

Do female entrepreneurs benefit from female politicians?

Nataliya Gerasimova* and Maximilian Rohrer^{†‡}

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Abstract

This paper provides novel evidence that female U.S. House Representatives causally increase the U.S. government's demand for products and services provided by female entrepreneurs. Using detailed data on individual contracts between the U.S. government and private firms around close U.S. congressional elections, we report that the election of a female representative increases the probability of government contracts being awarded to female entrepreneurs by 3.0 to 6.8 percentage points. Furthermore, contract performance is either improved or unaffected, which speaks against the misallocation hypothesis. We find no support for role-model effects as changes in the pool of female entrepreneurs cannot explain our findings. Thus, the evidence suggests that female politicians improve the business environment for female entrepreneurs by reducing the gender bias in the U.S. government procurement contracting system.

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Keywords: Gender Gap; Discrimination; Small Business; Entrepreneurship; Women Owned Firms; Female entrepreneurs; Government Procurement Contracts; Competition; Public Expenditure Allocation

*Department of Finance, Norwegian School of Economics (NHH), Email: nataliya.gerasimova@nhh.no

[†]Department of Finance, Norwegian School of Economics (NHH), Email: maximilian.rohrer@nhh.no

[‡]All remaining errors are our responsibility

1 Introduction

This paper investigates whether women in business directly benefit from the rising number of female representatives in the U.S. Congress. Representing women’s interests in general and increasing women’s empowerment in business seem to be among the primary items on the agenda of female politicians. To quote Senator Jeanne Shaheen, Democrat from New Hampshire, “Women are at the center of the American economy”¹ and “Women entrepreneurs may be the country’s greatest untapped economic resource”.² Despite the political support for women owned businesses,³ academic research has established that female entrepreneurs face more barriers in business environment compared with their male counterparts with gender biases being the most likely explanation.⁴

Based on these arguments, we hypothesize that the presence of female representatives in Congress creates more business opportunities for women owned businesses. Our empirical investigation faces two challenges: measuring benefits accruing to individual firms that can be associated with an individual politician and achieving causal inference. To preview our findings, exploiting close elections for causal inference and using individual procurement contracts between the U.S. government and individual firms, we provide novel evidence that female politicians substantially increase the government’s demand for products and services from female entrepreneurs.

We address the first challenge by using procurement contracts between the U.S government and small businesses as a measure of benefits accruing to individual firms that can be influenced by individual U.S. representatives. While federal agencies argue that legislators do not influence contract allocation,⁵ the opposite has been shown empirically.⁶ An anecdotal example of how female representatives support women owned firms in contract allocation can be found in the correspondence between Diana DeGette, a Democrat from Colorado, and the General Services Administration (GSA) on behalf of Ms. Carol McCallister, owner of Champion Business Services in Aurora. The representative expressed Ms. McCallister’s concern of competing with companies such as GAP Solutions, Inc which led to a reply by the Small Business Administration (SBA) offering their counselling to increase her abilities to win federal contracts. In addition, the SBA’s Procurement Center Representative in Denver, Colorado, offered to meet with Ms. McCallister to provide direct assistance.

The analysis in this paper is based on a sample of 1,038,018 competitive definite contracts awarded to 162,741 unique small businesses between 2005 and 2018. We focus on small businesses for three reasons. First, 94% of

¹<https://www.shaheen.senate.gov/news/press/shaheen-releases-report-on-womens-entrepreneurship>

²<https://www.forbes.com/sites/realspin/2018/01/11/sen-jeanne-shaheen-how-we-can-help-women-entrepreneurs-succeed/>

³For the rest of the paper, we use women owned businesses (WOBs), women owned firms, and female entrepreneurs interchangeably.

⁴For evidence on gender bias in business and access to capital, see Coleman and Robb [2009]; Bellucci, Borisov, and Zazzaro [2010]; Wu and Chua [2012]; Alesina, Lotti, and Mistrulli [2013]; Guzman and Kacperczyk [2019]; Hebert [2020]; Ewens and Townsend [2020].

⁵To quote John C. Johnson, ex-assistant commissioner of GSA’s Federal Technology Service, “I’ve never had a member of Congress do that, and no, it wouldn’t have any effect. The process is very well-defined in terms of how we make selections.”<https://www.govexec.com/magazine/features/2005/12/schmooze-or-lose/20778/>

⁶For evidence on U.S. Congress Members influence on the allocation of government procurement contracts, see Cohen, Coval, and Malloy [2011]; Goldman, Rocholl, and So [2013]; Tahoun [2014]; Brogaard, Denes, and Duchin [2020].

women owned firms are small businesses according to the Commerce Department (Beede and Rubinovitz [2015]). Second, politicians are vocal about their support for small businesses (Neree [2015]). Lastly, small businesses account for a huge portion of the U.S. economy. According to the SBA, there are more than 30 million small businesses in the U.S., they added 1.8 millions of net jobs, and they employ 47% of the private work force in 2018.⁷ Additionally, gender disparity in the awarding process of government contracts is an acknowledged issue of political interest. According to a report published by the Commerce Department the odds of women owned firms winning a federal contract are about 21% lower than for otherwise similar companies (Beede and Rubinovitz [2015]).

The second challenge is to disentangle the endogeneity of women’s presence in politics and business. Reverse causality might pose a threat because improved business environment for women might lead to more female politicians. Another concern is omitted variable bias because general shifts in the empowerment of women, such as the me-too movement, might simultaneously increase the female representation in both politics and business (Heminway [2019]). We overcome these endogeneity concerns by exploiting mixed-gender House elections with less than a 5 percentage points margin of victory.⁸ Similar to other papers, we assume that the outcome of each close election is random ex-post and hence the gender of the district’s representative is as if exogenously assigned. Our sample considers 42 general and 2 special mixed-gender close elections for the 109th to 115th Congress of which 45% are won by women.

The main result of the paper is that an election of female representative causes a significant increase in the probability of a government contract being awarded to a women owned firm in her representative district. In the sample of all close mixed gender elections, the effect varies from 3.0 to 6.8 percentage points. The effects concentrates in elections with a male incumbent (4.3 percentage points), elections won by female Democrats (22.4 percentage points), and elections with a Republican incumbent (7.2 percentage points). The results do not depend on whether the election led to a change in ruling party or the age of the winning woman. From an economic perspective, the magnitudes are substantial. For example, the unconditional probability that a government procurement contract is awarded to a female entrepreneur in our sample, increased from 16.6% in 2005 to 20.1% in 2018, please see Figure 1. This change of 3.5 percentage points during this 13 year period is less than the causal effect we attribute to the election of a single female politician. Assuming that the estimates in our sample can be applied to all contractual government spending in the US, a back-of-the-envelope calculation suggests that in the fiscal year 2018, the election of a female representative led to a causal increase of 88 million USD of government contracts awarded to women owned firms in a given congressional district.⁹

⁷<https://advocacy.sba.gov/2019/04/24/small-businesses-drive-job-growth-in-united-states-they-account-for-1-8-million-net-n>

⁸Close elections as an identification strategy was first used by Lee [2001] and has since been used among others by Lee, Moretti, and Butler [2004]; Lee [2008]; Do, Lee, Nguyen, and Nguyen [2012]; Akey [2015]; Do, Lee, and Nguyen [2015] and Akey and Lewellen [2017].

⁹In the FY 2018, the U.S. government spent a total of 6.6 trillion USD of which 13.5%, 891 billion USD, were used on contractual services and supplies (see spending explorer on <https://www.usaspending.gov/>). The 115th House of Representatives had 435 seats, and hence

Under the assumption that the outcome of close elections is ex-post random, the identified effect is causal. To corroborate this claim, we provide falsification tests. Using placebo election dates, we show that the probability of women owned firms receiving government contracts is unrelated to the outcome of the close elections. The results are robust to varying the voting margin threshold that defines a close elections from 10% to 1%. In addition, our specifications include a rich set of covariates and fixed effects controlling for unobserved effects associated with individual districts, calendar months, 2-digit NAICS industries, awarding government agencies, and provided product or service types.

Although improbable, there is still the possibility of a time-varying district-specific unobserved variable that correlates with both the probability of female candidates winning and the gender bias in contract awarding. We resolve this concern by exploiting contracts awarded in counties that cross congressional district boundaries.¹⁰ In this specification, we can control for time-varying county specific unobserved variables and still identify the impact of representative gender on contract assignment. We confirm the initial findings, estimating a causal effect of up to 5.7 percentage points (37%).

In the second part of the paper, we investigate potential implications for the efficiency of contract allocation. An increase in contracts allocated to women owned firms through female legislators is consistent with both a benign role of them in mitigating frictions, but also a malign role of them in distorting resource allocation.

Regarding the benign role, male legislators might provide fewer contracts to women owned firms because of discrimination. Under this scenario, the influx of female representatives has a value-creating effect as the consequences of the gender bias induced friction are alleviated. Thus, the *discrimination* hypothesis predicts that higher amounts of government contracts awarded to women should not worsen the overall contract performance by women owned firms. For evidence supporting this mechanism in the entrepreneurship see [Gafni, Marom, Robb, and Sade \[2019\]](#); [Ewens and Townsend \[2020\]](#).

With regard to the malign role of female representatives, there might be a rational explanation for the existing gender gap in government contract allocation and female legislators increase contract provision to women owned businesses either because of favoritism or to generate political gains. Because of this, the *misallocation* hypothesis predicts that higher amounts of contracts might lead to economically inefficient outcomes such as weaker contract performance by women owned firms.

To differentiate between these two hypotheses, we compare contract execution by female entrepreneurs relative to their male counterparts dependent on the gender of the representative. We define execution as efficient if the

each district spent on average 2,048 million USD on contractual services and supplies. Assuming a causal increase of 4.3 percentage points, see Model 2 in Table 4, attributable to the election of a female legislator, this amounts to a increase of 88 million USD of government contracting allocated to women owned businesses per congressional district.

¹⁰[Huang \[2008\]](#); [Chava, Oettl, and Singh \[2019\]](#); [Chung \[2020\]](#) exploit similar approach to measure economic effects of state-specific policy changes.

contract is executed as agreed upon ex-ante. In other words, there are no changes in contract amount, contract maturity, or any other terms of the contract.¹¹ In short, we find that in district of female representatives women owned firms either perform similar to their male peers or better. In particular, we find some evidence that within the kinds of contracts that experience the biggest increase in probability of being awarded to female entrepreneurs, namely contract with medium to higher contract amount and longer maturity, female entrepreneurs tend to perform better than their male peers.

If we assume that the pool, quality, and behaviour of firms applying for government contracts is unaffected by the change in district representative, the above results are inconsistent with the *misallocation* and supportive of the *discrimination* hypothesis. The existing literature, however, shows that female representation might influence the behaviour by other women, the *role-model* hypothesis. For example, [Beaman, Duflo, Pande, and Topalova \[2012\]](#) show that female leaders impact girls' career aspirations and educational attainment. Hence, one could argue that the election of a female representative simply increases the pool or quality of women owned firms applying for government contracts because of some unobserved factor. To rule out this alternative explanation, we use the number of firms registered with the System for Award Management as a proxy for the number of firms intending to compete for government contracts.¹² We show that the share of registered women owned firms does not change around the election of female representatives, and hence we reject the *role-model* hypothesis.

Our analysis relates to three strands of the political economy and entrepreneurial finance literature: the literature investigating consequences of the increased participation by women in politics, the literature on political influence on government contracting, and lastly the literature on the role of gender pairings in a business environment.

First, the paper adds to the literature investigating the consequence of increased participation by women in politics. Taken together, contributions in the field support the view that female politicians take actions and support legislative policies that are targeted at and beneficial for female constituents. [Gerrity, Osborn, and Mendez](#) show that female legislators who replace men in the same district introduce more women's issues bills in Congress. [Volden, Wiseman, and Wittmer \[2018\]](#) conclude that female legislators promote more gender-related policies by increasing the amount of women issues. Besides legislative actions, female legislators contact federal agencies more frequently on behalf of women constituents than their male colleagues ([Lowande, Ritchie, and Lauterbach \[2019\]](#)). Even outside the political arena, female representatives focus more on "women's issues" in their Twitter activity ([Evans and Clark \[2016\]](#)). From a more general perspective, female representatives also approach legislative activities that

¹¹We use these performance proxies following, among others, [Giuffrida and Rovigatti \[2018\]](#); [Calvo, Cui, and Serpa \[2019\]](#); [Decarolis, Giuffrida, Iossa, Mollisi, and Spagnolo \[2019\]](#); [Carril \[2020\]](#).

¹²Another option would be to use actual bids placed for government contracts. Unfortunately, these bids are neither publicly available nor archived for longer time periods.

are unrelated to women's issues differently than their male counterparts.¹³ While the existing literature focuses mainly on the relationship between the gender of representatives and legislation activity, we contribute by asking a fundamentally different question by looking at how women in politics affect economic outcomes for women in business.

Second, we also add to the literature on political influence on government spending. Related papers in the field explain what characteristics of a politician lead to more funding allocated to her state, and what factors affect the distribution of the funds to firms, mostly focusing on firms' political connections. Regarding the former, states that are represented by members of the majority receive more federal grants (Albouy [2013]). Kasdin and Lin [2019] show that in response to the 2006 congressional elections, in which partisan control of the Congress changed to the Democrats, agencies altered their allocations of contracts. Similarly, Cohen et al. [2011] show that states represented by powerful committee chairs in Congress receive more federal spending. Concerning the latter, political connections have been shown to affect the allocation of government funds to firms, for example for the Troubled Asset Relief Program (TARP) (Duchin and Sosyura [2012]). Connection can be established via political contributions (Brogaard et al. [2020]), board connection (Goldman et al. [2013]), and ownership links (Tahoun [2014], Schoenherr [2019]). To the best of our knowledge, this paper is the first to investigate whether the gender pairing of legislator and contractor matters for contract allocation.¹⁴

Finally, we add to the literature on the role of gender pairings in a business environment, such as female entrepreneurs and female financiers. Taken together, evidence in the fields suggests that female interactions benefit women in a variety of contexts. For example, high-level female officers in the firm improve the working climate for other women at the firm, such as higher income (Bell [2005], Matsa and Miller [2011], Cohen, Hazan, and Weiss [2020]), faster career paths (Matsa and Miller [2011], Kunze and Miller [2017]), and more female-friendly working culture (Amore, Garofalo, and Minichilli [2014], Tate and Yang [2015]). Regarding access to capital, the evidence is mixed with some papers presenting evidence that female agents prefer to provide funding to female-led firms and women, while others find no evidence for bias. The literature has been studying crowd funding (Vismara, Benaroio, and Carne [2016]; Gafni et al. [2019], Bapna and Ganco [2020]), angel investors (Becker-Blease and Sohl [2007], Ewens and Townsend [2020]), venture capital (Hebert [2020], Gornall and Strebulaev [2020]), and personal debt financing (Bellucci et al. [2010]).¹⁵ We contribute to this literature, as to the best of our knowledge we are the first to report a direct effect of gender pairings across the realm of politics and business, focusing on the government's demand for products and services provided by women owned firms. From an entrepreneurial

¹³There has been extensive work done to study women as members of Congress and their impact on legislation (Swers [2001]; Swers [2005]; Pearson and Dancy [2011])

¹⁴For papers describing the incentives and biases of the government agencies that award procurement contracts please see Fernandez, Malatesta, and Smith [2012]; Brunjes and Kellough [2018].

¹⁵For additional evidence on gender bias in business and access to capital see Coleman and Robb [2009]; Asiedu, Freeman, and Nti-Addae [2012]; Wu and Chua [2012]; Alesina et al. [2013]; Lee and Huang [2018]; Guzman and Kacperczyk [2019]; Raina [2019]; Delis, Hasan, Iosifidi, and Ongena [2020].

perspective this is important, as according to [Shelton and Minniti \[2018\]](#) limited product market access is a key barrier to the survival and growth of entrepreneurs.

To sum up, we shed new light on the role of female representatives in the contracting relationship between private businesses and the U.S. government. As opposed to being merely the actors that set the legislative policies shaping the business environment, female legislators actively reduce gender biases within the U.S. procurement system. Exploiting close elections for identification, we show that female representatives causally increase the probability that a government contract is awarded to a female entrepreneur. Moreover, consequent contract performance is either unaffected or improved. This evidence on contract execution supports the *discrimination* hypothesis, and tends to reject the *role-model* and the *misallocation* hypotheses. Therefore, we conclude that female legislators decrease inefficiencies in the contract allocation process by reducing the gender bias.

Our findings are also of interest to policy makers, as the gender gap in government contracts has been prominent in public debates. Already, [Bates \[2002\]](#) points out that women owned businesses receive fewer government contracts than their male counterparts.¹⁶ In 1994, Congress enacted the Federal Acquisition Streamlining Act (FASA), signed into law by President Clinton, setting a goal of awarding 5% of federal government contract dollars annually to women owned small businesses. Since then, Congress has initiated several explicit programs aiming to increase female participation in government contracting.¹⁷ Nevertheless, it took 21 years until the goal was first reached in 2015. Our findings highlight an alternative pathway through which female politicians decrease gender gaps in government contracting. This is particularly timely, given that the number of female representatives in the House of Representatives is at an all-time high of 101 for the 116th Congress. Of these women, 88 are Democrats for which our results predict a particularly strong effect.

The rest of the paper is organized as follows. Section 2 describes the institutional details of government procurement contract allocation. We continue in Section 3 by presenting the data and summary statistics. Section 4 presents empirical tests and analyzes the results. We draw conclusions in Section 5.

2 Contracting between the U.S. government and private firms

In this section, we discuss the process of contracting between the U.S. government and private firms with a particular focus on small business set-asides and the identification of women owned businesses.

Federal procurement contracts are agreements between government agencies and businesses to obtain goods and services for a negotiated price and duration. The process of awarding government contracts starts with a federal

¹⁶For more evidence on the allocation of government procurement contracts see among others [Cohen and Malloy \[2016\]](#); [Esqueda, Ngo, and Susnjara \[2019\]](#); [Heese and Perez-Cavazos \[2019\]](#); [Canayaz, Cornaggia, and Cornaggia \[2020\]](#); [Green, Tian, and Xia \[2020\]](#).

¹⁷The most notable is the Women in Small Business (WOSB) program which was implemented in 2011. Our sample does not include contracts issued under the WOSB program and hence our findings are not driven by the increased use of it.

agency identifying a need for a purchase of a good or service. The agency decides the degree and method by which the contract is competed, the form of pricing appropriate to the contract, and whether the contract is for a definitive quantity or some indefinite delivery vehicle. Then, a contracting officer of this agency posts a solicitation on the beta.SAM.gov website. A solicitation announcement identifies what the agency wants to buy, provides instructions to potential contractors, identifies the source selection method to evaluate offers, and includes a deadline for the submission of bids or proposals. Firms then submit their offers for review by agency officers who evaluate them and make the final decision.¹⁸

Firms interested in getting a federal contract must obtain a Dun & Bradstreet Data Universal Numbering System (DUNS) unique number for each of the business's physical locations, and register with the federal government's System for Award Management (SAM). Firms that identify themselves as a small business in SAM must (1) meet the Small Business Act's definition of a small business and (2) not exceed size standards established, and updated periodically, by the Small Business Administration (SBA).¹⁹

Until Summer 2020, small businesses were able to self-certify as women owned small business (WOSB) when they register at SAM. The Small Business Act defines a WOSB as one that is a small business; is at least 51% owned and controlled by women who are U.S. citizens; has women manage day-to-day operations and also make long-term decisions. There is no additional monetary or time cost for firms to choose WOSB flag in the system. In addition, self-misclassification is punished.²⁰

In this paper, we focus on Small Business Administration (SBA) set-asides contracts with specified terms and conditions, so called definitive contracts (DCs) for two main reasons. First, 94% of women owned firms are small businesses according to the Commerce Department (Beede and Rubinovitz [2015]). Second, definitive contracts allow us to assess how female representatives impact government allocation in the case of stand-alone one-time agreements with a single firm for the purchase of goods or services under specified terms and conditions. In contrast, IDVs are agreements with one or more firms, and are characterized at the time of the award by uncertainty about the quantity of goods or services to be provided, the timing of delivery, or the scope of the agreement. This uncertainty might affect tractability of our contract performance measures.²¹

¹⁸The scope of action of contracting officers is defined and limited by the Federal Acquisition Regulation (FAR), a 1,942-page document that lays out policy goals and guiding principles as well as a uniform set of detailed policies and procedures to guide the procurement process.

¹⁹The Small Business Act defines a small business as one that is organized for profit; has a place of business in the United States; operates primarily within the United States or makes a significant contribution to the U.S. economy through payment of taxes or use of American products, materials, or labor; is independently owned and operated; and is not dominant in its field on a national basis. The business may be a sole proprietorship, partnership, corporation, or any other legal form.

²⁰The SBA has implemented several measures to strengthen the eligibility examination procedures for small businesses, including requiring adequate documentation to prove small business status. These measures take place to ensure ineligible businesses do not take advantage of small business set-asides. The rule enumerates enforcement measures; for example, the SBA shall have the right to disbar large contractors who identify themselves as a WOSB fraudulently from participating in Federal procurement opportunities (Khazan [2012]). The SBA reserves the right to monitor businesses for such fraud by conducting unannounced site visits. Finally, a contracting officer or third party has the opportunity to appeal the SBA's finding of eligibility by filing a "status protest" with the Office of Hearing and Appeals (Khazan [2012]).

²¹DCs and IDVs each account for roughly half of the contract spending (GAO [2017]).

The SBA set-aside is the most prevalent set-aside program, which sets aside federal procurement opportunities for small business concerns, regardless of gender.²² The main requirement that federal agencies generally reserve contracts that have an anticipated value greater than the micro-purchase threshold (currently \$10,000) but not greater than the simplified acquisition threshold (currently \$250,000) exclusively for small businesses unless the contracting officer is unable to obtain offers from two or more small businesses that are competitive with market prices and the quality and delivery of the goods or services being purchased. In addition, federal agencies generally set aside contracts that have an anticipated value exceeding the simplified acquisition threshold exclusively for small businesses when there is a reasonable expectation that offers will be obtained from at least two responsible small businesses offering the products of different small businesses (Rule of Two) and the award will be made at a fair market price.

3 Data

We combine three sets of data, namely congressional house elections, contracts awarded by the government to firms, and firms registered as prospective government contractors. In this section, we discuss variable construction for each of the three data sources.

3.1 Close U.S. House of Representatives elections

We gather information for all general and special House of Representative elections beginning with the 108th and ending with the 115th congress from the Federal Election Commission. Our sample starts with the special election in California’s 50th congressional district on the 6th of June 2006 won by Brian P. Bilbray, a Republican, over Francine Busby, a Democrat, and finishes with the general election of the 115 Congress held on the 8th of November in 2016.

The main analysis relies on close election for identification. Similar to [Lee \[2001\]](#), [Akey \[2015\]](#), and [Akey and Lewellen \[2017\]](#), we compute the election margins as the difference between votes obtained by the winner and the runner-up, and define elections with margins less or equal to 5 percentage points as close. As an additional filter, we limit the data to mixed-gender races in which a female candidate competes against a male one. Finally, we exclude close elections that are subsequent to other close elections in the same congressional district.

This leaves us with 42 general and 2 special elections in 41 different congressional districts and 26 different states. Of those 20 are won by female candidates, the remaining 24 by the male contestant. While we identify close elections for each congress in our sample, most close elections are from the 110th and 113th congress, namely

²²We exclude set-aside programs for specific types of small businesses (e.g., 8(a) small businesses, HUBZone small businesses, women-owned small businesses (WOSBs), and service-disabled veteran-owned small businesses (SDVOSBs)).

12 and 10 individual close elections respectively. Table 1 provides an overview of elections considered. The elections in the sample are fairly balanced regarding the party winning, whether or not there is a change in gender or party, the age of the elected official, and the gender of the incumbent. Personal information for individual representatives such as age, gender, and political party is obtained through the Bioguide Personal Pages. Table ?? in the in Appendix lists information for each close election, in particular, the Congress, the district, and election type. For both the winner and the loser, we report their name, gender, party, and percentage of votes received in the election.

The main identification relies on the assumption that the outcome of a close election is random ex-post. In Figure 2, we investigate the presence of bunching of mixed gender races outcomes. Both panels display a histogram of elections along the vote margin, defined as the difference between the vote received by the female candidate minus the votes received by the male opponent. A vote margin above zero indicates that the female candidate won. The upper panel includes all elections with vote margins between -50 and 50 percentage points, and suggests that a female candidate on average loses against a male candidate with a margin of -25 percentage points. The lower panel focuses on elections between -5 and 5 percentage points of vote margin, our sample of close elections. The histogram shows an even distribution of elections across the vote margin, with the potential exception of 10 election won by male candidates by a margin of 1 to 2 percentage points.

3.2 Contracts between the U.S. government and private firms

Our sample of procurement contracts between the U.S. Government and individual firms is obtained from the Federal Procurement Data System-Next Generation (FDPS-NG) and spans the period January 2005 to December 2018. We limit the sample to contracts that are awarded competitively and which only small businesses can compete for, namely Small Business Administration set-asides. We also exclude contracts without a well-defined completion date and budget. Additionally, we require that the contract is awarded to a firm directly, meaning the contract is not awarded to the parent company and is not a part of a bundled project, the contract is awarded and performed inside the U.S. without any foreign funding, the contractor is neither a government organization nor a nonprofit organization, and that the contractor is registered in the U.S. and not foreign owned.

In this paper, we study whether the probability of a contract being awarded to a female entrepreneur is associated with the gender of the representative in the district the respective contract is performed. The FAR defines a business as women owned if at least 51 percent of it owned by one or more women and in which management and daily business operations must be controlled by at least one woman. Figure 1 presents time series plot of the share of government contracts awarded to women owned businesses from 2005 to 2018, both equally and contract amount weighted. After an initial increase to 2008, the share of contracts awarded to female representatives oscillates

around approximately 20%. Unconditionally, there is also substantial variation within individual congressional districts over time as Figure 3 shows. It displays the share of contracts awarded to female entrepreneurs for each of the congressional district of the 110th (upper) and 114th (lower) Congresses. While there is persistence in some areas, for example, persistent lower allocation to female entrepreneurs in the middle North-West (except Washington) and Western part of the Mid-West, there is also substantial time variation in other parts, for example, comparing the allocation in the South-East and Eastern part of Mid-West from the 110th to the 114th Congress.

Our identification strategy relies on mixed gender House elections that are decided by a close margin. Hence, we limit the full contract sample to contracts awarded in a 18 months window around the identified term start dates, excluding the time between election and term start date. We exclude close elections with fewer than 10 contracts before and after the term start date. Table 2 provides summary statistics for both the full data set in Panel A but also for contracts specifically associated with close elections in Panel B.

The raw sample consists of 1,038,018 contracts worth 50.6 kUSD, amounting to a total of 52.6 billion USD spent by the U.S. government. Contracts awarded to female entrepreneurs tend to be smaller in contract amount, in average by 8.1 kUSD. However, the most striking difference between female entrepreneurs and male ones is that there are less than half the size of male entrepreneurs, both in terms of annual revenue and number of employees. Finally, we consider three measures of contract performance, namely whether the final contract amount equals the initial contract amount, whether the contract is executed during the initially specified maturity, and whether there were any modifications to the contract terms. Unconditionally, female and male entrepreneurs perform similarly. Table 2 Panel B provides summary statistics for the sample associated with close elections, separately for before and after the term start date. Notably, the share of contracts allocated to female entrepreneurs drops by 3.8 percentage points.

Firms owned by women differ from their male counterparts regarding among others which products or services they provide, and in which industries they operate.²³ Figure 2 illustrates this point by reporting the share of contracts awarded to female entrepreneurs across different 2-digit NAICS industries, indicating big heterogeneity. For example, more the 30% of contracts in the sectors 'Art, Entertainment, and Recreation', 'Educational Services', and 'Health Care and Social Assistance' are awarded to female entrepreneurs. In contrast, less than 15% of the contracts in the sections 'Agriculture, Forestry Fishing and Hunting', 'Public Administration', and 'Finance and Insurance' are awarded to female entrepreneurs. In addition to NAICS industry classification of the contractor, we observe the government awarding agency and the 2-digit product and service code.

²³The observation that female entrepreneurs differ from the male counterparts regarding products and services provided is also found in studies by Gafni et al. [2019]; Ewens and Townsend [2020] and Hebert [2020].

3.3 System for Award Management

To assess the pool of firms that are willing and able to participate in federal contracting, we use the System for Award Management (SAM), a continuously updated administrative system for the registration of current and prospective federal contractors. To conduct any business with the Federal Government, a firm needs an active registration in SAM. Using this dataset, we obtain the number of potential and current contractors per congressional district. We merge data from SAM and FDPS using DUNS numbers which are uniquely assigned to private firms.

4 Analysis

4.1 Unconditional analysis

We start by investigating correlations between the gender of the district representative and the probability of awarding government contracts to female entrepreneurs for the full sample of all contracts in the SBA set-aside program in a regression framework. The full sample includes all congressional districts spanning the 109th to the 115th Congress. Specifically, we estimate equations of the form:

$$WOB_{c,t,d} = \alpha + \beta_1 \times \text{Female Representative}_{t,d} + \gamma_c + \eta_t + \phi_d + \varepsilon_{c,t,d} \quad (1)$$

in which $WOB_{c,t,d}$ is an indicator variable which equals one if contract c awarded at time t and performed in congressional district d is awarded to a women owned firm. $\text{Female Representative}_{t,d}$ is an indicator variable which equals one if the congressional district d at time t is represented by a female legislator. γ_c are contract specific fixed effects for the 2-digit NAICS code, for the agency awarding the contract, and for the 2-digit product and service code²⁴. ϕ_d captures congressional district fixed effects and η_t are year-month fixed effects.

Importantly, we do not include contract specific information, such as amount and maturity, and firm characteristics, such as annual revenue and number of employees, as controls in the regression. This is due to the fact that these variables are not determined at the time of solicitation announcement but in negotiations with the firm receiving the contract. Hence, they are bad controls.

Throughout the paper, we use linear probability models, rather than probit, for two reasons. First, probabilistic models are biased in the presence of large number of fixed effects (Madalla 1987; Greene 2004). Second, estimation of the statistical and economic significance of interaction terms, our main coefficients of interest, is more

²⁴The General Services Administration divides every product or service purchased by the U.S. federal government into one of 24 services classes or one of 90 product classes.

reliable with an ordinary least squares (OLS) model (Angrist and Pischke 2008),

The main coefficient of interest is $\hat{\beta}_1$ which measures how much more likely a contract is allocated to a women owned business in congressional districts with female representatives. Table 3 presents the results. Column one considers the full sample. Focusing on congressional district that are or could have been represented by female politicians, we limit the full sample to representatives elected in a mixed gender race without imposing any limits on the voting margin in column two. In column three and four, we limit our sample to Democratic and Republican House Representatives. According to [Osborn, Kreitzer, Schilling, and Clark \[2019\]](#), Republican female legislators are at least as conservative as their Republican male colleagues. Moreover, Republican female donors do not focus on candidate gender and prefer conservative candidates ([Thomsen and Swers \[2017\]](#)). Also, Republican women may be constrained in their actions because they are a much smaller proportion of their party's legislators than Democratic women ([Dittmar, Sanbonmatsu, Carroll, Walsh, and Wineinger \[2017\]](#)) In column five, we limit the sample to contracts awarded during the last two weeks of September which are the end of the fiscal year. [Liebman and Mahoney \[2017\]](#) and [Carril \[2020\]](#) indicate that during this time government agencies go on a spending binge to justify future budget requests, so called the fiscal year spurge. We hypothesize that during that period there is more discretion in regards to the decision of government contractor and hence we expect the effects to be particularly strong.

In congressional districts which are represented by female Democrats, the probability of a contract being awarded to a women owned firm is 3.9 percentage points higher relative to the districts which are represented by male Democrats, significant at the 5% level. To assess the economic significance of the estimated coefficients, we report the unconditional probability that a contract is awarded to a female entrepreneur in the sample used in all tables. For model three, 18.9% of contracts are awarded to female entrepreneurs which implies that the effect attributable to female representatives amounts to approximately a fifth of the unconditional probability. All other models report insignificant correlations. These results are only indicative as the inference might be subject to endogeneity bias.

4.2 Close elections

To estimate the causal effect of female representatives on contract allocations, we use ex-post close elections between opponents of opposite gender as a source of exogenous variation similar to [Lee \[2001\]](#), [Akey \[2015\]](#), and [Akey and Lewellen \[2017\]](#). The identifying assumption is that in close elections, it is extremely difficult to predict the winner during the election cycle and hence the gender of the elected representative is as if randomly assigned. Following the literature, we define close elections as those with less than a 5 percentage points margin of victory.

We use a difference-in-difference regression framework to isolate the change in probability of awarding a contract to a female entrepreneur attributable to the election of a female representative. In particular, we estimate equations of the form:²⁵

$$\begin{aligned} WOB_{c,t,d(e)} = & \alpha + \beta_1 \times \text{Female Representative}_e + \beta_2 \times \text{Incoming congress}_{e,t} \\ & + \beta_3 \times \text{Female Representative}_e \times \text{Incoming congress}_{e,t} + \gamma_c + \eta_t + \phi_e + \epsilon_{c,t,d(e)} \end{aligned} \quad (2)$$

in which $WOB_{c,t,d(e)}$ is an indicator variable which equals one if contract c awarded at time t and performed in congressional district d associated with close election e is awarded to a women owned firm. $\text{Female Representative}_e$ is an indicator variable which equals one if the close election e is won by a female legislator. $\text{Incoming congress}_{e,t}$ is an indicator variable which equals one after the start of the term for election e . γ_c are contract specific fixed effects for the 2-digit NAICS code, for the agency awarding the contract, and for the 2-digit product and service code. η_t are year-month fixed effects. ϕ_e captures election fixed effects which subsume congressional district fixed effects.

The sample considers all contracts awarded in congressional districts experiencing a close mixed-gender elections in an 18 months window around the identified term start dates. We exclude the time between election and term start date, as for this time period the outcome of the election is known but the incumbent is still in charge. We select an 18 months window to include as many contracts as possible in the sample without including contracts awarded close to the next election in which re-election concerns might impact incentives. In addition, we exclude close elections with less than ten contracts before and after the term start date.

In our Difference-in-Difference specification β_1 can be interpreted as a structural difference in the probability of female entrepreneurs being awarded contracts in districts that will be won by female candidates. Under the parallel trend assumption and if outcomes of close elections are truly random, we expect the estimated $\hat{\beta}_1$ to be economically small and statistically insignificant. The inclusion of election fixed effects ϕ_e subsumes β_1 which hence is not identifiable. β_2 can be interpreted as the difference in probability of a contract being awarded to a female entrepreneur before and after the election, disregarding the outcome of the election. As we control for time fixed effects, which pick up the general trend that female entrepreneurs are awarded more contracts over time, we expect this coefficient to be statistically insignificant. Due to the presence of time fixed effects η_t and the fact that general elections are held on the same point in time for all congressional districts, $\hat{\beta}_2$ is only identified due

²⁵Related papers exploiting close elections often use Regression Discontinuity Designs which include vote margin in the specification, using linear, quadratic, polynomial, and spline functions. In contrast, we use a difference-in-difference framework using data before and after the election. For robustness, results including additional terms for the voting margin, using different definition of close elections, and different time windows can be obtained on request.

to the two special elections included in the sample, and hence hard to interpret. Because of this, we do not report it.

The coefficient of interest is β_3 which measures the treatment effect of exogenously receiving a representation by a female House representative. It can be interpreted as the increase in probability, reported in percentage points, that female entrepreneurs are awarded contracts if a woman compared to a man wins the election.

Table 4 reports the results. After the election, the probability of a contract being awarded to a women owned firm increases by 6.8 percentage points if a newly elected representative is a woman within a congressional district. In column two and three, we differentiate between elections with a male and a female incumbent. Due to the existing evidence on gender bias, we expect that the economic effect concentrates in elections in which a woman succeeds a male incumbent, which is confirmed in the data. We estimate an increase of 4.3 percentage points which is significant at the 5% level. Finally, we limit the sample to contracts awarded in the last two weeks of September, the end of the government's fiscal year. During this time, we assume that there is more discretion in the decision of government contract allocation and hence we expect a stronger results. While the estimated effect is lower with 3.0 percentage points, precision is increased substantially. The results are significant at the 1% level with a t-value of 5.9. From an economic perspective, the magnitudes range between 15% and 36% of the unconditional probability and, with the exception of model four, exceed the unconditional growth in contract allocation to female entrepreneurs from 2005 to 2018.

For the remainder of the paper, we focus on the sample of elections with a male incumbent. Results for the whole sample which can be obtained by request are similar but slightly weaker from a statistical perspective.

4.3 Robustness, parallel trends, and falsification tests

In case the outcome of close elections is truly random, the results presented in the previous section are causal. In this subsection, we show that our results are robust to varying definitions of close elections and that in absence of treatment the congressional district exhibit parallel trends.

To disperse concerns that a 5% vote margin threshold is too wide to identify elections with ex-post random outcomes or that it is cherry picked, we redo the analysis for all mixed gender elections with male incumbents imposing different vote margin thresholds defining a close elections. Decreasing the vote margin from 10% to 1% does not affect statistical significance but increases the economic effect detected, as shown in Table 5. For all models, the estimated effect is significant for at least at the 5% level, increasing in economic magnitude when limiting the vote margin. The high coefficient in model five can be explained by the observations that the relevant sample only covers seven elections of which three are won by women and hence a single election might make a substantial impact on the estimate. Notably, for all models the probability of a female candidate winning the election is close

to 50%, ranging between 45.2% to 57.1%, which further supports the claim that the outcome of these elections is hard to anticipate. There is one difference to our main specification in Table 4, namely the inclusion of month fixed effects instead of year-month effects. The reason is that as the number of unique elections is decreasing when limiting the voting margin, our main coefficient of interest becomes increasingly subsumed by the fixed effects, in particular by year-month fixed effects.

In a next step, we examine the parallel trend assumption before and after the treatment date, by repeating the analyses with placebo event dates. In particular, we distort the event date by 36 and 24 month before and after the actual term start date associated with the close election. In the cases of general elections, distorting the term start date by 24 month coincides with the election of the previous or subsequent congress. If the parallel trend assumption is satisfied, we would expect to find an economically small and statistically insignificant coefficient, which we do as reported in Table 5. Besides the original event date, model three, all estimated coefficients are insignificantly different from zero.

4.4 Contagious counties

In the previous section, we provide support for the claim that the outcome of close elections is ex-post random, and hence inference is causal. In this section, we provide additional evidence that time-varying district-specific unobserved variable that correlates with both the probability of female candidates winning and the gender bias in contract awarding cannot explain our results. We achieve this by exploiting counties that span multiple congressional district, henceforth called contagious counties.

The identifying assumption is that such areas have similar observed as well as unobserved characteristics except for the district representative (see Huang [2008]; Chava et al. [2019]; Chung [2020]). In this set-up, we can include time-varying county-specific fixed effects and still identify the impact a female representative has on the gender bias in contract awarding. Compared to previous approaches in which we estimate the differential effect of electing a woman over a man, another added benefit of this approach is that we can isolate the effect of electing a female or a male representative individually. This is interesting, as it might be the case that a man narrowly winning against a woman, might respond by increasing the share of contracts allocated to female entrepreneurs. One could think of several reasons, for example in order to diminish the electoral support for the women during future elections, or by realizing how important women's issues are due to the narrow election result.

The sample is constructed as follows. For each close election, we determine contagious counties that are partially within the relevant congressional district. A contagious county is defined as a county which spans multiple congressional districts with at least 20% of all contracts awarded being issued in each congressional district. We construct an indicator variable *Affected district*, that turns one if the contract was awarded in the part of the conta-

gious county that was affected by a close election, and zero otherwise. In the case of general elections, elections are held in all counties at the same time. In other words, even the control counties are experiencing an election. Because of this, we only consider contagious counties that experience same gender elections besides the identifying close elections.

Using this sample, we can estimate the causal effect of a female and of a male representative winning a close election separately. In particular, we estimate following equation using OLS:

$$WOB_{c,t,a(e)} = \alpha + \beta_1 \times \text{Affected district}_{a(e)} + \beta_2 \times \text{Incoming congress}_{e,t} + \beta_3 \times \text{Affected district}_{a(e)} \times \text{Incoming congress}_{e,t} + \gamma_c + \phi_e + \iota_{a,t} + \varepsilon_{c,t,a(e)} \quad (3)$$

in which $WOB_{c,t,a(e)}$ is an indicator variable which equals one if contract c awarded at time t and performed in county a associated with close election e is awarded to a women owned firm. $\text{Affected district}_{a(e)}$ is an indicator variable which equals one if the county $a(e)$ is affected by the close election e . $\text{Incoming congress}_{e,t}$ is an indicator variable which equals one after the start of the term for election e . γ_c are contract specific fixed effects for the 2-digit NAICS code, for the agency awarding the contract, and for the 2-digit product and service code. ϕ_e captures election fixed effects which subsume congressional district fixed effects.

The main goal of this specification is to control for time-varying unobserved effects namely by including county year-month fixed effects, captured by $\iota_{a,t}$. The coefficient of interest is $\hat{\beta}_3$, which measures the effect attributable to the winner of the close election.

Table 7 model one and two report the results. In model one, we only consider close elections which are won by a female candidate while model two focuses on elections won by a man. In short, while the election of a female candidate causes a significant increase in contracts awarded to female entrepreneurs, the elections of a man lead to a smaller but still significant decrease. Specifically, the election of a woman leads to an increase of 5.6 percentage points, slightly higher than previous results.

Finally, we consider the full sample of close elections, by estimating following Difference-in-Difference-in-Difference regression:

$$\begin{aligned}
WOB_{c,t,a(e)} = & \alpha + \beta_1 \times \text{Affected district}_{a(e)} + \beta_2 \times \text{Incoming congress}_{e,t} + \beta_3 \times \text{Female Representative}_e \\
& + \beta_4 \times \text{Affected district}_{a(e)} \times \text{Incoming congress}_{e,t} \\
& + \beta_5 \times \text{Affected district}_{a(e)} \times \text{Female Representative}_e \\
& + \beta_6 \times \text{Female Representative}_e \times \text{Incoming congress}_{e,t} \\
& + \beta_7 \times \text{Affected district}_{a(e)} \times \text{Incoming congress}_{e,t} \times \text{Female Representative}_e \\
& + \gamma_c + \phi_e + \iota_{a,t} + \epsilon_{c,t,a(e)}
\end{aligned} \tag{4}$$

in which *Female Representative_e* is an indicator variable which equals one if the close election *e* is won by a female legislator. This specification allows us to identify the causal effect of electing a female representative over a male one controlling for time-varying district-specific unobserved variable, estimated by $\hat{\beta}_7$. Table 7 model three, provides strong support for our main hypothesis with an effect of 4.0 percentage points significant at the 1% level with a t-value of 5.7.

Taking together, section 4.3 and 4.4 suggest that the main findings of this paper are causal.

4.5 Sub-sample analysis

In this section, we investigate sub-samples based on representative and election characteristics. First, we want to disperse any concerns that our results are driven by other factors which may correlate with representative gender, such as age and political affiliation. Second, we investigate if the ability and motivation of female representatives to support women owned businesses varies with characteristics consistent with related research.

Our empirical approach is similar to the main results presented in Section 4.2 as we reestimate Equation 2 for sub-samples. In particular, we investigate the age of the representative, whether or not the election led to a change in ruling party, the political affiliation of the winning representative, and lastly the political affiliation of the incumbent. Table 8 reports the results.

First, we distinguish between representatives younger and older than 56 years, the median age. The main concern would be that female representatives tend to be younger, and younger representatives might care more about gender bias in any context. We can reject this concern by looking at the summary statistics, as in both the full sample and the close election sample, the average age of female politicians is comparable to the age of their male counterparts. In contrast, for the 116th Congress, which is not part of our sample, there was a record number of female representatives, many of them newly elected.²⁶ Several of them, such as Alexandria Ocasio-Cortez and

²⁶For this Congress, the age of newly elected is 48 years, two years younger than for the previous Congresses.

Ilhan Abdullahi Omar, received substantial media attention and are younger than their colleagues, which might shape the preconception of female representatives being younger.

We find that the impact female representatives have on the gender bias in contract allocation is stronger for younger representatives compared to older ones but significant for both, as seen in column one and two in Table 8. For representatives younger than 56 years, electing female representatives leads to an 11.7 percentage point (56.0%) increase in contracts awarded to women owned businesses significant at the 10% level, compared to 3.2 percentage points (19.3%) for older ones significant at the 5% level.

Second, we distinguish between elections leading to a change in party and the ones that do not. We find significant effects for both types of elections as reported in column three and four. Magnitudes are fairly similar with 4.6 percentage points (28.1%) significant at the 5% level for elections with changes in gender, and 5.6 percentage points (24.4%) significant at the 10% level for the ones not leading to changes in the ruling party.

Third, we investigate whether the party affiliation of the representative, Democratic or Republican, matters in column five and six. Republican women are potentially constrained in their actions in Congress because they are a much smaller proportion of their party's legislators than Democratic women ([Dittmar et al. \[2017\]](#)). We find a strong and positive effect associated with female Democrats and the opposite for female Republicans. While the magnitudes are considerably different and both significant at the 1% level, we would like to point out that the samples are fairly unbalanced. In column five, we consider eleven elections of which nine are won by female Democrats. In contrast, the sample in column six considers 19 elections of which only three are won by female Republicans. Hence, while the finding that the effects concentrate with Democrats is consistent with [Dittmar et al. 2017](#) and [Osborn et al.](#), the results have to be taken with care due to the unbalanced sample.

Finally, we investigate whether the party affiliation of the incumbent matters. The argument being that male Democrats may care more about female issues than male Republicans, so that the election of a female representative will not lead to change in contract assignment. We find that the effect concentrates in elections with Republican incumbents for which the election of a female representative leads to an increase of 7.2 percentage points (32.1%) significant at the 5% level. In contrast to the previous analysis, the samples in column seven and eight are balanced along the gender dimension with 50% and 36% of the elections being won by women in column seven and eight, respectively. However, the vast majority of election won by female representatives with a Republican incumbent, are won by female Democrats.

Taken together, this section suggests that neither the age of the representative nor the fact whether the election led to a change in party matters. However, there is strong evidence that the party affiliation makes a difference, in particular that the main effect is due to female Democrats.

4.6 Heterogeneous effects based on contract features

Previous results apply to all government contracts not depending on individual features, such as contract amount and maturity. While the probability that female entrepreneurs receive government contract increases in the presence of female politicians, the economic effects might be small if the effects concentrate in small and hence unattractive contracts. In this section we ask whether the detected effect varies with contract features.

In particular, we divide the full sample of government contracts in terciles based on contract amount and maturity, and re-estimate Equation 2. The results are reported in Table 9 and suggest that the effects are strongest for medium and large contracts, and for contracts with a long maturity. For the lowest tercile of contract amount, we detect an insignificant effect while for the biggest tercile the election of a woman increases the probability that a contract is awarded to a female entrepreneur by 5.2 percentage points (26%) at the 5% significance level. For maturity terciles, the pattern is even more pronounced with a significant positive effect of 13.1 percentage points (69%) at the 5% significance level for the contracts with longest maturity.

These results suggest that the effect concentrates in attractive contracts, specifically contracts with large amounts and longest maturity.

4.7 Contract performance

In this section, we investigate the change in gender bias from a performance perspective. Most likely, a female politician has many motives to award more contracts to women other than allocating contracts to the best bidding firm. Taken to the extreme, re-election concerns or favoritism in contract allocation might cost the U.S. government as the newly chosen firms perform worse and contracts need to be renegotiated. On the other hand, if female politicians reduce a pre-existing and value destroying gender bias in government contracting, this might be beneficial to the U.S. government as performance quality is increasing.

To differentiate between these arguments, we ask if the performance difference between male and female entrepreneurs depends on the gender of the elected official, using a sample of contracts awarded within the 18 months after the term start subsequent to a close election. We estimate following model using OLS:

$$\begin{aligned} \text{Performance}_{c,t,d(e)} = & \alpha + \beta_1 \times \text{Female Representative}_e + \beta_2 \times \text{Female entrepreneur}_{c,t,d(e)} \\ & + \beta_3 \times \text{Female Representative}_e \times \text{Female entrepreneur}_{c,t,d(e)} + \gamma_c + \eta_t + \phi_e + \varepsilon_{c,t,d(e)} \end{aligned} \quad (5)$$

in which $\text{Performance}_{c,t,d(e)}$ indicates the performance of contract c awarded at time t and performed in congressional district d associated with close election e . We use three binary measures of performance all indicating if

the contract was executed as agreed upon initially. $Performance_{c,t,d(e)}$ turns one if there was a change in contract amount, if there was a change in maturity, and if there was any modification. Using these measures of performance is motivated by Brogaard et al. [2020], who report that political influence leads to renegotiations of existing government contracts.²⁷

$Female Representative_e$ is an indicator variable which equals one if the close election e is won by a female legislator. $Female entrepreneur_{c,t,d(e)}$ is an indicator variable which equals one if contracts c is executed by a women owned business. γ_c are contract specific fixed effects for the 2-digit NAICS code, for the agency awarding the contract, and for the 2-digit product and service code. η_t are year-month fixed effects. ϕ_e captures election fixed effects which subsume congressional district fixed effects.

In our Difference-in-Difference specification β_2 can be interpreted as the difference in performance comparing female and male entrepreneurs. The coefficient of interest is β_3 measuring whether this performance difference depends on the gender of the elected house representative. If the reported effects are driven by missallocation, we would expect worse performance by female entrepreneurs in districts with a female representative, meaning that $\hat{\beta}_3$ is positive and significant. If female politicians reduce a unjustified gender bias in government contracting, we expect the opposite.

Table 10 reports the results. Each Panel considers a different performance measure and column one uses the full sample of contracts. While the point estimates are consistently negative, pointing towards the gender bias hypothesis, they are not significant.

In Section 4.6, we show that the largest impact of female representatives on contract awarding to female entrepreneurs concentrates in contracts with medium and large contracts, and contracts with long maturity. In a next step, we ask if the performance differences between female and male entrepreneurs varies along the same dimensions. In particular, we estimate Equation 6 separately for each tercile of contract amount and maturity and results are reported in Table 10. In column two to four (five to seven) we report the results for each sub-sample based on contract amount (maturity) terciles, separately for each performance measure in each panel.

The main take away is that for contracts with longest maturity, female entrepreneurs perform substantially better than male entrepreneurs in districts won by female representatives. For example, female entrepreneurs are 15.5 percentage points (51%) more likely to execute contracts without a change in contract amount compared to male entrepreneurs in districts won by a female representative. In addition, female entrepreneurs are 10.4 percentage points (47%) more likely to execute a contract without a change in maturity and 15.6 percentage points (26%) more likely to execute a contract without any modification. All three mentioned effects are at least statistically

²⁷Brogaard et al. [2020] find that in their sample 83% of the funds allocated to government contracts is due to these renegotiations (1.9 trillion USD out of 2.3 trillion USD). In contrast, in our sample only 24% are due to these renegotiations. The main difference is that our sample focuses on SBA set asides while Brogaard et al. [2020] considers a sample of contracts awarded to public listed firms.

significant at the 5% level. Point estimates for contract maturity tell a similar story but for the most part are statistically insignificant.

Taken together, there is weak evidence that exactly for the kinds of contracts which are more likely awarded to female entrepreneurs in district run by female representatives, female entrepreneurs deliver better performance. This suggest a rejection of the miss-allocation hypothesis.

4.8 Changes in the pool of firms bidding for governmental contracts

The election of a female representative might affect the behaviour of women owned business competing for governmental contracts. Evidence for the mechanism that the representation of women by another women changes behaviour can be found in [Beaman et al. \[2012\]](#) who show that female leaders impact girls' career aspirations and educational attainment.

In our set-up this might imply that if female entrepreneurs perceive that obtaining contracts is easier because a new representative is a woman, either the rate of new business creation or the bidding rate by female entrepreneurs may increase after the election. This would imply that the increase in odds of getting government contract by women owned firms in the main results is driven by an increase in female firms bidding for the contracts rather than an increase in probability getting a contract by female firms. While the number and type of firms bidding for a government contract is unobservable as awarding agencies do not keep historical bid records, we observe the firms registered with SAM, a necessary condition if a firm wants to compete for contracts.

To assess the validity of the role model hypothesis, we investigate if the pool of firms in districts experiencing close elections changes. Using the sample of all close elections, we estimate following cross-sectional regression model:

$$\Delta Y_e = \alpha + \beta_1 \times \text{Female Representative}_e + \beta_2 X_e + \eta_C(e) + \varepsilon_e \quad (6)$$

in which Y_e are a series of dependent variables capturing the changes in the pool of firms around close elections. X_e are a set of control variables for each elections, namely an indicator if the winner is Republican, the winner is the incumbent, and the logarithm of the representatives age. *Female Representative_e* is an indicator variable which equals one if the close election e is won by a female legislator. $\eta_{C(e)}$ are Congress C fixed effects.

In column one, the dependent variable is the log change in firms registered in SAM before and after the close elections. The results suggest that the election of a female representative leads to an increase in the number of

firms intending to bid for government contracts. Column two reports results for the dependent variable of interest in this section, namely the linear change in the share of female registered firms before and after a close elections. In case the election of a female representative leads to an increase in female firms bidding for governmental contracts, we would expect a positive and significant coefficient. We find the opposite, namely an insignificant and slightly negative one which we interpret as evidence against the role model hypothesis.

Obviously the main shortcoming of this analysis is the low number of observations, namely only 44 close elections with enough data. In a last step we verify whether the main result of the paper, the awarding of governmental contracts to female entrepreneurs in districts won by female representatives, survives a similar aggregation. In column four, we use the linear change in share of contracts allocated to female entrepreneurs as dependent variable. We find an increase of 7 percentage points significant at the 5% level, an estimate close to the ones in the main section of this paper. For completion, we investigate whether the election of female representatives has any impact on the number of contracts awarded in a congressional district, which we reject in column three.

Taken together, we find evidence that rejects the hypothesis that the election of female representatives leads to a change in the number of women owned businesses competing for government contracts.

5 Conclusion

In this paper, we shed new light on the role of female representatives in the contracting relationship between private businesses and the U.S. government. Exploiting close elections for identification, we show that female representatives causally increase the probability that a government contract is awarded to a female entrepreneur. Moreover, consequent contract performance is either unaffected or improved. This evidence on contract execution supports the *discrimination* hypothesis, and tends to reject the *role-model* and the *misallocation* hypotheses. Therefore, we conclude that female legislators decrease inefficiencies in the contract allocation process by reducing the gender bias. To the best of our knowledge, this paper provides the first systematic analysis in the financial economics literature of how the political empowerment of women affects business environment for female entrepreneurs.

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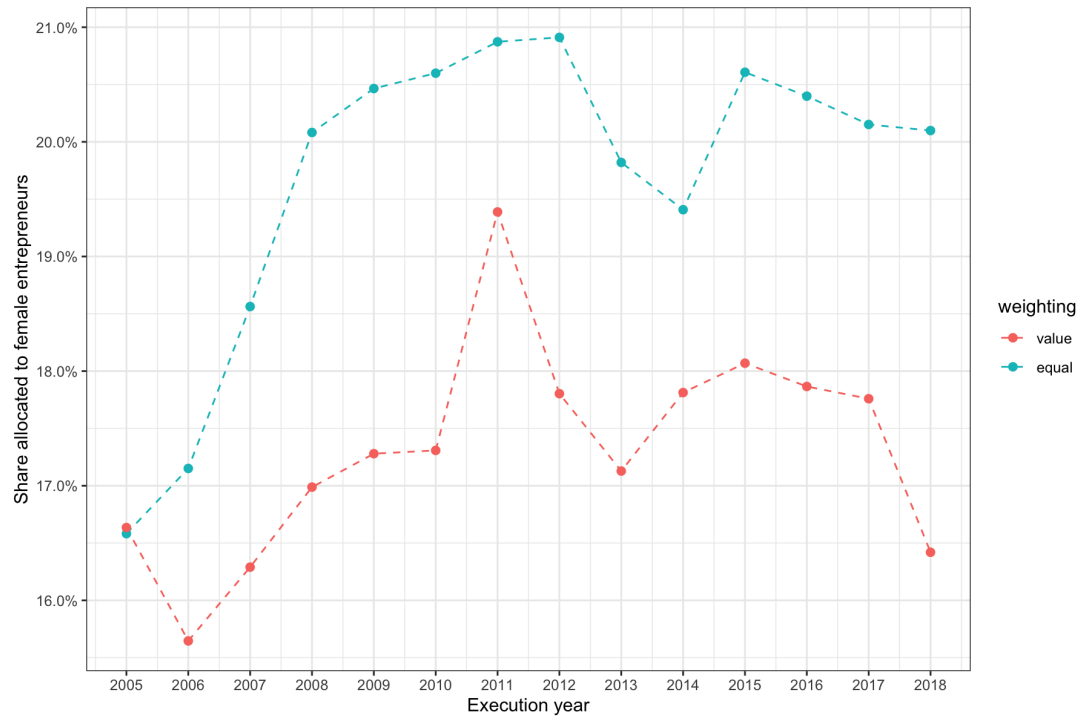
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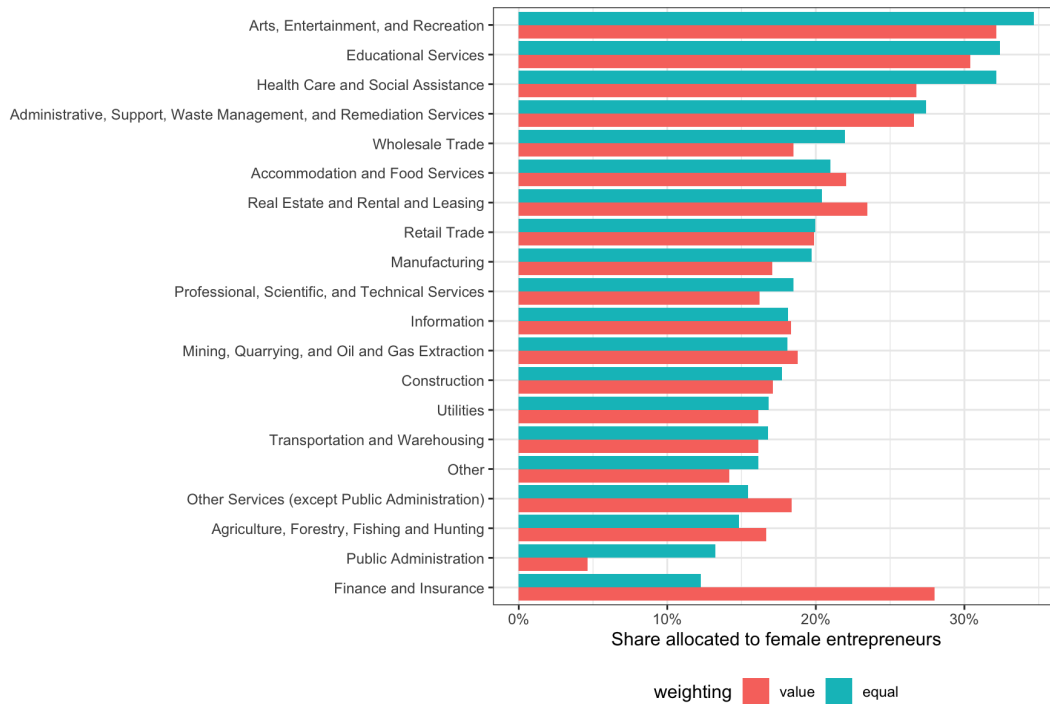
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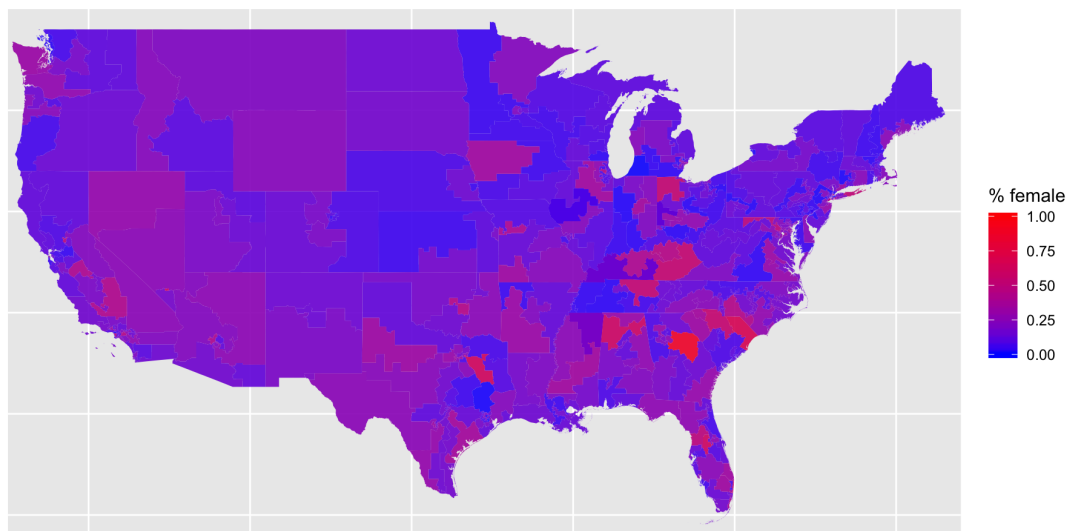
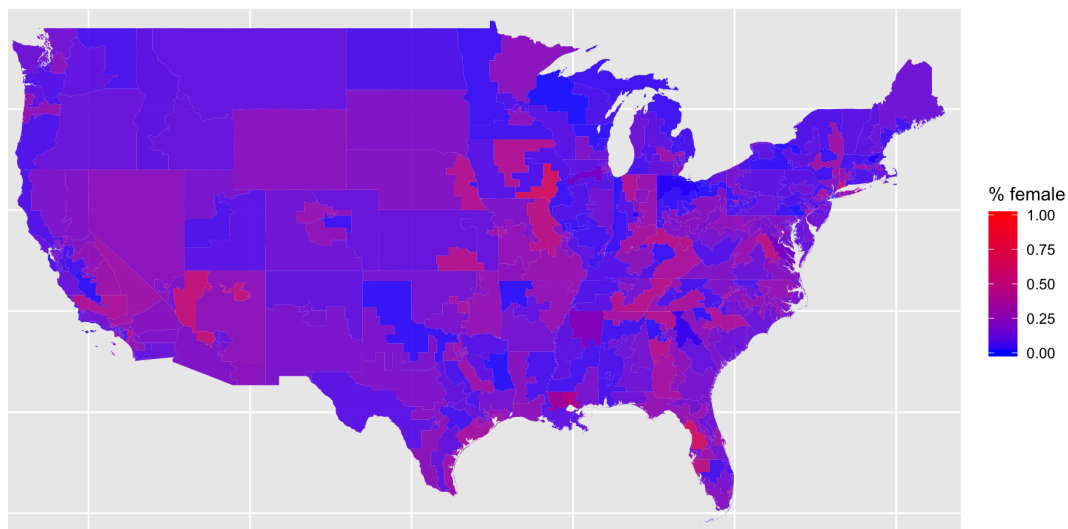
The plot displays the share of government procurement contracts allocated to female entrepreneurs for individual calendar years. The blue line displays the equally weighted average while the red line displays the contract amount weighted share. The sample considers all contracts awarded under the SBA program that are competitive between 2005 and 2018.

Figure 1: Share of government procurement contracts allocated to female entrepreneurs over time



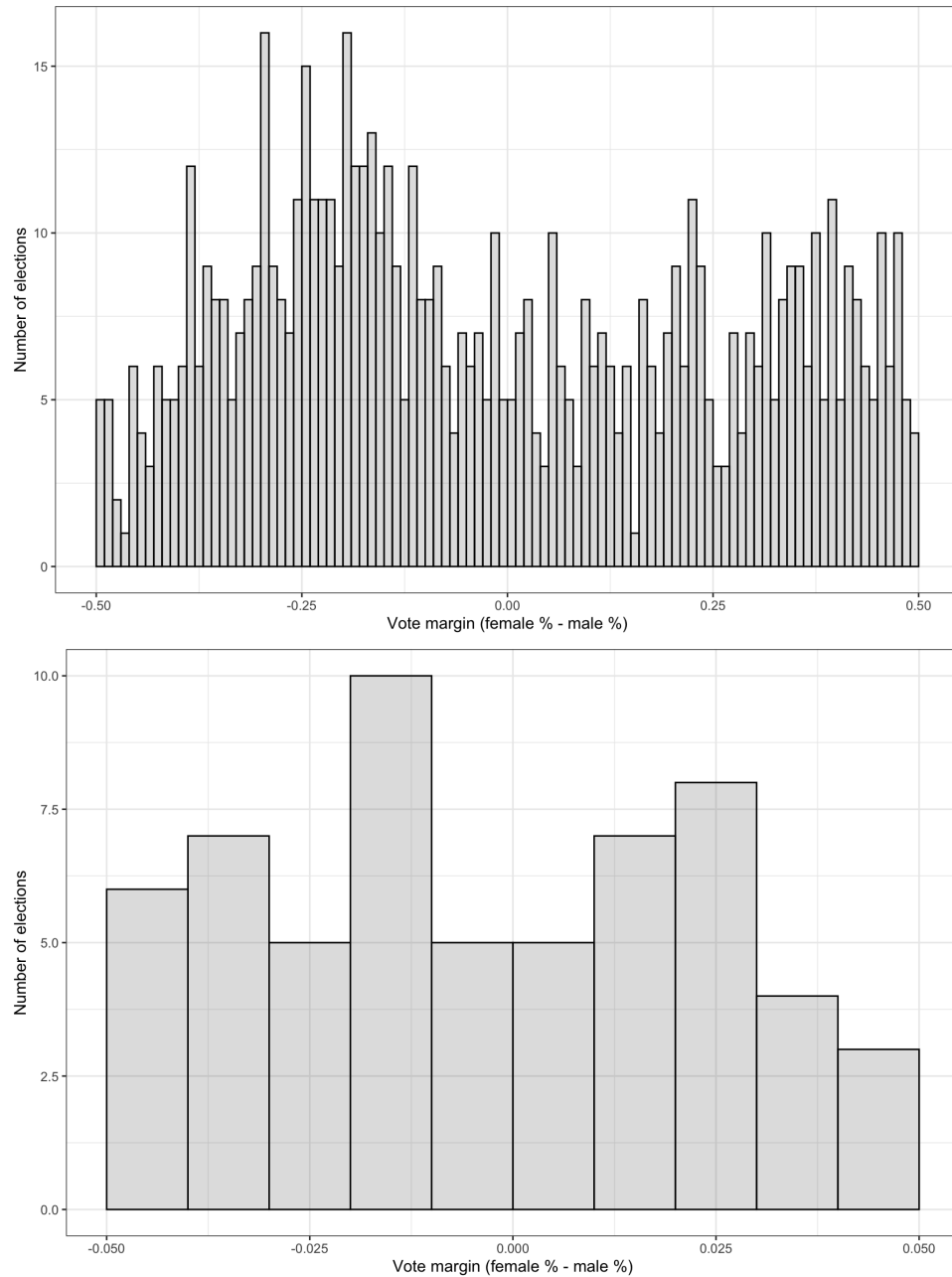
The plot displays the share of government procurement contracts allocated to female entrepreneurs across 2-digit NAICS industries. The individual industries are displayed in an decreasing order using the equally weighted measure. The blue bars displays the equally weighted average while the red bars displays the contract amount weighted share. The sample considers all contracts awarded under the SBA program that are competitive between 2002 and 2018.

Figure 2: Share of government procurement contracts allocated to female entrepreneurs across industries



The plot displays the contract among weighted share of government procurement contracts allocated to female entrepreneurs for each congressional district, excluding Alaska and other congressional districts that are not on mainland North America. The upper (lower) map displays the distribution for the 110th (114th) congress. The sample considers all contracts awarded under the SBA program.

Figure 3: Share of government procurement contracts allocated to female entrepreneurs per congressional district for the 110th (upper) and 114th (lower) congress



The figure displays a histogram of individual elections along voting margin. The sample consists of elections between a male and a female candidate for the 109th to the 115th congress. On the x-axis the voting margin, defined as the difference between the vote received by the female candidate minus the vote received by the male candidate, is displayed. The upper panel considers a range of voting margin from -50% to 50%, while the lower panel considers a range from -10% to 10%.

Figure 4: Histogram of voting margin

Table 1: Summary statistics - close elections between female and male House Representatives

This table provides an overview on close elections analysed in this paper. For different sub-samples of the data, we provide the number and share of all close elections and the ones won by female and male candidates respectively. The sample consists of all House of Representatives elections decided by a margin of maximum 5% in which a female candidate competed against a male one. In addition, we exclude close elections that are subsequent to other close election in the same congressional district and require a minimum of 90 days of data on government procurement contracts surrounding the election.

	Full sample		Female winner		Male winner	
	Nr.	%	Nr.	%	Nr.	%
All close elections	44	100%	20	45%	24	55%
Democratic winner	19	43%	13	68%	6	32%
Republican winner	25	57%	7	28%	18	72%
Age of winner ≤ 56	23	52%	10	43%	13	57%
Age of winner > 56	21	48%	10	48%	11	52%
Gender change	18	41%	12	67%	6	33%
No gender change	26	59%	8	31%	18	69%
Party change	21	48%	12	57%	9	43%
No party change	22	50%	7	32%	15	68%
Female incumbent	14	32%	8	57%	6	43%
Male incumbent	30	68%	12	40%	18	60%

Table 2: Summary statistics - government procurement contracts

This table report summary statistics for all government procurement contract related variables used in the analysis. Panel A provides mean, standard deviation, and number of observations for several key variables separately for all contracts, contracts awarded to female entrepreneurs, and male entrepreneurs for the years 2005 to 2018. In addition, we provide the results of a t-test for differences between contracts awarded to female and male entrepreneurs.

Panel B provides similar information for contracts awarded in the district of a mixed gender close elections separately for before and after the election. For each close election and the corresponding congressional district, the sample considers all contracts performed in the district in the time window of 18 month before and after the start of the term. Contracts awarded between election and term start date are excluded. P-values in both panels are based on non-clustered standard errors.

Panel A: Full sample

	All contracts			Female entrepreneur			Male entrepreneur			t-test	
	Mean	Std.Dev	Nr. Obs.	Mean	Std.Dev	Nr. Obs.	Mean	Std.Dev	Nr. Obs.	Difference	p-value
Contract amount (kUSD)	50.64	185.82	1,038,018	44.16	168.39	208,435	52.27	189.91	829,583	−8.11	0.00
Maturity (in days)	134.54	414.74	1,038,018	133.21	420.31	208,435	134.88	413.33	829,583	−1.67	0.10
Annual revenue (mUSD)	19.48	53.77	925,908	9.23	27.50	188,014	22.09	58.32	737,894	−12.85	0.00
Number of employees	50.73	103.46	925,908	24.31	57.09	188,014	57.46	111.25	737,894	−33.15	0.00
Share contracts with change in contract amount (in %)	20.04	40.03	21,702	20.04	40.04	3,567	20.03	40.03	18,135	0.01	0.99
Share contracts with change in maturity (in %)	14.69	35.40	21,702	15.17	35.87	3,567	14.59	35.30	18,135	0.58	0.38
Share modified contract (in %)	30.40	46.00	21,702	30.84	46.19	3,567	30.32	45.96	18,135	0.52	0.54

Panel B: Contracts awarded before and after mixed gender close elections

	Before the election			After the election			t-test	
	Mean	Std.Dev	Nr. Obs.	Mean	Std.Dev	Nr. Obs.	Difference	p-value
Share contracts awarded to female entrepreneurs (in %)	20.76	40.56	10,079	16.93	37.51	11,569	3.82	0.00
Contract amount (kUSD)	50.88	186.74	10,079	49.94	181.06	11,569	0.94	0.71
Maturity (in days)	120.64	194.98	10,079	138.11	572.20	11,569	−17.47	0.00
Annual revenue (mUSD)	20.74	51.71	8,749	20.94	53.95	9,733	−0.20	0.80
Number of employees	56.55	109.97	8,749	62.54	121.81	9,733	−5.99	0.00
Share contracts with change in contract amount (in %)	20.37	40.27	9,742	19.65	39.74	11,149	0.71	0.20
Share contracts with change in maturity (in %)	14.55	35.26	9,742	14.86	35.57	11,149	−0.32	0.52
Share modified contract (in %)	30.01	45.83	9,742	30.77	46.16	11,149	−0.76	0.23

Table 3: Unconditional regression explaining the probability of a government contract being awarded to a female entrepreneur

This table examines the probability that a government procurement contract is awarded to a female entrepreneur depends on whether the House Representative is female. The main independent variable is an indicator if the House Representative is female, *Female Representative*. Column one considers the full sample while we limit to races of representatives of opposite gender in column two. In column three, we limit to only Democratic House Representative, and in column four to Republican house representatives. In column five we limit to contracts awarded during the last two weeks of September. We consider fixed effects for individual congressional district, 2-digit NAICS industries, year-month, awarding agency, and 2-digit product and service code. Coefficients are reported in percentages. The sample consists of all contracts awarded by the Federal Government in the SBA program that are competitive between 2005 and 2018 spanning from the 109th to the 115th Congress. Standard errors are reported in parenthesis and clustered at 2-digit NAICS code industries, calendar year, and state. ***, **, and * denote significance at the 1%, 5%, and 10%, respectively.

Dependent variable: Probability of contract being awarded to a female entrepreneur					
Female Representative	0.81 (0.89)	0.45 (0.95)	3.91** (1.78)	-0.10 (1.41)	-0.98 (1.04)
Congressional district fixed effects	yes	yes	yes	yes	yes
2-digit NAICS code industry fixed effects	yes	yes	yes	yes	yes
Year month fixed effects	yes	yes	yes	yes	yes
Contract awarding agency fixed effects	yes	yes	yes	yes	yes
2-digit product and service code fixed effect	yes	yes	yes	yes	yes
Share contracts allocated to female entrepreneurs	20.1	20.2	18.9	21.2	21.2
Sample limit	Full sample	Opposite gender race	Democrats	Republicans	Last two weeks of September
Observations	1,033,028	339,978	480,133	499,152	105,430
Adjusted R ²	0.08	0.09	0.08	0.10	0.06

Table 4: Difference in Difference regression explaining the probability of a government contract being awarded to a female entrepreneur

This table examines whether female House Representatives influence the probability that a government procurement contract is awarded to a female entrepreneur. Each column displays the results of a Difference in Difference specification with a dummy indicating whether a given contract was awarded to a female entrepreneur around close House of Representatives elections as dependent variable. The main independent variable is an indicator if the winning representative is female, *Female Representative*, and an indicator whether the contract was awarded after the start of the new Congress, *Incoming Congress*. We consider fixed effects for individual elections, 2-digit NAICS industries, year-month, awarding agency, and 2-digit product and service code. The sample consists of all competitive contracts awarded within the SBA program in congressional districts experiencing a House of Representatives elections decided by a margin of maximum 5% in which a female candidate competed against a male one with enough data that are not subsequent to another close elections. In the first three columns, we consider contracts awarded in an event window of 18 months around the election date. We exclude contracts awarded in the time between election and term start date. Based on the incumbent gender, we consider three sub-samples, only elections with male incumbent, female incumbent, and both. The last column considers only the last two weeks of September, the end of the fiscal year, in the year before and after an election. Coefficients are reported in percentages. Standard errors are reported in parenthesis and clustered at 2-digit NAICS code industries and calendar year. ***, **, and * denote significance at the 1%, 5%, and 10%, respectively.

Dependent variable: Probability of contract being awarded to a female entrepreneur				
Incoming Congress \times Female Representative	6.80* (3.56)	4.27** (1.61)	3.41 (4.25)	3.01*** (0.51)
Individual election fixed effects	yes	yes	yes	yes
2-digit NAICS code industry fixed effects	yes	yes	yes	yes
Year month fixed effects	yes	yes	yes	no
Contract awarding agency fixed effects	yes	yes	yes	yes
2-digit product and service code fixed effect	yes	yes	yes	yes
Share contracts allocated to female entrepreneurs	18.7	18.7	18.8	20.5
Sample limit	Full sample	Male incumbent	Female incumbent	Last two weeks of September
Observations	21,609	15,381	6,228	1,793
Adjusted R ²	0.13	0.18	0.08	0.10

Table 5: Robustness - different voting margin thresholds

This table examines whether the relationship between female House Representatives and the probability that a government procurement contract is awarded to a female entrepreneur depends on the definition of a close election by varying the vote margin threshold. Each column displays the results of a Difference in Difference specification with a dummy indicating whether a given contract was awarded to a female entrepreneur around close House of Representatives elections as dependent variable. The main independent variable is an indicator if the winning representative is female, *Female Representative*, and an indicator whether the contract was awarded after the start of the new Congress, *Incoming Congress*. We consider fixed effects for individual elections, 2-digit NAICS industries, month, awarding agency, and 2-digit product and service code. The sample consists of all competitive contracts awarded within the SBA program in congressional districts experiencing a House of Representatives elections in which a female candidate competed against a male one with enough data that are not subsequent to another close elections. A close election is defined by a margin of 10%, 7.5%, 5%, 2.5%, and 1% margin, depending on the model. Standard errors are reported in parenthesis and clustered at 2-digit NAICS code industries and calendar year. ***, **, and * denote significance at the 1%, 5%, and 10%, respectively.

Dependent variable: Probability of contract being awarded to a female entrepreneur					
Incoming Congress \times Female Representative	2.96*** (0.77)	5.77** (2.17)	5.05*** (1.39)	6.43*** (1.81)	23.85*** (5.36)
Individual election fixed effects	yes	yes	yes	yes	yes
2-digit NAICS code industry fixed effects	yes	yes	yes	yes	yes
Month fixed effects	yes	yes	yes	yes	yes
Contract awarding agency fixed effects	yes	yes	yes	yes	yes
2-digit product and service code fixed effect	yes	yes	yes	yes	yes
Share contracts allocated to female entrepreneurs	19.6	18.6	18.7	17.7	15.6
Number of individual elections	79	62	44	26	7
Number of individual elections	45.6%	45.2%	45.5%	42.3%	57.1%
Voting margin	10%	7.5%	5%	2.5%	1%
Sample limit	Male incumbent	Male incumbent	Male incumbent	Male incumbent	Male incumbent
Observations	29,406	24,367	15,381	9,165	2,531
Adjusted R ²	0.12	0.13	0.18	0.20	0.25

Table 6: Falsification test - placebo election dates

This table provides a falsification test on whether female House Representatives influence the probability that a government procurement contract is awarded to a female entrepreneur. Each column displays the results of a Difference in Difference specification with a dummy indicating whether a given contract was awarded to a female entrepreneur around close House of Representatives elections as dependent variable. In model one to five, we change the election date by -36, -18, 0, 18, and 36 months. The main independent variable is an indicator if the winning representative is female, *Female Representative*, and an indicator whether the contract was awarded after the start of the new Congress, *Incoming Congress*. We consider fixed effects for individual elections, 2-digit NAICS industries, year-month, awarding agency, and 2-digit product and service code. The sample consists of all competitive contracts awarded within the SBA program in congressional districts experiencing a House of Representatives elections decided by a margin of maximum 5% in which a female candidate competed against a male one with enough data that are not subsequent to another close elections. The sample is limited to elections with male incumbents. Coefficients are reported in percentages. Standard errors are reported in parenthesis and clustered at 2-digit NAICS code industries and calendar year. ***, **, and * denote significance at the 1%, 5%, and 10%, respectively.

Dependent variable: Probability of contract being awarded to a female entrepreneur					
Incoming Congress \times Female Representative	-1.57 (2.01)	3.54 (2.43)	4.27** (1.61)	2.42 (2.46)	0.93 (1.03)
Congressional district fixed effects	yes	yes	yes	yes	yes
2-digit NAICS code industry fixed effects	yes	yes	yes	yes	yes
Year month fixed effects	yes	yes	yes	yes	yes
Contract awarding agency fixed effects	yes	yes	yes	yes	yes
2-digit product and service code fixed effect	yes	yes	yes	yes	yes
Share contracts allocated to female entrepreneurs	26.8	25.0	18.7	18.5	17.7
Change in election date	-36 months	-24 months	no distortion	+24 months	+36 months
Sample limit	Male incumbent	Male incumbent	Male incumbent	Male incumbent	Male incumbent
Observations	10,055	11,998	15,381	8,510	8,494
Adjusted R ²	0.30	0.27	0.18	0.13	0.11

Table 7: Counties spanning more than one congressional district

This table examines whether female House Representatives influence the probability that a government procurement contract is awarded to a female entrepreneur using a specification exploiting contracts awarded in counties that span multiple congressional districts. Each column displays the results of a Difference in Difference (in Difference) specification with a dummy indicating whether a given contract was awarded to a female entrepreneur around close House of Representatives elections as dependent variable. The main independent variable is an indicator if the winning Representative is female, *Female Representative*, an indicator variable turning one if the contract was awarded after the start of the new Congress, *Incoming Congress*, and an indicator variable indicating if the contract was issued in the part of the zip code associated with the congressional district of the close house elections *Affected district*. We consider fixed effects for county years, individual elections, 2-digit NAICS industries, year-month, awarding agency, and 2-digit product and service code. The sample consists of all competitive contracts awarded within the SBA program in zip code areas that span multiple congressional districts with at least one being associated with House of Representatives election decided by a margin of maximum 5% in which a female candidate competed against a male one with enough data that are not subsequent to another close elections. We consider an event window of 18 months before and after the election. We exclude contracts awarded in the time between election and term start date. We limit the sample based on the outcome of the election as indicated in the row *Gender election winner* as well as the gender of the incumbent *Incumbent gender*. Coefficients are reported in percentages. Standard errors are reported in parenthesis and clustered at 2-digit NAICS code industries and calendar year. ***, **, and * denote significance at the 1%, 5%, and 10%, respectively.

Dependent variable: Probability of contract being awarded to a female entrepreneur			
Affected district	-6.25*** (1.42)	-2.08 (1.85)	-2.23 (3.35)
Affected district \times Incoming Congress	5.65*** (1.18)	-0.34** (0.15)	0.96 (0.71)
Affected district \times Incoming Congress \times Female Representative			4.03*** (0.76)
County \times year fixed effects	yes	yes	yes
Individual election fixed effects	yes	yes	yes
2-digit NAICS code industry fixed effects	yes	yes	yes
Contract awarding agency fixed effects	yes	yes	yes
2-digit product and service code fixed effect	yes	yes	yes
Share contracts allocated to female entrepreneurs	15.3	24.3	21.6
Incumbent gender	male	male	male
Gender election winner	female	male	both
Observations	2,378	5,477	7,855
Adjusted R ²	0.26	0.16	0.15

Table 8: Sub-samples analysis

This table examines whether the influence between House Representatives' gender on the probability that a government procurement contract is awarded to a female entrepreneur varies based on different sub-samples of contracts using close elections. Each column displays the results of a Difference in Difference specification with a dummy indicating whether a given contract was awarded to a female entrepreneur around close House of Representatives elections as dependent variable using different samples of the whole data. The main independent variable is an indicator if the winning Representative is female, *Female Representative* and an indicator variable turning one if the contract was awarded after the start of the new Congress, *Incoming Congress*. Similar to other results presented, we consider fixed effects for individual elections, 2-digit NAICS industries, year-month, awarding agency, and 2-digit product and service code. The first split differentiates between winners based on the political party. The second split is based on whether the Representative is above or below 50 years. The third separates the election in the ones with a gender change and the ones without. The final split differentiates between elections that led to a change in party and they ones did not. The sample consists of all contracts awarded in congressional districts experiencing a House of Representatives elections decided by a margin of maximum 5% in which a female candidate competed against a male one with enough data that are not subsequent to another close elections. We consider an event window of 18 months before and after the election. We exclude contracts awarded in the time between election and term start date. Coefficients are reported in percentages. Standard errors are reported in parenthesis and clustered at 2-digit NAICS code industry and calendar year. For model 4, we do not cluster on 2-digit NAICS code industries as the multi-way clustering following Cameron, Gelbach and Miller (2011) yields a non-definite variance matrix. ***, **, and * denote significance at the 1%, 5%, and 10%, respectively.

Dependent variable: Probability of contract being awarded to a female entrepreneur								
	Age		Party change		Incoming Representative		Incumbent	
	≤ 56	> 56	Yes	No	Democrats	Republicans	Democrats	Republicans
Incoming Congress × Female Representative	11.67* (6.20)	3.23** (1.06)	4.56** (1.54)	5.61* (3.14)	22.41*** (1.23)	−4.65*** (1.40)	3.16 (2.73)	7.22** (2.47)
Individual election fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
2-digit NAICS code industry fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Year month fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
Contract awarding agency fixed effects	yes	yes	yes	yes	yes	yes	yes	yes
2-digit product and service code fixed effect	yes	yes	yes	yes	yes	yes	yes	yes
Share contracts allocated to female entrepreneurs	20.9	16.7	16.2	23.0	18.4	18.9	10.3	22.5
Sample limit	Male incumbent	Male incumbent	Male incumbent	Male incumbent	Male incumbent	Male incumbent	Male incumbent	Male incumbent
Observations	7,457	7,924	9,690	5,691	6,489	8,892	4,737	10,644
Adjusted R ²	0.19	0.23	0.16	0.27	0.19	0.23	0.16	0.20

Table 9: Heterogeneous effects based on contract features

This table examines whether contract features are important to the relationship between the election of female representatives and the contract allocation to female entrepreneurs. Each column displays the results of a Difference in Difference specification with a dummy indicating whether a given contract was awarded to a female entrepreneur around close House of Representatives elections as dependent variable for different sub samples. Model 1 to 3 consider sub-samples of contracts based on contract amount terciles while the remaining columns limit the sample based on contract maturity terciles. The main independent variable is an indicator if the winning representative is female, *Female Representative*, and an indicator whether the contract was awarded after the start of the new Congress, *Incoming Congress*. We consider fixed effects for individual elections, 2-digit NAICS industries, year-month, awarding agency, and 2-digit product and service code. The sample consists of all competitive contracts awarded within the SBA program in congressional districts with male incumbents experiencing a House of Representatives elections decided by a margin of maximum 5% in which a female candidate competed against a male one with enough data that are not subsequent to another close elections. Coefficients are reported in percentages. Standard errors are reported in parenthesis and clustered at 2-digit NAICS code industries and calendar year. ***, **, and * denote significance at the 1%, 5%, and 10%, respectively.

Sample limit	Contract amount			Maturity		
	T1	T2	T3	T1	T2	T3
Incoming Congress \times Female Representative	1.08 (3.65)	6.46*** (1.58)	5.23** (1.90)	-3.54 (2.30)	0.93 (3.05)	13.17** (4.63)
Individual election fixed effects	yes	yes	yes	yes	yes	yes
2-digit NAICS code industry fixed effects	yes	yes	yes	yes	yes	yes
Year month fixed effects	yes	yes	yes	yes	yes	yes
Contract awarding agency fixed effects	yes	yes	yes	yes	yes	yes
2-digit product and service code fixed effect	yes	yes	yes	yes	yes	yes
Share contracts allocated to female entrepreneurs	17.8	18.1	20.2	16.8	19.0	19.0
Sample limit	Male incumbent	Male incumbent	Male incumbent	Male incumbent	Male incumbent	Male incumbent
Observations	5,121	5,127	5,133	3,114	3,101	3,212
Adjusted R ²	0.20	0.22	0.20	0.16	0.12	0.21

Table 10: Contract performance

This table examines contract performance of firms receiving contracts a close House of Representatives elections. Each column displays the results of a Difference in Difference specification with each panel using a different measure of contracts performance. The dependent variables are a dummy indicating whether there was a change in contract amount and maturity, and an indicator for contracts executed with modification. The main independent variable is an indicator if the winning Representative is female, *Female Representative*, and an indicator whether the gender of the entrepreneur is female, *Female entrepreneur*. In addition, we control for initial maturity, the initial contract among, the number of employees, and the annual revenue, using the log transform for all variables. Each specification consider fixed effects for individual elections, 2-digit NAICS industries, year-month, awarding agency, and 2-digit product and service code. The sample consists of all contracts awarded in congressional districts with male incumbents in the 18 months window after experiencing a House of Representatives elections decided by a margin of maximum 5% in which a female candidate competed against a male one with enough data that are not subsequent to another close elections. Coefficients are reported in percentages. Standard errors are reported in parenthesis and clustered at 2-digit NAICS code industries and calendar year. ***, **, and * denote significance at the 1%, 5%, and 10%, respectively.

Panel A: Dependent variable - Change in contract amount

Sample limit	Full	Contract amount			Maturity		
		T1	T2	T3	T1	T2	T3
Female Entrepreneur	2.59 (2.07)	2.33 (2.46)	4.24*** (1.06)	2.27 (4.27)	4.19* (1.97)	2.21 (5.41)	5.50 (3.80)
Female Entrepreneur × Female Representative	-5.81 (4.11)	-1.52 (5.42)	-7.56** (3.17)	-7.38 (7.19)	-2.41 (3.75)	0.53 (8.08)	-15.54** (5.83)
Mean of dependent variable	20.1	14.5	18.9	27.0	15.7	14.7	30.1
Observations	6,604	2,202	2,201	2,201	2,202	2,201	2,201
Adjusted R ²	0.20	0.17	0.18	0.27	0.07	0.16	0.34

Panel B: Dependent variable - Change in maturity

Sample limit	Full	Contract amount			Maturity		
		T1	T2	T3	T1	T2	T3
Female Entrepreneur	0.82 (1.32)	-0.18 (2.27)	3.29 (3.26)	-0.62 (5.73)	1.13 (2.03)	-3.53 (2.49)	2.66 (1.74)
Female Entrepreneur × Female Representative	-4.31 (2.44)	1.37 (2.24)	-3.52 (4.11)	-6.87 (8.82)	0.55 (3.18)	4.70 (3.94)	-10.37*** (2.32)
Mean of dependent variable	14.8	9.5	12.4	22.6	11.7	10.6	22.2
Observations	6,604	2,202	2,201	2,201	2,202	2,201	2,201
Adjusted R ²	0.12	0.08	0.07	0.17	0.08	0.10	0.19

Panel C: Dependent variable - Modified contract

Sample limit	Full	Contract amount			Maturity		
		T1	T2	T3	T1	T2	T3
Female Entrepreneur	-0.39 (2.77)	-1.17 (2.45)	2.07 (2.05)	1.15 (3.92)	1.61 (3.57)	-3.58 (6.44)	3.99 (3.35)
Female Entrepreneur × Female Representative	-3.98 (3.95)	3.53 (2.08)	-4.36 (3.01)	-9.34 (7.07)	1.30 (4.13)	4.57 (8.71)	-15.64*** (4.97)
Mean of dependent variable	31.3	22.7	28.5	42.7	25.1	25.3	43.6
Observations	6,604	2,202	2,201	2,201	2,202	2,201	2,201
Adjusted R ²	0.18	0.12	0.15	0.23	0.09	0.16	0.27

Table 11: First difference regression explaining firm registration and contract allocation

This table examines whether aggregate patterns in company registration and contract allocation change around close elections. Each column displays the results of a first difference specification with each model using a different measure of firm registration and contract allocation as dependent variable. The dependent variables are the change in registered firms, the change in share of female firms registered, the change in number of contracts, and the change in share of contracts allocated to female entrepreneurs. The main independent variable is an indicator if the winning Representative is female, *Female Representative*. We include controls for the party of the winning candidate, incumbent status, age of the representative, and Congress fixed effects. The sample consists of all House of Representatives elections decided by a margin of maximum 5% in which a female candidate competed against a male one with enough data that are not subsequent to another close elections. The dependent variables are aggregate for the period of 18 months before the election and the same period after the term start. Standard errors are reported in parenthesis. ***, **, and * denote significance at the 1%, 5%, and 10%, respectively.

Dependent variable	Δ Registered firms		Δ Contracts	
	Δ Number	Δ % female	Δ Number	Δ % female
Female Representative	0.25** (0.11)	-0.02 (0.03)	-0.08 (0.20)	0.07** (0.03)
Republican	0.13 (0.11)	0.03 (0.03)	0.01 (0.21)	0.04 (0.03)
Incumbent	-0.06 (0.10)	0.05** (0.02)	-0.09 (0.19)	-0.04 (0.03)
log(Age)	0.37 (0.31)	-0.05 (0.08)	-0.34 (0.60)	0.04 (0.10)
Congress fixed effects	yes	yes	yes	yes
Mean of dependent variable	0.06	0.01	0.25	-0.03
Std. Dev. of dependent variable	0.36	0.07	0.77	0.10
Observations	44	44	45	45
Adjusted R ²	0.32	-0.02	0.41	0.03