Are Board Gender Quotas Effective in the United States?

Evidence from the California Senate Bill 826

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Abstract

This paper uses difference in difference and triple difference models to assess the relationship between gender quota mandates and firm performance. I use data from Institutional Shareholder Services (ISS), which provides information about Fortune 1500 board directors, and Compustat, which provides financial data for each firm. This research builds upon previous literature on gender diversity and the effectiveness of board gender quotas. My results show that the gender quota mandate was effective at getting more women into board seats. In general, California firms that required one female be added to their board saw positive impacts on firm performance and firms that needed more than one female saw negative impacts. This study also finds that new first-time female director appointments increase more for California firms than non-California firms, suggesting that the Bill expedited the expansion of the female director pool. These new female appointees tend to have a similar skill set as current female board members, but have fewer skills than both new male and current male members. Lastly, I find that larger firms and firms who already have at least one female on their board tend to more readily change their board in order to comply with the quota more than smaller firms with fewer women.

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I. Introduction

In 2018, California became the first U.S. state to mandate a board gender quota with the passing of Senate Bill No. 826 (SB 826). The Bill required that companies headquartered in California have at least one female director by the end of 2019 and two (three) female directors for boards of five (six or more) by end of 2021. Gender quota mandates have been popular in European countries since the early 2000s but have only recently gained traction in the United States. Companies in the U.S. have faced increased social pressure to diversify their boards as research reveals the benefits of gender diversity in a business setting (Bear and Woolley 2011; Kelemen et al. 2020). In this paper, I consider the effects it has on firm performance and board composition of companies since it is the first of its kind in the United States.

Quota mandates are passed with the goals of promoting gender equality, creating workplace opportunities for women, and boosting the economy. According to a study done by Mckinsey, $12 trillion could be added to the global GDP through greater equality for women in the workplace (Woetzel et al. 2015). While this study identifies several areas that can help bridge the gender gap, policies to support women in the workplace are a major one. Board gender quotas are one example of a policy that could contribute to greater gender equality. Putting more women in board level positions not only creates a more gender-diverse board, but could also help to balance gender inequities across the entire firm. However, there is debate over whether gender quotas actually reach these goals and if they are constitutional in the United States (Goldberg 2021). As mentioned in Senate Bill No. 826, the Equilar Gender Diversity Index predicts that it would take 40 or 50 years to achieve gender parity without government intervention. Lack of gender equality can be costly to the economy if a large proportion of the population is not reaching their full productivity. Further, if there are inefficiencies related to non-diverse boards, then the absence of gender parity may be costly to the company.

This paper explores the impact of California's gender quota law using difference-in-difference and triple difference estimation strategies to assess the law's impact on firm performance measures and board composition. I utilize indicators such as earnings per share (EPS), return on assets (ROA), return on equity (ROE), and Tobin's Q to measure firm performance. I also measure changes in board composition through gender distribution, board size, and the skill levels, age and tenure of the directors.

The endogeneity of firm boards has made it difficult to decipher the effects of board diversity and firm performance. However, using SB 826 as an exogenous shock, I am able to draw causal conclusions from the data. Exogeneity for this study stems from the varying level of females on each board at the time the Bill was passed. Firms with fewer females on their board should be more affected by the mandate, as compared to those with more female directors. Another form of exogeneity, as argued by Greene, et al. (2020), originates from the unexpected signing of the law by Governor Brown given that he did not give a public statement on his stance of the Bill before signing (Fuhrmans and Lazo 2018). Thus, the unpredictability of the passing of the Bill allows us to isolate the firm performance measurements to an exogenous change in board structure.[1] Lastly, California is home to around 12% of public companies in the U.S. meaning that this mandate impacts a wide variety of companies with differing firm characteristics (Greene, et al. 2020). In my sample of 662 public firms across the United States, 84 (13%) are headquartered in California and 60 (71%) of the California companies needed to add at least one female director by 2021. For the firms in my sample, SB 826 required that at least 84 additional female directors be on boards by the end of 2021.

Firms who did not already comply with the quota at the time the legislation was passed, must either add another seat to their board, replace an existing board member, or change the location of their headquarters. Assuming that most firms decided to remain headquartered in California, I would expect to see an increased demand for female talent and a change in board composition as a result of the Bill. The 2021 report by the Secretary of State of California states that during 2020, 6 firms moved into California and 22 firms moved out of California into another state (1% and 3% of total firms in California respectively) (Weber 2021). Table 1 compares statistics from the complete sample of California firms to what is represented in my sample.

This paper contributes to the small literature on board gender quotas in the United States. To my knowledge, this is the first paper to look at the quota's impact on Tobin's Q, ROA and ROE for U.S. firms. In this paper, I evaluate how board gender quotas impact firm performance

[1] The Bill passed the House on May 31, 2018, passed the Senate on August 29, 2018, approved and signed into law on September 30, 2018. Research done by Hwang, Shivdasani, and Simintzi (2021) shows that the media attention on the Bill was very limited before the passing and did not become widespread until October 1st, based on google search trends. Additionally, their same study finds that the portfolio return is small in magnitude and statistically insignificant on the days the Bill passed the House and the Senate, which also suggests there was no anticipation of the law's passage.

and the composition of boards within California and outside of California. Using a triple difference estimation model this paper finds that the California quota significantly increases the number of women on the boards of California. In general, California firms that required one female be added to their board saw positive impacts on firm performance and firms that needed more than one female saw negative impacts. Further, this study finds that new first-time female director appointments increase more for California firms than non-California firms, suggesting that the Bill expedited the expansion of the female director pool. These new female appointees tend to have a similar skill set as incumbent female board members, but have fewer skills than both new and incumbent male members. Lastly, I find that larger firms and firms who already had at least one female on their board tend to more readily change their board in order to comply with the quota than smaller firms with fewer women.

II. Conceptual Framework

A. Background

Norway became the first country to pass a board gender quota mandate in December of 2005. The Norwegian Gender Balance Law mandated that within two years, women must represent 40% of the firm's board. Norway's quota was very effective in increasing the number of women as they saw an increase from 5% seats held by females in 2001 to 40% in 2008 (Ideas for Leaders 2017). Non-compliant Norwegian firms faced severe consequences such as dissolution by the government (Gidlund and Lund 2017). Given the extent of the punishments, it is not surprising that the Norwegian mandate proved to be effective at significantly raising the number of seats held by women. While this is a good reference point on early mandates, the United States economy is not particularly comparable to Norway in terms of size or structure. Many countries including France, Italy, Belgium, Germany, and Iceland have followed suit in implementing mandatory gender requirements for boards. While the United States has held off on a federal mandate, California became the first state to put such a bill into law in 2018.

On September 30, 2018 the California Governor, Jerry Brown, signed SB 826 into law with hopes to improve gender diversity on company boards, stimulate the economy and create more opportunities for women in business. The Bill includes penalties for noncompliance including $100,000 for the first violation and $300,000 for each subsequent violation. However, $100,000 to a small company may be a much larger percentage of the balance sheet than it is for

a large corporation, making the penalties more severe for smaller firms. Governor Brown passed the Bill with the intention to "bring a variety of perspectives to the table that can help foster new and innovative ideas" (Siu 2018). The California senators who originally introduced the Bill believed that not only would this help create gender parity, but also allow California to set the precedent for other states to follow (Siu 2018). Some critics believe that the government should not be able to mandate firm decisions in general and especially when it comes to leadership and management. Since the passing of the decision, there have been a couple court cases regarding the constitutionality of the mandate. The federal courts dismissed the *Meland v. Padilla* case, where a shareholder claimed that they could not vote for the director nominee as they wanted because of the mandate. For now, firms are expected to comply with the mandate.

B. Impact of Board Quotas on Firms

There is a vast literature documenting the positive effects of increased gender diversity on a variety of firm outcomes from profitability to fraudulent activity (Post et al. 2015; Cummings et al. 2015). A much smaller literature examines the effect of gender quota mandates on the outcomes of firms, especially for the United States. To my knowledge, there are two papers that consider how the California gender quota laws passed in 2018 have impacted various firm outcomes for California. Hwang, Shivdasani, and Simintzi (2021) finds a decline in shareholder value for firms headquartered in California and believe that supply side constraints drive these outcomes. They also find that female appointments increase by 61% whereas male appointments decrease by 50% (Hwang et al. 2021). Greene, Intintoli, and Kahle (2020) finds negative returns for companies who needed to add more females to comply with the law and also attributes their findings to supply side constraints of female directors.

Studies on the Norwegian gender quota mandate have found that quotas are effective in getting more women on boards, showing significant increases in female representation (Yang et al. 2019). The Norwegian quota was also associated with an increase in the directors' average educational degree level but no change in board size, implying that the new female directors are replacing current male directors (Yang et al. 2019). While the Norway quota was effective in getting women seats on the board, studies on firm performance have found mixed results. Some studies find negative effects on firm performance in terms of operating income/assets (OI/A), return on assets (ROA), Tobin's Q, and market to book ratio (MTBR) (Yang et al. 2019; Ahern and Dittmar 2012). However, increased female representation from the quotas is associated with

a significant decrease in firm risk (Yang et al. 2019; Bernile et al. 2018). One potential explanation is that the decrease in firm risk could be related to the decrease in firm value because lower systematic risk provides equity investors with lower profitability from their investments (Yang et al. 2019). In other words, if female representation makes firms less risky, equity investors will see the company as less risky and volatile, which will make their investment safer, but their potential returns lower.

Some researchers have hypothesized that the reason for some initial negative results is due to labor market frictions resulting from the lack of supply of women in the director pool (Hwang et al. 2021; Greene, Intintoli, and Kahle 2020; von Meyerinck et al. 2019). The director pool consists of individuals who already sit on at least one board. Hwang et al. (2021) found a 49% increase in female board members who were first time members of executive boards in California relative to the mean. This suggests that firms had to reach beyond the existing pool of directors to find qualified women who are not already directors on boards. Greene et al. (2020) uses this same hypothesis in their analysis and find that companies who have easier access to a pool of female directors see less negative returns as a result of the legislation announcement. While there are benefits to expanding the female director pool, such as less interlocking between companies, the time constraint of the Bill could potentially cause matching problems between directors and the companies. If the search costs for companies to find a new female director are very high, they may end the search early and settle for a director that is not a perfect match.

A larger literature on diversity and team performance show mostly positive effects. Hoogendoorn et al. (2013) find that business teams perform better when there is an equal gender mix, but other researchers only find this result under certain leadership conditions (Kelemen et al. 2020). Similarly, team collaboration dramatically improved when women joined the team, which was attributed to the benefits women bring to the group collaboration processes (Bear and Woolley 2011). There is no doubt that having a more diverse boardroom has great potential to stimulate more creative and innovative problem solving, but it is important to consider the mechanisms through which gender parity is achieved to fully understand the outcomes and impacts it has on the economy and the firms themselves.

C. Theory

I intend to use variation in gender diversity levels across firms in California at the time of the Bill passing to estimate the causal effect of gender quota laws on firm performance and board composition. Following Greene et al. (2020), if I expect that adding women to boards improves firm performance, I have to assume that boards who do not have a gender diverse board are not aware of the benefits of gender diversity, or else they would have already appointed more women to realize these benefits. However, if a firm is discriminating based on gender, it could be that the firm is aware of the potential benefits of gender diversity, but is opting to forgo these benfits due to their underlying preferences. Further, it is possible that if firms already have efficient boards through their current composition, they may face costs to changing their board structure in order to comply with the mandate (Greene et al. 2020). Similarly, I would expect SB 826 to have no impact on performance if male and female directors are easily substitutable for one another in terms of skill, influence, and experience (Greene et al. 2020).

Theory 1: *Greater diversity on boards is positively related to firm performance due to the benefits of having various leadership styles, risk preferences, and diversity of thought.*

While some papers have found negative impacts on stock market reactions of the gender quotas, I believe that having a more diverse board will result in long-run positive effects when looking at real operating firm performance measures (ROA, ROE, Tobin's Q). Potentially higher diversity leads to higher quality of decisions because varying viewpoints may lead to the challenging of current norms and for processes to be improved. These improvements in decision making for the firm may be reflected in the real operating measures.

Theory 2: *Initial negative results will resolve in the long-run.*

I speculate that negative results will only be present in the short-run and these initial negative results resolve in the long-run for the California firms. In the long-run, the firms will realize the benefits of the appointed female board members as new appointees reach positions of influence and acquire industry and firm specific knowledge. On a related note, if mandated gender quotas create negative short run effects for firms due to supply side constraints of female directors, I speculate as more states implement gender quota laws there will be less initial negative effects due to an increase in the supply of female directors nationally. If mandates increase the number of female directors, supply constraints will lessen. This will allow firms to more efficiently recruit female candidates and firms will realize the positive impacts of gender parity through

quotas. However, if new mandates outpace the expansion of the pool, then firms would continue to see supply shortages for sometime.

Theory 3: *The quota may lead to imperfect replacement of current board members.* Since Hwang et al. (2021) have found that board size stays constant while female representation increases significantly, the new appointees must replace existing male board seats. Ahern and Dittmar (2012) found similar results in their study on the Norwegian quota. If the mandate causes hiring out-of-pool female directors (females who have never served on a board before), the quota may result in a decline in the average industry experience, tenure, and specific firm knowledge if veteran directors are replaced. On the other hand, if the data shows that board size increases in order to accommodate the quota (instead of replacing current members), I would expect to see less negative effects. This imperfect replacement of the current board members could cause negative impacts in the short run for a few reasons such as perceived firm stability. Studies have shown that board tenure is an indicator of firm stability (Livnat et al. 2021; Huang et al. 2018). Furthermore, high levels of experience, moderate levels of variation in age and tenure within teams were correlated with positive firm performance (McIntyre et al. 2007). It is possible that the California quota may shift the makeup of board composition to have a greater variety in age, experience levels, and tenure. If the data shows a shift, I believe it could partially explain the initial negative results. However, as the new appointees gain industry knowledge, tenure, and experience, these initial negative impacts could be outshined by the positives of having diverse perspectives and different leadership styles when it comes to decision making. On a related note, it is possible that companies with larger shortfalls may see larger negative results because dramatic changes in board composition (as opposed to larger or more gradual changes) may be more disruptive to the firm as a whole.

Theory 4: *Well performing firms will be able to attract female talent easier.* Additionally, I hypothesize that firms who are already performing well will have an easier time attracting female talent. This is because a firm with a good reputation will naturally attract higher quality candidates because people want to work for the best firms. On a similar note, firms that are doing well will be able to cover the search costs easier and spend more time searching for a perfect fit for their board as opposed to a struggling company who may not get the top choice of female talent. It is possible that similar results will be found for larger firms due to their recognizability and larger resources to search for and also hire directors.

III. Data

I use data from Institutional Shareholder Services on Fortune 1500 company boards from 2007–2020 for my analysis. The dataset includes individual-level variables on directors such as name, ethnicity, gender, birthdate, skillset of directors, director tenure, as well as firm level variables such as board size, number female directors, number of women board leaders, and many other variables. I collapse the individual-level data to get firm-by-year observations and limit the sample to the firms with an observation in every year from 2007–2020. I also utilize the individual level data to assess differences between the newly appointed directors and the existing directors.

I extract the financial information from Compustat, which provides financial data such as earnings per share (EPS), return on assets (ROA), return on equity (ROE), and Tobin's Q. EPS is a company's net income divided by its shares. This is a useful metric to consider because it represents the company's profitability. The higher the EPS, the more profitable the company is. EPS does not depend on outside investors judgements or expectations which makes it an important outcome to consider as it is only impacted by the net income of the firm and the number of its shares. However, it is possible for firms to manipulate this measure if they decide to buy back their shares right before filing their earnings reports, which could artificially make their EPS appear to be higher. ROA measures how profitable the company is compared to its assets and represents how efficiently a company utilizes their assets to generate income. ROE measures how efficiently the firm is able to generate income from the capital that their shareholders have invested. Tobin's Q represents the relationship between the firm's market valuation and the intrinsic value of the company (market value divided by asset replacement cost).[2] It is a way to estimate whether a firm is over or undervalued. Compustat also provides the location of principal executive office in 2021, but does not include historical headquarter information. I supplement the data with historical headquarter data provided by research done by Mingze Gao (Gao 2021). However, Mingze Gao's data only includes observations up to the year 2018. To solve this problem, I hand-collected state head quarter data from US Securities and Exchange Commission (SEC) filings for the companies with missing observations.

Using these three datasets, I am able to get company-by-year data that has information on firms' board characteristics, financials and location. Once limiting the sample to those with

[2] Refer to Table 11 for more in-depth definitions of these variables.

observations in every year with the relevant financial information, I am left with a sample of 662 companies, 84 of which are located in California (approximately 13% of my sample).

Table 1 reports basic statistics of all companies headquartered in California and allows for the comparison of the firms represented in my sample. There are 647 companies headquartered in California and 84 of them are in my sample. Of all California companies, 311 report compliance with the requirements of the law, and 50 of these are represented in my sample. In 2020, 6 companies moved into California and 2 of these are in my sample. Lastly, 22 companies moved out of California to a different state, and 3 of these are represented in my sample. While the sample for this research does not include the entire population of California companies, it is reflective proportionally to what the population looks like.

Table 2 outlines the number of California firms that fall into each requirement of the Senate Bill. By 2021, boards of different sizes had varying requirements of the number of females needed to satisfy the mandate. These numbers are shown in the third column of Table 2. *Shortfall* represents the number of females each firm needs to add to their boards in order to satisfy the 2021 requirements of SB 826 at the time of the Bill passing.[3] About 46% of companies in California with boards of 8 or larger had a shortfall of 1 and 17% of them had a shortfall of 2 or more.

Figure 1 is useful to see how the number of female directors on the boards changed for firms in California and firms not in California between 2017 and 2020. It appears that the number of female directors rises for both inside California and outside California just by looking at the density plots.

Through observing the difference-in-difference of sample means, I can estimate the causal effect of Senate Bill 826. These results are shown in Table 5 and represent the difference in means between firms inside of California to firms outside of California before and after the passing of the quota. This estimation shows that *board size* was not particularly impacted, but the *number of females* and *percent female* on the board increased by more in California than it did for outside California. This suggests that firms responded to the Bill by replacing men on boards in California rather than by expanding their board to add females. This is consistent with the fact that *tenure* decreases more in California than in non California states. Further, *age* decreased more in California which suggests that younger women are joining the boards and replacing

[3] Refer to Table 11 for more in-depth definitions of these variables.

older male members who may have been on the board for a while. In terms of firm performance measures, all of the measures are better for California than for non California companies. It is possible that this is partially due to the changes within the board structure which allow for new ideas and stronger decisions to be made for the company.

IV. Research Design

In order to test my hypotheses, I use a difference-in-difference and triple difference in difference estimation strategies. I compare various outcomes of each firm from before the mandate to after, for firms located inside versus outside California. The general difference in difference equation is as follows:

$$Y_{fst} = \beta_0 + \beta_1 Cali_s + \beta_2 Post_t \, x \, Cali_s + \Gamma_f + \gamma_t + e$$

Where *Y* is an outcome for a firm *f*, in year *t*, located in state *s*. *Post* is an indicator variable for after the passing of SB 826 (years 2019 and 2020), and *Cali* is an indicator for firms that are headquartered in California. Γ_f represents firm fixed effects and γ_t represents year fixed effects. The outcomes, *Y*, are either board composition characteristics such as, *number of females*, *percent female*, *board size*, *age* and *tenure* and performance measures such as *Tobin's Q*, *ROA*, *ROE* and *EPS*. Each outcome variable is defined in more detail in Table 11. β_2 can be interpreted as the change in an outcome for firms in California relative to the change for firms outside of California. This follows the parallel trends assumption, that California firms would have trended similarly to non-California firms without the impact of the law. However, this regression assumes that the effect of SB 826 is the same on all California firms, regardless of how large of a change, if any, firms needed to make to their board composition.

Shortfall is equal to the number of females the board needs to add in order to comply with the mandate in 2018, when the law was passed. Including *shortfall* in the regression allows for the law to impact California firms with varying levels of *shortfall*s differently, while also controlling for unknown variable biases that are correlated with firms with certain *shortfalls*. A similar strategy is used by Hwang et al. (2021) in their study on the California mandate. This is particularly useful because it is possible that firms with a shortfall of 0 may not be impacted by the law the same way that firms with a shortfall of 1 or more. Firms with a shortfall of 0 are not binded by the law, meaning they did not need to make any changes to their board in order to

comply. Using the variation of *shortfall* with this estimation strategy allows me to reach causal conclusions on the effectiveness of the California gender quota mandate.[4] The general triple difference in difference equation is as follows:

$$Y_{fst} = \beta_0 + \beta_1 Cali_s + \beta_2 Post_t \, x \, Cali_s + \beta_3 Post_t \, x \, shortfall_f + \beta_4 Post_t \, x \, Cali_s \, x \, shortfall_f + \Gamma_f + \gamma_t + e$$

Where *Y* is an outcome (same as above) for a firm *f* in year *t,* located in state *s*. *Post* is an indicator variable for after the passing of SB 826 (years 2019 and 2020), and *Cali* is an indicator variable for firms that are headquartered in California. Γ_f represents firm fixed effects and γ_t represents year fixed effects. Year fixed effects are included to control for business cycles and market swings. Firm fixed effects are included to control for inter-firm differences. Outcome variables include earnings per share (EPS), return on assets (ROA), return on equity (ROE) and Tobin's Q as well as board composition characteristics such as board size, age and tenure of the directors.

V. Results and Discussion

Board Composition

Table 6 reports the impact of the Bill on board composition utilizing the difference-in-difference regression method. Regression analysis allows me to control for firm and year fixed effects, which reduces noise in the coefficients and controls for business cycles or other macroeconomic factors that vary by year. Panel A reports the difference-in-difference model and Panel B reports the triple difference model which allows the effects of the law to vary by the shortfall of the firms. Panel A results almost perfectly mirror the difference in mean results shown in Table 5. Panel B reveals how the varying levels of shortfall change how the firm is impacted by the passing of SB 826. Panel A coefficients can be interpreted as the relative increase in an outcome for firms in California compared to non-California firms. Panel B coefficients can be interpreted as the relative increase/decrease in an outcome for firms in California with a shortfall of 1 compared to California firms with a shortfall of 0 relative to this same difference for non-California firms. The coefficients represent the differences of the

[4] *Shortfall* is calculated for non-California firms as well, even though the Bill does not have an impact on non-California firms. This means that post shortfall coefficients are picking up the difference in national trends for companies that have that particular shortfall.

outcomes for firms in California with shortfalls of 1 and 0 compared to that same difference for non-California firms of shortfalls 1 and 0.[5] Panel A and Panel B both show positive coefficients on the *number of females* and *percent female*, however Panel B reports a larger and more statistically significant change in *number of females* (0.44) whereas Panel A shows only a small and less statistically significant change (0.13). Once accounting for shortfall, we saw the *number of females* on boards increased by a larger magnitude, meaning that firms with a shortfall of 1 in California, compared to firms with a shortfall of 0 in California, added more females to their boards relative to this same difference for firms not in California. *Percent female* is almost equal in the two panels (2.0% and 1.96% respectively), which means that shortfall did not dramatically change the way firms were affected by the quota in terms of *percent female*. California firms with a shortfall of 1, relative to California firms with a shortfall of 0, increased the percent of women on their board by 1.96% more compared to this same difference for non-California firms. The difference in the change of *board size* between California firms with a shortfall of 1 to California firms with a shortfall of 0 is 0.60 larger relative to this same difference for firms outside of California. This can be interpreted as firms in California expand their board instead of replacing members. The coefficients seen in Panel B are larger in magnitude than expected, especially compared to Panel A. Previous literature on both the US and Norwegian quotas have found that board size was not impacted by the quota, implying that women replaced current members on the board which would also imply that tenure would decrease (Hwang et al. 2021; Ahern and Dittmar 2012). These results are reflected in my Panel A. However, I find that when running the triple difference and allowing the impacts of the Bill to vary by shortfall, there are large and statistically significant increases for both *board size* and *tenure*. While this goes against my original hypothesis, my assumption is that when shortfall is accounted for, the regression uncovers how shortfall companies respond differently to the law. For example, it is possible that firms are aware of the disruption to the board that may be caused by replacing a current member, so instead they opt to add another seat to the board. Perhaps this is the most rational and quickest path for firms to take, simply adding an additional seat to the board instead of trying to replace current members is easier and causes less disruption.

[5] The triple difference coefficients represent the following differences:
[(CA shortfall 1 in 2020 - CA shortfall 1 in 2018) - (CA shortfall 0 in 2020- CA Shortfall 0 in 2018)]-
[(nonCA shortfall 1 in 2020 -nonCA shortfall 1 in 2018) - (nonCA shortfall 0 in 2020- nonCA Shortfall 0 in 2018)]

Firm Performance

Results for the firm performance indicators are shown in Table 7. Panel A reports the difference-in-difference model and Panel B reports the triple difference model which allows the effects of the law to vary by the shortfall of the firms. In general, it appears that the differences of firm performance measures for firms in California with shortfalls of 1 and 0 compared to that same difference for non-California firms of shortfalls 1 and 0 were all positive. However, firms in California with shortfalls of 2 or more saw negative Tobin's Q, ROA, and EPS and a positive ROE. Tobin's Q and ROA are both positive and significant (0.61 and 3.85 respectively) for firms in California with a shortfall of 1 compared to California firms with a shortfall of zero relative to this same difference in non-California firms. However, when it comes to firms with a larger shortfall, these coefficients are negative and significant (-0.71 and -2.90 respectively). This may suggest that firms who have to add more women experience a larger change in the board dynamics and see negative initial results due to this change. This could be due to imperfect matching between new board members and companies. First, it is possible that the time constraint of the Bill is putting stress on companies to replace their members without allowing for enough time to search for the perfect match for their company. It is also possible that in addition to the time constraint, the pool of women directors is too small to satisfy the new increased demand for female talent. This could again lead to imperfect recruitment of board members because the current members have been on the board for a while, know the company very well, have industry knowledge, and adding new women who have less experience with the firm could lead to negative outcomes. This is potentially why there are initial negative results for firm performance as women shake up the dynamic of the board and the more women required to be added the bigger change we see. It is possible that firms can expect to see positive results of adding these women in the coming years as the stability of the board composition settles. When women are able to reach positions of influence on the board itself, and have more of a voice in the decision making process, the firm will see the benefits of their membership.

In-Pool vs Out-of-Pool Directors

The California Senate Bill 826 had an impact on the decisions firms made on who to appoint to their board, as reflected in Table 8. "In-pool" directors are individuals who already serve on at least one board prior to their appointment to a new board. "Out-of-pool" directors are

individuals who have not served on a board before. The data shows that the total number of female appointments increased significantly for firms in California versus firms outside of California (114% versus 83%) in the 3 years after the Bill was passed compared to the 3 years before the Bill was passed. In-pool and out-of-pool female directors in California increased by 244% and 55% respectively, which was higher than numbers seen for firms outside of California (227% and 45% respectively). This reflects the idea that SB 826 led not only to more female appointments but also to a larger female director pool. Firms within California only saw a 5% increase of total male appointments and non-California firms male appointments decreased by 2.5%. The number of out-of-pool male directors decreased for firms within and outside California. It appears that the number of females being appointed to boards is increasing at a much faster rate than male directors both inside and outside California, but of a greater magnitude inside California. This finding is also shown through California firms increasing the proportion of female appointments to total appointments from 27% to 43% compared to non-California firms increasing from 27% to 41%.

Director Skill Level

To further this research, I examine the similarities of skill level new appointees had in comparison to existing board members and to newly hired members before the Bill was passed. If the new members appointed after 2018 in California are different compared to new members appointed before 2018 in California, then the Bill may be having an impact on hiring decisions due to time pressure. However, if the skill set of these groups are similar, then it is possible that the firms were able to hire adequately as they would have before the Bill, even with the time constraint. Table 9 displays the differences of skills between incumbent men and women to newly appointed men and women. Director Skills is a vector that is the sum of 14 different possible skills the director may have defined by ISS.[6] Panel A displays that existing male directors in California from the pre period have 0.75 skills and existing female directors have 0.51 skills on average. Whereas newly appointed directors obtain fewer skills comparatively for both men and women (0.44 and 0.28 respectively). Similar patterns are reflected in the pre period for non-California firms in Panel B. In the post period for firms in California, all skill levels across the groups are higher with new women possessing a similar skill level to incumbent

[6] See Table 11 for more details on director skills variable.

women but still a large difference between incumbent men and new women. It is possible that this is due to the fact that skills can be correlated with experience and as women are on these boards for longer, firms will see their skill level increase and become more comparable to the male skill level. The table also shows the number of committees the director is a member of and the number of committees the director is a chair of. Being a member of a committee gives the director more voice and influence over decisions the firm makes and being a chair of the committee does so even more. I suspect that as women are on boards for a longer period of time, they will be appointed to these positions of greater influence and firms will realize the positive impacts of greater gender diversity on their boards.

Firm Compliance

In order to test my fourth theory, (which hypothesizes that larger firms, higher performing firms, and firms with more women on their board will be able to meet the quotas fastest), I compare the sample of all the firms in California who faced a binding restriction of the law in Table 10. These firms needed to add at least one female to the board as of 2018. I then split that sample into those who were able to comply with the law by 2020 (Panel A) and those who were not (Panel B). Overall, the firms who were able to meet the quota from 2018-2020, had a larger board size, higher percent of females on the board, and had a larger firm (based on number of employees) than firms that were not able to comply. ROA, ROE and Tobin's Q did not show much of a difference. This is consistent with larger firms, who already had females on their boards, and with a larger board as of 2018, were able to increase the number of females to meet the quota easier than smaller firms with less females on boards and smaller boards. This is also consistent with the social networking theory, which suggests that when firms already have women on the board, they will use their network and social capital to help attract other women (Mehra et al. 1998). Furthermore, it could be the case that these firms are able to attract the best female candidates because of this social network which may lead to performance improvements. Additionally, it is likely that larger firms have more resources and money to spend on searching for new directors or they may have more name recognition which could make it easier to hire. It is also possible that the firms in Panel B simply just did not try to reach the quota.

VI. Conclusion

This paper investigates the causal relationship between firm gender quotas and board structure and firm performance. Results confirm the theory that firms in California are increasing the number of female directors on their boards, which may have led to instability in the firm through less-perfect matching due to time constraints imposed by the law. I suspect that initial levels of negative results will fade in the long run as the pool of female directors expands adequately to meet the demand and as women get to greater levels of influence on the board.

The results confirm the current literature on gender quotas suggesting that supply side constraints of the female director pool may make it difficult for firms to adequately hire and meet the quota. I suspect that as time goes on, the supply of female talent will increase and it will be easier for firms to appoint female talent. The quota did help expand the talent pool by adding new female directors who had never previously served on a board before. Not only will this help California firms, but may also be beneficial to firms outside California who are looking to hire female directors.

Overall, this study finds that the California quota significantly increased the number of women on the boards of California. In general, California firms that required one female be added to their board saw positive impacts on firm performance and firms that needed more than one female saw negative impacts. Additionally, new first-time female director appointments increase more for California firms than non-California firms, suggesting that the Bill expedited the expansion of the female director pool. These new female appointees tend to have a similar skill set as current female board members, but have fewer skills than both new male and current male members. Lastly, I find that larger firms and firms who already have at least one female on their board tend to more readily change their board in order to comply with the quota more than smaller firms with fewer women.

There is plenty of room to build on the current literature of quotas in the United States. While this paper uses data through 2020, it would be even better to include 2021 and 2022 data that captures the years after the final requirement of SB 826 in 2021. Having more years following the quota will allow for long run effects to be seen and for potentially more accurate and precise measures to be taken. Additionally, my sample did not include all of the firms which are publicly listed and headquartered in California. It would be even better to include all the firms to get a larger sample size of California firms.

This study finds compelling results about how gender quotas impact firms in the United States and sets a platform for further research if other states decide to implement a similar quota. The long term implications of United States gender mandates are still unknown, and there is definitely a need to continue studying these topics as well as considering the constitutionality of such a law. The results found in this paper are encouraging, but there is plenty more to be done.

Bibliography

Ahern, Kenneth R., and Amy K. Dittmar. “The Changing of the Boards: The Impact on Firm Valuation of Mandated Female Board Representation.” *SSRN Electronic Journal*, June 2012. https://doi.org/10.2139/ssrn.1364470.

Bear, Julia B, and Anita Williams Woolley. “The Role of Gender in Team Collaboration and Performance.” *Interdisciplinary Science Reviews* 36, no. 2 (2011): 146–53. https://doi.org/10.1179/030801811x13013181961473.

Bernile, Gennaro, Vineet Bhagwat, and Scott Yonker. “Board Diversity, Firm Risk, and Corporate Policies.” *Journal of Financial Economics* 127, no. 3 (2018): 588–612. https://doi.org/10.1016/j.jfineco.2017.12.009.

Burrow, Norma, Alexandra Fedorets, and Anna Gibert. “The Effects of a Gender Quota on the Board of German Largest Corporations,” 2018. https://www.sbs.su.se/polopoly_fs/1.417933.1545051481!/menu/standard/file/The%20effects%20of%20a%20gender%20quota%20on%20the%20board%20of%20German%20largest%20corporations.pdf.

Cumming, Douglas, T. Y. Leung, and Oliver Rui. “Gender Diversity and Securities Fraud.” Academy of Management Journal 58, no. 5 (2015): 1572–93. https://doi.org/10.5465/amj.2013.0750.

Fuhrmans, Vanessa, and Alejandro Lazo. “California Moves to Mandate Female Board Directors.” The Wall Street Journal. Dow Jones & Company, August 30, 2018. https://www.wsj.com/articles/california-moves-to-mandate-female-board-directors-1535571904.

Gao, Mingze. “Firm Historical Headquarter State from SEC 10K/Q Filings.” Firm Historical Headquarter State from SEC 10K/Q Filings - Mingze Gao, 2021. https://mingze-gao.com/posts/firm-historical-headquarter-state-from-10k/.

“Gender Representation on Corporate Boards of Directors.” Wikipedia. Wikimedia Foundation, November 2, 2021. https://en.wikipedia.org/wiki/Gender_representation_on_corporate_boards_of_directors.

Gidlund, Alexander, and Tommy Lund. “The Norwegian Gender Quota Law and Its Effects on Corporate Boards.” diva-portal, 2017. https://www.diva-portal.org/smash/get/diva2:1119270/FULLTEXT01.pdf.

Goldberg, Nicholas. “California's Controversial Law Requiring Women No Corporate Boards Is Back in the Cross Hairs .” Los Angeles Times. Los Angeles Times, August 2, 2021. https://www.latimes.com/opinion/story/2021-08-02/california-women-corporate-boards.

Greene, Daniel, Vincent J. Intintoli, and Kathleen M. Kahle. “Do Board Gender Quotas

Affect Firm Value? Evidence from California Senate Bill No. 826." *Journal of Corporate Finance* 60 (2020): 101526. https://doi.org/10.1016/j.jcorpfin.2019.101526.

Hoogendoorn, Sander, Hessel Oosterbeek, and Mirjam van Praag. "The Impact of Gender Diversity on the Performance of Business Teams: Evidence from a Field Experiment." *Management Science* 59, no. 7 (2013): 1514–28. https://doi.org/10.1287/mnsc.1120.1674.

Huang, Sterling, and Gilles Hilary. "Zombie Board: Board Tenure and Firm Performance." *Journal of Accounting Research* 56, no. 4 (2018): 1285–1329. https://doi.org/10.1111/1475-679x.12209.

Hwang, Sunwoo, Anil Shivdasani, and Elena Simintzi. "Mandating Women on Boards: Evidence from the United States." *SSRN Electronic Journal*, 2021. https://doi.org/10.2139/ssrn.3265783.

Kelemen, Thomas K., Samuel H. Matthews, Xin‐an Zhang, Bret H. Bradley, and Huihua Liu. "When Does Gender Diversity Enhance Team Performance? the Dual Need for Visionary Leadership and Team Tenure." *Journal of Applied Social Psychology* 50, no. 9 (June 20, 2020): 501–11. https://doi.org/10.1111/jasp.12690.

Livnat, Joshua, Gavin Smith, Kate Suslava, and Martin Tarlie. "Board Tenure and Firm Performance." *Global Finance Journal* 47 (February 2021): 100535. https://doi.org/10.1016/j.gfj.2020.100535.

McIntyre, Michael L., Steven A. Murphy, and Paul Mitchell. "The Top Team: Examining Board Composition and Firm Performance." *Corporate Governance: The international journal of business in society* 7, no. 5 (October 23, 2007): 547–61. https://doi.org/10.1108/14720700710827149.

Mehra, Ajay, Martin Kilduff, and Daniel J. Brass. "At the Margins: A Distinctiveness Approach to the Social Identity and Social Networks of Underrepresented Groups." Academy of Management Journal 41, no. 4 (1998): 441–52. https://doi.org/10.5465/257083.

Post, Corinne, and Kris Byron. "Women on Boards and Firm Financial Performance: A Meta-Analysis." Academy of Management Journal 58, no. 5 (2015): 1546–71. https://doi.org/10.5465/amj.2013.0319.

"Quotas to Gender-Balance the Board: Norway's Drastic Action Worked." Ideas for Leaders, July 20, 2017. https://www.ideasforleaders.com/ideas/quotas-to-gender-balance-the-board-norway%E2%80%99s-drastic-action-worked.

"SB - 826 Corporations: Boards of Directors." Bill Text - SB-826 Corporations: boards of directors. California Legislative Information, October 1, 2018. https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB826.

"Senate Bill No. 826." Bill Text - SB-826 Corporations: boards of directors. Accessed

November 17, 2021. https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201720180SB826.

Siu, Antoinette. “California May Mandate a Woman in the Boardroom, but Businesses Are Fighting It.” TechCrunch. TechCrunch, August 12, 2018. https://techcrunch.com/2018/08/12/california-may-mandate-a-woman-in-the-boardroom-but-businesses-are-fighting-it/.

von Meyerinck, Felix, Alexandra Niessen-Ruenzi, Markus Schmid, and Steven Davidoff Solomon. “As California Goes, so Goes the Nation? Board Gender Quotas and Shareholders' Distaste of Government Interventions.” SSRN. European Corporate Governance Institute, January 3, 2019. http://ssrn.com/abstract_id=3303798.

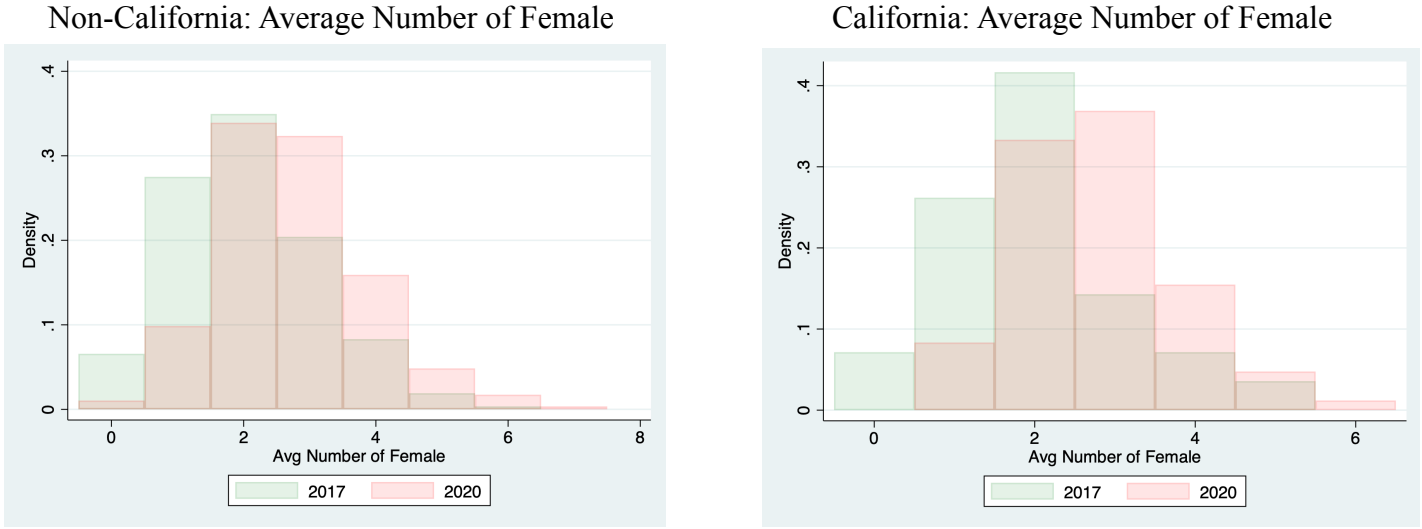
Weber, Shirley N. Women on Boards - March 2021 report, March 2021. https://bpd.cdn.sos.ca.gov/women-on-boards/wob-report-2021-02.pdf.

Woetzel, Jonathan, Anu Madgavkar, Kweilin Ellingrud, Eric Labaye, Sandrine Devillard, Eric Kutcher, James Manyika, Richard Dobbs, and Mekala Krishnan. “How Advancing Women's Equality Can Add $12 Trillion to Global Growth.” McKinsey & Company. McKinsey & Company, September 1, 2015. https://www.mckinsey.com/featured-insights/employment-and-growth/how-advancing-womens-equality-can-add-12-trillion-to-global-growth.

Yang, Philip, Jan Riepe, Katharina Moser, Kerstin Pull, and Siri Terjesen. “Women Directors, Firm Performance, and Firm Risk: A Causal Perspective.” *The Leadership Quarterly* 30, no. 5 (2019): 101297. https://doi.org/10.1016/j.leaqua.2019.05.004.

Appendix

Figure 1. Histogram of Average Number Female Directors on Boards



Note: This figure represents the average number of females across the firms not in California compared to firms in California in 2017 (pre-SB826) and in 2020 (post-SB826). It is important to note the differences in sample size, there are 578 non-California firms in the sample and only 84 California firms. This sample is representative of firms from the S&P 1500 who have data available in every year from 2007- 2020 from the ISS dataset and excludes firms who underwent a merger or acquisition.

Table 1. Total California Firms vs Sample California Firms

	All of California	Represented in Sample
Total number public corporations listing a CA principal executive office in 2020 ("Impacted corporations")	647	84
Total number of impacted corporations that *reported* compliance with the 2020 women on boards requirements	311	50
Total number of publicly held corporations that moved HQ from another state into california during 2020	6	2
Total number of publicly held corporations that moved HQ from another state out of california during 2020	22	3

Note: This table represents all of California headquartered companies with data provided by the Secretary of State, Alex Padilla, in the yearly Women on Boards report. This data is from the March 2021 report. The sample data is provided for comparison purposes. It is important to note that not every company reports their compliance to the state, so the impacted firms reporting compliance measure slightly different things as the sample data used for this study did not depend on companies reporting. My sample is representative of firms from the S&P 1500 who have data available in every year from 2007- 2020 from the ISS dataset and excludes firms who underwent a merger or acquisition.

Table 2. Female Board Membership Required by SB826 - California Firms Shortfall

board size	# of companies	# female directors required	Number of companies in CA with Shortfall of:			
			0 females	1 female	2 females	3 females
4	0	1	0	0	0	0
5	2	2	1	0	1	0
6	4	3	0	0	3	1
7	2	3	0	1	1	0
>=8	76	3	23	39	11	3
Total:	**84**		**24**	**40**	**16**	**4**

Note: This table shows the requirements of female directors on boards under SB826. This shows the requirements that firms with principal executive offices in California will need to reach by the end of 2021 at the time of passing (2018). This sample is representative of firms from the S&P 1500 who have data available in every year from 2007- 2020 from the ISS dataset and excludes firms who underwent a merger or acquisition.

Table 3. Summary Statistics - California Firms vs Non-California Firms (2018)

	mean		median		25th pct		75th pct	
	CA	non- CA	CA	non- CA	CA	non- CA	CA	non- CA
Board Characteristics								
Board size	9.39 [2.33]	10.01 [2.15]	9	10	8	9	10	11
# Female directors	2.13 [1.10]	2.24 [1.17]	2	2	2	1	3	3
% Female directors	22.5 [10.6]	22.0 [1.03]	22.2	22.2	17.4	14.3	27.9	27.3
Shortfall*	1.00 [0.81]	0.92 [0.85]	1	1	0	0	1	2
Age	62.92 [3.95]	63.0 [3.47]	63.00	63.00	60.14	60.92	64.63	65.10
Tenure	9.92 [4.04]	9.56 [3.69]	9.76	8.88	7.08	7	12.15	11.5
Firm Characteristics								
Tobin's Q	2.72 [1.89]	2.07 [1.41]	2.11	1.62	1.52	1.21	3.10	2.38
ROA	6.60 [7.77]	6.25 [6.99]	5.58	5.73	1.77	2.33	10.43	9.11
ROE	12.84 [36.59]	17.75 [220.2]	12.22	13.43	5.71	8.00	26.77	22.53
Earnings per Share	2.97 [3.47]	3.86 [10.01]	2.43	2.83	1.05	1.38	4.06	4.92
Number of Observations	84	578	84	578	84	578	84	578

Note: This table reports summary statistics (for the year 2018) for firms with principal executive offices in California versus firms with principal executive offices outside of California. This sample is representative of firms from the S&P 1500 who have data available in every year from 2007- 2020 from the ISS dataset and excludes firms who underwent a merger or acquisition. *This measure of shortfall allows it to vary from year to year for each firm.

Table 4. Summary Statistics - California Firms vs Non- California Firms (2020)

	mean		median		25th pct		75th pct	
	CA	non- CA	CA	non- CA	CA	non- CA	CA	non- CA
Board Characteristics								
Board size	9.45 [1.81]	10.08 [2.13]	9	10	8	9	10.5	11
# Female directors	2.78 [1.04]	2.75 [1.15]	3	3	2	2	1	3
% Female directors	29.6 [10.1]	27.1 [9.8]	28.6	27.3	22.2	20.0	37.5	33.3
Shortfall*	0.49 [0.65]	0.56 [0.69]	0	0	0	0	1	1
Age	62.76 [4.00]	63.01 [3.46]	62.73	63.11	60.38	60.85	64.81	65.20
Tenure	9.47 [3.85]	9.23 [3.88]	9.34	8.75	6.44	6.62	11.79	11.13
Firm Characteristics								
Tobin's Q	2.84 [2.37]	1.97 [1.59]	2.01	1.41	1.25	1.10	3.29	2.23
ROA	6.67 [8.60]	3.83 [8.74]	5.74	3.90	1.97	0.70	11.92	7.67
ROE	15.74 [46.05]	5.77 [391.9]	13.71	10.48	5.52	1.85	28.41	18.84
Earnings per Share	3.14 [4.75]	3.21 [11.87]	2.92	2.41	1.06	0.53	4.57	4.79
Number of Observations	84	578	84	578	84	578	84	578

Note: This table reports summary statistics (for the year 2020) for firms with principal executive offices in California versus firms with principal executive offices outside of California. This sample is representative of firms from the S&P 1500 who have data available in every year from 2007- 2020 from the ISS dataset and excludes firms who underwent a merger or acquisition. *This measure of shortfall allows it to vary from year to year for each firm.

Table 5. Difference in Sample Means on Firm Performance and Board Structure

	(1) # Female	(2) % Female	(3) Board Size	(4) Age	(5) Tenure	(6) Tobin's Q	(7) ROA	(8) ROE	(9) EPS	(10) Shortfall*	N
Difference in Difference: Δtreatment - Δcontrol	**0.14**	**2.0**	**-0.01**	**-0.16**	**-0.12**	**0.22**	**2.49**	**14.88**	**0.82**	**-0.15**	
Panel A: Treatment group, California Firms											
2018	2.13 [1.10]	22.5 [10.6]	9.39 [2.33]	62.92 [3.95]	9.92 [4.04]	2.72 [1.89]	6.60 [7.77]	12.84 [36.59]	2.97 [3.47]	1.00 [0.81]	84
2020	2.78 [1.04]	29.6 [10.1]	9.45 [1.81]	62.76 [4.00]	9.47 [3.85]	2.84 [2.37]	6.67 [8.60]	15.74 [46.05]	3.14 [4.75]	0.49 [0.65]	84
Δ treatment	0.65	7.1	0.06	-0.16	-0.45	0.12	0.07	2.90	0.17	-0.51	
Panel B: Comparison group, non-California Firms											
2018	2.24 [1.17]	22.0 [1.03]	10.01 [2.15]	63.0 [3.47]	9.56 [3.69]	2.07 [1.41]	6.25 [6.99]	17.75 [220.2]	3.86 [10.01]	0.92 [0.85]	578
2020	2.75 [1.15]	27.1 [9.8]	10.08 [2.13]	63.01 [3.46]	9.23 [3.88]	1.97 [1.59]	3.83 [8.74]	5.77 [391.9]	3.21 [11.87]	0.56 [0.69]	578
Δ control	0.51	5.1	0.07	0.01	-0.33	-0.10	-2.42	-11.98	-0.65	-0.36	

Note: This table reports a difference in sample means for firms within California versus outside of California from before and after the passing of the Bill. This sample is representative of firms from the S&P 1500 who have data available in every year from 2007- 2020 from the ISS dataset and excludes firms who underwent a merger or acquisition. *This measure of shortfall allows it to vary from year to year for each firm.

Table 6. The Impact of SB 826 on Board Composition

	(1) # Female	(2) % Female	(3) Board Size	(4) Age	(5) Tenure
Panel A. Difference-in-Difference					
Post x Cali	0.13* (0.054)	2.0*** (0.005)	0.07 (0.096)	-0.16 (0.249)	-0.16 (0.167)
Panel B. Triple Difference					
Post x Cali x shortfall 1	0.44*** (0.127)	1.96 (0.012)	0.60** (0.226)	-0.01 (0.587)	0.79* (0.395)
Post x Cali x shortfall 2+	0.32* (0.145)	2.20 (0.014)	0.61* (0.263)	0.03 (0.684)	0.90* (0.460)

Note: This table reports difference-in-difference regression (Panel A) and triple difference regression (Panel B) on board characteristics for firms within California versus outside of California from before and after the passing of the Bill. All regressions include firm fixed effects and year fixed effects. This sample is representative of firms from the S&P 1500 who have data available in every year from 2007- 2020 from the ISS dataset and excludes firms who underwent a merger or acquisition. There are a total of 7,282 observations in each regression. The regressions only include years after 2010, to account for the 2007-2008 financial crisis and recession that greatly impacted firms. Shortfall in these regressions is equal to the value of shortfall in 2018, when the law was passed, for each firm. For these regressions, shortfall is equal to 1 or 2. Shortfalls of 2 include firms with a shortfall of 2 or 3 which includes 20 firms. ***p <0.01, ** p< 0.05, * p<0.

Table 7. The Impact of SB 826 on Firm Performance

	(1) Tobin's Q	(2) ROA	(3) ROE	(4) EPS
Panel A. Difference-in-Difference				
Post x Cali	0.51***	1.43**	36.6	0.19
	(0.058)	(0.492)	(58.0)	(0.784)
Panel B. Triple Difference				
Post x Cali x shortfall 1	0.61***	3.85***	83.7	0.51
	(0.135)	(1.15)	(136.1)	(0.923)
Post x Cali x shortfall 2+	-0.71***	-2.90*	2.37	-1.66
	(0.158)	(1.36)	(160.3)	(1.07)

Note: This table reports difference-in-difference regression (Panel A) and triple difference regression (Panel B) on performance measures for firms within California versus outside of California from before and after the passing of the Bill. All regressions include firm fixed effects and year fixed effects. This sample is representative of firms from the S&P 1500 who have data available in every year from 2007- 2020 from the ISS dataset and excludes firms who underwent a merger or acquisition. There are a total of 7,282 observations in each regression. The regressions only include years after 2010, to account for the 2007-2008 financial crisis and recession that greatly impacted firms. Additionally, *shortfall* in these regressions is equal to the value of shortfall in 2018, when the law was passed, for each firm. The number of observations is lower for ROA and ROE due to missing financial data from various firms. For these regressions, shortfall is equal to 1 or 2. Shortfalls of 2 include firms with shortfall of 2 or 3 which includes 20 firms. ***p <0.01, ** p< 0.05, * p<0.1

Table 8. Senate Bill 826 Impact on Pool of Directors

	California Firms			Non-California firms		
	2015-2017	2018-2020	% Change	2015-2017	2018-2020	% Change
female director appointments	29	62	113.8%	191	350	83.2%
male director appointments	77	81	5.2%	520	507	-2.5%
in-pool female director appointments	9	31	244.4%	40	131	227.5%
out-of-pool female director appointments	20	31	55.0%	151	219	45.0%
in-pool male director appointments	13	27	107.7%	141	225	59.6%
out-of-pool male director appointments	64	54	-15.63%	379	282	-25.6%
% female appointed to male appointed	37.7	76.5	102.92%	36.7	69.0	73.8%
% female appointed of total appointments	27.4	43.4	58.4%	26.9	40.8	51.67%
Total appointments	106	143	34.9%	711	857	20.5%

Note: This table reports the impact of California Senate Bill 826 on board appointments. The sample is representative of firms from the S&P 1500 who have data available in every year from 2007- 2020 from the ISS dataset and excludes firms who underwent a merger or acquisition. An in-pool director is someone who already sat on at least one board previously to being appointed to a new board. An out-of-pool director is someone who has not sat on a board previously to being appointed to a company's board.

Table 9. Senate Bill 826 Impact on Directors Skills - Summary Statistics Means

Panel A. California Firms

	2015-2017				2018–2020			
	Incumbent Men	New Men	Incumbent Women	New Women	Incumbent Men	New Men	Incumbent Women	New Women
Director Skills	0.75 [0.832]	0.44 [0.769]	0.51 [0.685]	0.28 [0.591]	0.84 [0.849]	0.63 [0.887]	0.49 [0.676]	0.42 [0.800]
Committee Member	1.64 [1.27]	0.65 [.957]	1.68 [1.05]	0.52 [0.785]	1.37 [1.26]	0.33 [0.671]	1.55 [1.05]	0.52 [0.784]
Committee Chair	0.43 [0.694]	0.01 [0.114]	0.44 [0.712]	0.00 [0.000]	0.39 [0.682]	0.00 [0.000]	0.36 [0.649]	0.00 [0.000]
N	1,856	77	431	29	1,725	81	562	62

Panel B. Non-California Firms

	2015-2017				2018–2020			
	Incumbent Men	New Men	Incumbent Women	New Women	Incumbent Men	New Men	Incumbent Women	New Women
Director Skills	0.79 [0.897]	0.61 [0.895]	0.44 [0.690]	0.20 [0.528]	0.87 [0.928]	0.65 [0.891]	0.49 [0.724]	0.41 [0.743]
Committee Member	1.62 [1.27]	0.65 [1.04]	1.89 [1.11]	0.74 [1.05]	1.39 [1.26]	0.63 [0.944]	1.71 [1.16]	0.75 [1.03]
Committee Chair	0.40 [0.677]	0.02 [0.175]	0.39 [0.691]	0.01 [0.072]	0.36 [0.646]	0.02 [0.171]	0.38 [0.680]	0.00 [0.053]
N	13,305	520	3,145	191	12,542	507	3,979	350

Note: This table reports the means of the variables respectively. Director skills is provided by ISS, a vector of 14 different skills a director can have. Committee member represents the number of committees that director is a member of and committee chair represents how many committees the director is the chair of.

Table 10: Summary Stats for California Compliant vs non-Compliant Firms

	Panel A. complied in 2020	Panel B. did not comply in 2020
Board size	9.18 [1.15]	8.69 [2.01]
% female	21.3 [3.9]	14.6 [8.0]
Number female	1.93 [0.262]	1.28 [0.729]
Number Employees (in thousands)	32.60 [52.76]	19.36 [45.39]
ROA	7.48 [7.93]	6.85 [8.40]
ROE	14.07 [21.46]	15.62 [16.98]
Tobin's Q	2.75 [2.04]	2.75 [1.88]
N	28	32

Note: This table shows the sample means for firms in California who were binded by the legislation, meaning they needed to add at least one more female to their boards as of 2018. This table displays the means of varying firm characteristics for firms that were able to meet the quota from 2018 to 2020 versus firms that were not able to meet the quota by 2020. The variable values are from the year 2018.

Table 11. Variable Definitions

Variable name	Definition
Board Characteristics (source: ISS)	
Board size	Number of directors on the board
# Female directors	Number of female directors on the board
% Female directors	Fraction of directors on the board that are female
Shortfall	Shortfall is equal to the number of female directors who must be appointed to the board to comply with Senate Bill 826. There are two ways that shortfall is measured in this paper: **Summary Stats** - For the summary statistics tables (Table 3, Table 4 & Table 5) shortfall is allowed to vary by year. This helps to see how shortfall changes over time as firms add women to their boards. **Regressions** - For the regressions (Table 6 & Table 7) shortfall is equal to the firm's shortfall in 2018, when the law was passed. This allows for the comparison of firms with the same shortfall and their reaction to the law being passed. Additionally, firms with shortfalls of 2 and 3 are grouped together due to limited observations.
Age	Average age of the directors on the board.
Tenure	Average number of years served by the current board members.
Director Characteristics (Source: ISS)	
Skills	Number of skills a director possesses. ISS groups director skills into 14 different categories that include past experience in any of these roles, positions, or expertise at a company: Chief Executive Officer, Chief Financial Officer, Chief Operating Officer, Chairmen, Executive Vice President, President, Senior Vice President, Secretary, Treasurer, Vice President, Vice Chairman, Financial Expert, Professional Services, and Leadership.
Committee member	Number of committees a director sits on. These include nominating, governance, compensation, and audit committees.

Variable Name	Definition
Committee chair	Number of committees a director is the chair of. These include nominating, governance, compensation, and audit committees.
Female director	Indicator variable that equals one if the director is a female.
Incumbent women	Indicator variable that equals one if the director currently serves on the board and is female.
New women	Indicator variable that equals one if the director is a new member of the board and is female.
In-pool female director	A female director who already serves on at least one other board of directors.
Out-of-pool female director	A female director who has been appointed to a board for the first time in their career.
% female to male appointed	Ratio of the number of female appointees to the number of male appointees.
% female of total appointments	Percent of the total appointees that are female.
Firm Characteristics (Source: Compustat)	
Firm Size	Number of employees in thousands
Tobin's Q	[(price common stock * number common stock) + total assets - common equity] / total assets
Return on assets	Income before extraordinary items /[(total assets $_{t}$ + total assets $_{t-1}$)/2]
Return on equity	Income before extraordinary items /[(total common equity $_{t}$ + total common equity $_{t-1}$)/2]
Earnings per share	Earnings per share excluding extraordinary items / adjustment factor
Post	Indicator variable equal to one if the year is after 2018.
Cali	Indicator variable equal to one if the firm was headquartered in California for the time from 2008-2020 and did not enter or move out.