets. *Market-to-book* is the market value of the firm's equity and its book value of debt relative to the firm's assets. *Market-to-book* is winsorized at the 1% level in each tail. All control variables are measured as the change in the average in the four years following a close election compared to the four years preceding a close election. Industries are defined at the two-digit SIC level for probit specifications and otherwise at the three-digit level. All models include year and industry fixed effects and an intercept term. Probit specifications (Panel A, models 1 and 4; Panel B, all models; Panel C, models 1 and 3) report marginal effects at *Close elections* =1 and at the mean for control variables. Standard errors are reported in parentheses and clustered at the firm level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: Allocation of Contracts

Dependent variable	Contract Increase	Contract Count	Award Amount	Length Increase	Length
Model	(1)	(2)	(3)	(4)	(5)
Distant connections	0.017***	3.855**	0.054**	0.019***	0.014***
	(0.005)	(1.730)	(0.025)	(0.005)	(0.005)
ΔSize	0.051	14.801	0.192	0.067	0.069
	(0.049)	(13.335)	(0.280)	(0.048)	(0.094)
ΔMarket-to-book	-0.001	0.453	0.037	0.018	0.015
	(0.024)	(3.565)	(0.095)	(0.019)	(0.020)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
R-squared	0.175	0.075	0.192	0.085	0.093
Observations	1,192	1,398	1,398	1,186	1,398

Panel B: Contract Design

Dependent variable	Incentives	Performance	Competition	Bids
Model	(1)	(2)	(3)	(4)
Distant connections	0.013***	0.008**	0.014***	0.018***
	(0.004)	(0.003)	(0.004)	(0.005)
ΔSize	-0.020	-0.018	0.046	0.053
	(0.043)	(0.033)	(0.043)	(0.055)
ΔMarket-to-book	-0.003	-0.046**	0.017	-0.004
	(0.015)	(0.019)	(0.015)	(0.021)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
R-squared	0.111	0.110	0.082	0.077
Observations	947	964	1,181	1,192

Panel C: Renegotiation

Dependent variable	Award Increase	Award Change	Extension
Model	(1)	(2)	(3)
Distant connections	0.019***	0.067***	0.017***
	(0.004)	(0.026)	(0.006)
ΔSize	0.038	0.293	0.004
	(0.052)	(0.276)	(0.053)
ΔMarket-to-book	0.016	0.069	0.005
	(0.014)	(0.085)	(0.018)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
R-squared	0.194	0.158	0.084
Observations	1,192	1,398	1,197

Table 8: Long-Term Value and Performance

This table reports the long-term effects of political connections on value and performance. Panel A explores the long-term value implications of contracts using buy-and-hold abnormal returns (BHARs). Panel B details the long-term performance relation of political connections. Panel A reports the coefficients from regressions of BHARs (relative to a benchmark model) in four years regressed on *Contracts indicatior*, which equals one if a firm receives an increase in the contract award in the four years following a close election compared to the four years preceding a close election, using *Close elections* as an instrument and * indicates the predicted value from the first stage. The industry benchmark is formed by comparing the firm return to the industry average by SIC (level two, three and four). The size and market-to-book match is formed by filtering to firms whose size is within 30% and then finding the closest match based on market-to-book. Similarly, the industry, size and market-to-book match is formed by first restricting to firms within the same industry and then using the same matching steps. The four-factor model includes the following factors: the value-weighted CRSP market return, small minus big (SMB), high minus low (HML) and momentum. The five-factor model includes the same factors as the four factor model and the Pastor and Stambaugh (2003) liquidity factor. All models in this panel include year fixed effects and an intercept term. Standard errors are clustered at the firm level. In Panel B, *ROA* is return on assets. *Size* is the natural log of firm assets. *Profitability* is measured as earnings before interest, taxes and depreciation over total assets of the firm. *Tangibility* is the ratio of net property, plant and equipment to total assets. *Book leverage* is the book value of debt over total assets. *Cash/Assets* is measured as cash and short-term investment divided by total assets. *Market-to-book* is the market value of the firm's equity and its book value of debt relative to the firm's assets. *HHI* is the Herfindahl-Hirschman Index of Sales for the industry. *Profitability, Book leverage* and *Market-to-book* are winsorized at the 1% level in each tail. All control variables are measured as the change in the average in the four years following a close election compared to the four years preceding a close election. All models include year and industtry (at the three-digit SIC level) fixed effects and an intercept term. Standard errors are reported in parentheses and clustered at the firm level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Panel A: Long-term Value

Benchmark Model	1 year	2 years	3 years	4 years
Industry (SIC4)	1.067**	1.656**	2.331**	2.669**
Industry (SIC3)	1.082**	1.483*	2.114**	2.655**
Industry (SIC2)	1.184**	1.233	1.668*	1.889*
Size, Market-to-Book	0.750	0.766	0.198	1.593
Industry (SIC2), Size, Market-to-Book	0.224	1.004	0.548	0.805
Four-factor model	0.972	1.287	0.401	1.584
Five-factor model	0.867	1.298	0.466	1.586

Panel B: Long-term Performance

Dependent variable	$ROA_{t,t+1}$	$ROA_{t,t+2}$	$ROA_{t,t+3}$	$ROA_{t,t+4}$
Model	(1)	(2)	(3)	(4)
Contracts indicator*	0.540**	0.532**	0.517**	0.507**
	(0.258)	(0.256)	(0.254)	(0.252)
ΔSize	-0.054	-0.055	-0.049	-0.043
	(0.067)	(0.067)	(0.067)	(0.067)
ΔProfitability	2.589***	2.537***	2.497**	2.466**
	(0.988)	(0.982)	(0.983)	(0.983)
ΔTangibility	0.918**	0.960**	0.965**	0.979**
	(0.421)	(0.417)	(0.419)	(0.418)
ΔBook leverage	-1.503***	-1.515***	-1.527***	-1.531***
	(0.581)	(0.579)	(0.578)	(0.578)
ΔCash/Assets	1.886***	1.876***	1.864***	1.864***
	(0.718)	(0.715)	(0.715)	(0.713)
ΔMarket-to-book	-0.429**	-0.433**	-0.433**	-0.435**
	(0.171)	(0.171)	(0.171)	(0.171)
ΔHHI	-0.011	0.005	-0.010	-0.004
	(0.211)	(0.215)	(0.212)	(0.211)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
R-squared	0.571	0.576	0.581	0.584
Observations	1,392	1,392	1,392	1,392

Table 9: Contracts and the Scale of Innovation

This table examines the effect of contracts on the scale of firm innovation. The dependent variable is defined as *Patents* in a certain number of years, which is *Number of patents* divided by its annual-technology class mean and *Number of patents* is the number of patents awarded to the firm in a year, averaged over the number of years specified. *Close elections* is a count of the number of winners that a firm contributes to during an election cycle minus the number of losers in close elections, where a close election is defined as a margin of victory of less than 5%. *Contracts indicator* equals one if a firm receives an increase in the contract award in the four years following a close election compared to the four years preceding a close election, and * indicates the predicted value from the first stage. *Size* is the natural log of firm assets. *Profitability* is measured as earnings before interest, taxes and depreciation over total assets of the firm. *Tangibility* is the ratio of net property, plant and equipment to total assets. *Book leverage* is the book value of debt over total assets. *Cash/Assets* is measured as cash and short-term investment divided by total assets. *Market-to-book* is the market value of the firm's equity and its book value of debt relative to the firm's assets. *HHI* is the Herfindahl-Hirschman Index of *Sales* for the industry. *Profitability, Book leverage* and *Market-to-book* are winsorized at the 1% level in each tail. All control variables are measured as the change in the average in the four years following a close election compared to the four years preceding a close election. Industries are defined at the three-digit SIC level. All models include year and industry fixed effects and an intercept term. Standard errors are reported in parentheses and clustered at the firm level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Dependent variable	First Stage	Patents in 1-4 years	Patents in 1-2 years	Patents in 3-4 years
Model	(1)	(2)	(3)	(4)
Close elections	0.015***			
	(0.004)			
Contracts indicator*		2.133**	2.680**	1.781**
		(0.997)	(1.304)	(0.745)
ΔSize	-0.006	0.161	0.241	0.089
	(0.040)	(0.116)	(0.148)	(0.089)
ΔProfitability	0.136	-0.212	-0.403	0.163
	(0.196)	(0.598)	(0.786)	(0.448)
ΔTangibility	-0.029	0.194	0.295	0.280
	(0.201)	(0.575)	(0.720)	(0.471)
ΔBook leverage	-0.023	-0.212	-0.233	-0.134
	(0.082)	(0.231)	(0.286)	(0.179)
ΔCash/Assets	-0.130	0.580	0.800	0.439
	(0.181)	(0.632)	(0.866)	(0.431)
ΔMarket-to-book	0.002	0.029	0.044	0.021
	(0.015)	(0.047)	(0.063)	(0.035)
ΔHHI	-0.099	0.376	0.375	0.369
	(0.225)	(0.513)	(0.647)	(0.414)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	1,392	1,392	1,392	1,392

Table 10: Contracts and Novelty of Innovation

This table examines the effect of contracts on the novelty of firm innovation. *Citations* is *Patent citations* divided by its annual-technology class mean and *Patent citations* is the citations per patent awarded. *Self citations* is the average citations to a firm's own patents per patent awarded in a year and *Originality* measures the diversity of citations made by a patent. The respective adjusted variables are divided by their annual-technology class average. *Close elections* is a count of the number of winners that a firm contributes to during an election cycle minus the number of losers in close elections, where a close election is defined as a margin of victory of less than 5%. *Contracts indicator* equals one if a firm receives an increase in the contract award in the four years following a close election compared to the four years preceding a close election, and * indicates the predicted value from the first stage. *Size* the natural log of firm assets. *Profitability* is measured as earnings before interest, taxes and depreciation over total assets of the firm. *Tangibility* is the ratio of net property, plant and equipment to total assets. *Book leverage* is the book value of debt over total assets. *Cash/Assets* is measured as cash and short-term investment divided by total assets. *Market-to-book* is the market value of the firm's equity and its book value of debt relative to the firm's assets. *HHI* is the Herfindahl-Hirschman Index of *Sales* for the industry. *Profitability*, *Book leverage* and *Market-to-book* are winsorized at the 1% level in each tail. All control variables are measured as the change in the average in the four years following a close election compared to the four years preceding a close election. Industries are defined at the three-digit SIC level. All models include year and industry fixed effects and an intercept term. Standard errors are reported in parentheses and clustered at the firm level. ***, **, and * denote significance at 1%, 5%, and 10%, respectively.

Dependent variable	Citaitons in 1-4 years	Self citaitons in 1-4 years	Originality in 1-4 years
Model	(1)	(2)	(3)
Contracts indicator*	1.203***	0.786**	2.012**
	(0.444)	(0.338)	(0.869)
ΔSize	0.031	0.028	0.044
	(0.064)	(0.049)	(0.114)
ΔProfitability	-0.507	-0.125	-0.838
	(0.343)	(0.264)	(0.559)
ΔTangibility	0.524	0.151	0.759
	(0.320)	(0.280)	(0.592)
ΔBook leverage	-0.019	-0.017	-0.190
	(0.132)	(0.112)	(0.244)
ΔCash/Assets	0.496*	0.404	0.746
	(0.290)	(0.333)	(0.510)
ΔMarket-to-book	0.005	-0.007	-0.016
	(0.025)	(0.023)	(0.045)
ΔHHI	-0.127	0.120	-0.435
	(0.307)	(0.250)	(0.524)
Year fixed effects	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes
Observations	1,392	1,392	1,392