How Do Firms Respond to Gender Quotas?: Evidence From California's SB826

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Preliminary – Please Do Not Circulate

1 Introduction

In the United States, the presence of women in top leadership positions is a relatively rare phenomenon. A recent Pew report documents that as of 2020, women constituted 27% of Congress, 18% of state governors, and 7% of Fortune 500 CEOs.[1] The lack of gender parity in leadership comes against the backdrop of increasing female representation in graduate and professional schools. Between 1990 and 2017, the share of female MBA graduates increased from 35% to nearly 50%. MBA programs are common pathways to corporate leadership positions, yet as of 2020, women only represented 21% of corporate boards (Figure 1).

To address gender disparities in corporate board membership, California's Governor Jerry Brown signed SB826 on September 30th, 2018, which represents the first gender-based quota for corporate boards in the United States.[2] The intent of the legislation was to increase female representation on corporate boards. This sentiment is embodied in the first line of the bill: "More women directors serving on boards of directors of publicly-held corporations will boost the California economy, improve opportunities for women in the workplace, and protect California taxpayers, shareholders, and retirees." To achieve a greater female presence on corporate boards, SB826 requires that listed companies headquartered in California have at least one female director by the end of 2019. As an enforcement mechanism, annual fines ranging from \$100,000 to \$300,000 are levied on companies that fail to comply. California's gender quota arrives in the context of growing interest in boardroom Diversity, Equity, and Inclusion. In August 2021, the SEC approved NASDAQ's requirement that listed firms disclose whether they have at least two diverse directors. Furthermore, Hawaii, Massachusetts, Michigan, New Jersey, and Washington are considering adopting laws similar to SB826.[3]

While existing literature has focused on stock price reactions to SB826, the purpose of this paper is to inquire how firms responded to the legislation. I ask whether companies with all-male boards added female representation, and if so, whether the female additions were observably more or less qualified. Further, I examine how SB826 changed Firm Value and Operating Performance in the two years after its implementation.

The answers to these questions are intriguing for several reasons. Recent estimates suggest that firms mandated to comply with California's 2018 gender quota experienced a 1-2% decline in share prices following the legislation's enactment (Hwang et al. (2018); von Meyerink et al. (2021); Gertsberg et al. (2020); Greene et al. (2020)). However, there is vigorous debate on the reasons why investors reacted negatively. Greene et al. (2020) argue that the share price reaction reflects an insufficient supply of qualified female candidates. As support, the authors show the negative announcement effect is exacerbated in industries with no female CEOs and a below-median number of female directors. This view is contested by Gertsberg et al. (2020), who document that female directors appointed after SB826 have comparable shareholder support as incoming male directors. Instead, they purport that the negative share price reaction is driven by dysfunctional board dynamics, whereby firms do not oust male directors with the least shareholder support to comply with SB826. By analyzing the characteristics of directors appointed after the quota – including age, top-level experience, and connections with company leadership – I assess whether SB826 reduced director quality.

A limitation of assessing director quality based on observable characteristics is that directors may contribute in ways that are difficult to measure. For example, studies have found that gender diverse boards are tougher monitors of executives (Adams and Ferreira 2008) and foster investment in fruitful Research and Development activities (Bernile et al. 2018). To obtain a more thorough understanding of how quota-appointed directors impact firms, I examine the quota's long-run effect on a host of financial outcomes. I

[1] See https://www.pewresearch.org/social-trends/fact-sheet/the-data-on-women-leaders/
[2] For a list of gender quotas implemented outside the United States, see Table 1 of Ahern and Dittmar (2012).
[3] https://corpgov.law.harvard.edu/2020/03/18/new-report-on-california-board-gender-diversity-mandate/

consider metrics on the Income and Balance Sheet to inquire whether quota-appointed directors affect profitability or liquidation value. To probe whether these directors affect a firm's intangible assets, such as its reputation or quality of management, I study SB826's effects on Market Value, Tobin's Q, and Return on Assets.

On theoretical grounds, it is unclear whether the quota should help or harm firms' financial outcomes. In a textbook argument, firms optimally choose the board of directors to maximize shareholder value. External factors that constrain the firm's ability to optimize, such as a government mandated gender quota, should worsen firm outcome measures. However, quota-appointed directors may be token appointments, lacking the influence or ability to shape the board of directors' collective decision making. An alternative perspective highlights that quota-appointed directors are unlikely to belong to the "Old Boys Club," and so may be tougher monitors of corporate executives.[4] To the extent that firms benefit from additional monitoring, the quota may improve financial performance.[5]

My results provide credible causal estimates of how gender diversity affects firm outcomes. As stressed by Adams, Weisbach, and Hermalin (2008), board structure is an equilibrium outcome designed to address a company's corporate governance issues. For example, shareholders may elect directors to optimally monitor company executives. Observational studies that compare outcomes across firms with varying degrees of board gender diversity will not capture the causal impact of gender diverse boards. Moreover, changes in outcomes within a firm potentially reflect shifts in corporate objectives rather than the impact of female directors. For instance, a firm may hire female directors as part of its broader Corporate Social Responsibility efforts. As a result, even studies that use firm fixed effects may yield incorrect estimates of a board's impact. In the US context, most studies that examine the effects of board gender diversity have adopted the prior approaches.[6] By studying how firm outcomes respond to SB826, a legislation requiring firms to add female directors, I address important endogeneity concerns present in the literature.

Using linked data between BoardEx and Compustat, I find that the legislation was massively successful in introducing gender diversity into corporate boards. In 2017, there were 196 California-based listed companies with all-male boards. By 2020, fewer than 30 listed companies based in CA had all-male boards. To more formally identify the causal effect of the quota, I track the board composition of all domestic listed companies that had no female representation in 2017. Among these companies, only the firms based in CA as of 2017 need to change board composition to be compliant with SB826 ("treated or quota-affected firms").[7] Leveraging the firms based outside of California as a control group ("control firms"), my difference-in-differences estimates indicate that SB826 reduced the share of all-male boards by 28%. Robustness tests indicate that these results are not driven by shifts in attitudes about women in leadership that are particular to California.[8]

To evaluate whether the legislation caused quota-affected companies to hire less-qualified directors, I compare the characteristics of female directors who join treated and control firms after SB826. I find that quota-appointed directors generally have similar characteristics as peer (non-quota-appointed) female directors. On average, women joining treated firms are 1 year older, 4 percentage points less likely to have

[4]In current vernacular, the phrase "Old Boys Club" refers to the preservation of social elites (Cullen and Perez-Truglia (2021)).

[5]Quota-appointed female directors may also improve firm outcomes by solidifying a firm's reputation as a socially responsible actor (e.g. Hill et al. 2007) or by offering valuable perspectives not considered by all-male boards. In support of the latter claim, Spitzer and Talley (2013) provide a theoretical model showing that non-pivotal members in a group may influence collective decision making by undertaking costly investments in information acquisition.

[6]See Bernile et al (2018) for an exception. They use the diversity of potential directors that live within a non-stop flight of a firm's headquarter as an instrument for board diversity.

[7]These firms can also evade the legislation's reach by de-listing or changing headquarter location.

[8]They are further not driven by differential attrition across treatment and control units (Table A7). CA-based firms affected by the quota are not more likely to take evasive actions – delist or change headquarter location – than firms in the control group (Table 4).

prior board experience, and 5 percentage points more likely to have prior C-Suite experience than those joining control firms. None of these differences are statistically significant at conventional levels. Women in the two groups also appear similar on connections with the incumbent board; differences in the share with prior employment connections to existing company leadership are indistinguishable from zero.

The muted differences may still be consistent with the theory that SB826 caused quota-affected firms to hire lower-quality female directors. If California-based firms typically have higher quality board members, then the null differences described would suggest SB826 reduced director quality. I do find evidence that CA-based companies typically hire directors with more top-level experience. Prior to SB826, directors joining treated firms were 4 percentage points more likely to have board experience than those joining control firms. Expanding the set of firms considered, I observe identical differences when comparing female directors hired by CA-based firms to those hired by firms based outside of CA.[9] These numbers suggest that quota-affected firms dipped into a marginally lower rung of talent.

Nevertheless, SB826 raised the Market Values of quota-affected firms by 19% in the 9 quarters after its adoption. Over the same period, the legislation had minimal impact on Operating Performance.[10] These results are corroborated by Triple Differences and Quantile Regression specifications.[11] Notably, an observational analysis that relies upon firm fixed effects incorrectly posits that gender diverse boards immediately raise both Market Values and Operating Performance. This incongruence implies that firms with faster growth trajectories adopt gender diverse boards and highlights the endogeneity of board composition.

Most directly, my paper contributes to the literature examining firm reactions to SB826 (Hwang et al. (2018); von Meyerink et al. (2021); Gertsberg et al. (2020); Greene et al. (2020)). While these papers focus on the immediate stock price reactions to the legislation's signing, my study examines the longer-term impacts of the quota. In that sense, my analysis more closely resembles the literature that evaluates the long-run effects of the 2003 Norwegian quota. Ahern and Dittmar (2012) find that the quota led to less experienced boards and worse Operating Performance. Bertrand et al. (2018) argue that the quota did not impact women in business besides those who earned directorships due to the legislation. These results may not necessarily hold in the US context since the Norwegian quota required 40% female board representation while California's mandated the presence of a single female director. Indeed, in the two years following SB826, I do not observe deteriorating Operating Performance among quota-affected firms.

More broadly, this paper adds to scholarship on how women obtain leadership positions and impact organizations. I provide direct evidence that female directors do not belong to the "Old Boys Club" by showing that they are unlikely to have prior employment relationships with sitting directors.[12] Further, I document that companies on faster growth trajectories adopt gender diverse boards. This result stands at odds with the widely held "Glass Cliff" hypothesis, which states that poorly performing companies are more likely to implement female leadership (Ryan and Haslem 2005; Cook and Glass 2013).[13] My findings that SB826 had null effects on Operating Performance also conflict with literature showing female presence improves organizational outcomes. For example, Gompers et al. (2021) find that some venture capital partners are persuaded to hire female partners upon having a daughter. They conclude increased gender diversity at the partner level increases fund returns. Chattopadhyay and Duflo (2004) study a 1992 Indian

[9] I reach similar conclusions when considering the incidence of prior C-Suite or Same Sector experience.

[10] Operating performance is measured by Return on Assets, Tobins Q, and outcomes on the Income and Balance Sheet.

[11] In contrast to the Difference-in-Differences specification, the triple differences specification leverages variation in outcomes among firms that had gender diverse boards in 2017.

[12] See Drechsel-Grau and Holub (2020), Cullen and Perez-Truglia (2021), von Essen and Smith (2021), and Chevrot-Bianco (2021) on how gendered connection patterns affect workplace outcomes. See Hallock (1997) for an earlier study on board interlock and its impacts on firm outcomes.

[13] Ryan and Haslem (2005) find that companies that appointed female directors had consistently worse performance in the preceding 5 months than those that appointed male directors. Cook and Glass (2013) find that we find that minorities are more likely than white men to be promoted CEO of weakly performing firms.

gender quota that required one-third of local political positions to be reserved for women. As a result of the policy, they document the provision of public goods is more closely aligned with the preferences of women. In the two years after its implementation, I find California's gender quota was successful in placing qualified women onto corporate boards, but that it did not fundamentally change the way companies operate.

This paper proceeds as follows. I discuss SB826 requirements in Section 2 and data details in Section 3. In Section 4, I describe compliance with the legislation. Sections 5 and 6 discuss the legislation's impacts on board characteristics and financial outcomes. Section 7 concludes.

2 Legal Context

On 9/30/2018, California Governor Jerry Brown signed into law Senate Bill (SB) 826, which requires publicly-held corporations with a principal executive office in California to have at least one female director on their Board of Directors by December 31, 2019.[14] Companies with 5 (6 or more) directors are mandated to have at least 2 (3) female directors by the end of 2021. I study how companies responded to the first tranche of SB826, which represents the very first board gender quota in the United States context.[15]

As visualized by Figure 3, the legislation impacts companies based in California with shares listed on the New York Stock Exchange, NASDAQ, or NYSE American. SB826 does not cover private companies or listed companies with headquarters outside of California.[16] Companies that fail to comply with the quota are subject to fines: each director seat required to be held by a female that is not actually held by a female for at least a portion of the calendar year counts as a violation. A fine of $100,000 is assessed for the first violation, and $300,000 for each subsequent violation.[17]

Firms affected by SB826 have a couple of options to avoid paying fines.[18] First, these companies can add a female board member between 1/1/2019 - 12/31/2020, either by replacing an existing male director or by expanding the size of the board.[19] Second, these companies can evade the reach of the legislation by going private or changing headquarter location. To evaluate how firms responded to the legislation, I construct a firm-year panel that contains the firm's headquarter location, board size, board gender composition, and an indicator showing whether the company is listed.[20]

California's quota arrives in the context of growing domestic interest in boardroom diversity, equity, and inclusion. In 2013, the California legislature approved SCR62, which encouraged all publicly-held firms to have at least one female board member by 12/2016. Unlike SB826, SCR62 did not impose any fines for firms that failed to abide by the recommendation. In 2017, more than 30 percent of California-based companies continued to have all-male boards (Table 1), so the author of SCR62 introduced SB826 as a "follow up" (Bishop 2018). Building upon SB826, California Governor Newsom approved AB979 in late 2020, which

[14]According to the CA Secretary of State, "A female is an individual who self-identifies her gender as a woman, without regard to the individual's designated sex at birth." Publicly-held companies have shares listed on the New York Stock Exchange, NASDAQ, or NYSE American.

[15]SB826 faces several open legal challenges as of this writing. One line of argument posits that the legislation imposes a gender quota that violates the California constitution. Another argues that California's legislation violates the internal affairs doctrine, requiring companies headquartered in California but incorporated elsewhere to abide by two sets of laws. See Grundfest (2018) for further details.

[16]In contrast to listed companies, who are required to file annual reports with the SEC, private companies are not mandated to disclose their financial information to the general public. Since this paper addresses the effect of SB826 on financial performance, I restrict attention to listed companies. SB826 does cover companies listed on foreign exchanges with headquarters in CA. I exclude consideration of these companies since my analysis focuses on domestic and listed companies.

[17]For example, a listed California-based company that has no female board members between 1/1/2019 and 12/31/2020 would owe a fine of $400,000. Failure to file timely board gender information with California's Secretary of State also comes with a $100,000 fine. As of December 2021, no fines have been assessed as SB826 faces legal challenges: https://www.reuters.com/world/us/trial-begins-challenge-california-women-boards-law-2021-12-01/. See also https://corpgov.law.harvard.edu/2020/03/18/new-report-on-california-board-gender-diversity-mandate/

[18]I define "affected" firms as listed companies with all-male boards as of 2017. In principle, the legislation can deter companies from transitioning from a gender diverse board (boards with at least one woman) to an all-male board. However, Table A5 shows that such transitions are very rare.

[19]Corporate executives cannot unilaterally change board size. Under California General Corporation Law, the number of directors is determined by the board or shareholders (Bishop 2018).

[20]Section 3 provides details on how this panel is constructed.

requires the companies subject to SB826 to also have at least one director from an underrepresented community by 12/2021.[21] Following California's lead, the SEC approved NASDAQ's board diversity disclosure requirements in August 2021. NASDAQ's rules encourage companies listed on its exchange to have at least 2 diverse directors, or else release a public statement indicating why the requirement could not be met. Like SCR62, companies that fail to meet the recommendation face no financial penalties, so long as a public statement is provided. To isolate the effects of California's gender quota (as opposed to the joint effects of SB826, AB979, and NASDAQ's rule), my empirical analysis concludes by 12/2020.

3 Data Sources and Sample Description

3.1 Data Sources

Two data sources guide my empirical study. To analyze how the gender quota shifted the composition of corporate boards, I use data from BoardEx, a financial technology company. I employ data from Compustat to investigate how SB826 affected financial performance. Companies across these two sources of data can be linked, permitting me to study relationships between director characteristics, board characteristics, and firm outcomes.[22]

BoardEx provides detailed information on both the composition of corporate boards and the employment histories of directors.[23] By combing through a company's annual reports, BoardEx provides yearly descriptors of the board's size and gender composition.[24] Furthermore, by parsing through published online reports, BoardEx characterizes the gender and complete employment history of directors in its database.[25] Prior roles of directors contain a start and end date, allowing me to construct measures of a director's experience at a given point in time. These employment histories also enable BoardEx to determine whether any two directors in its database share a prior employment connection.[26] While BoardEx provides annual information on board composition for North American listed and private firms after 1999, I restrict attention to domestic listed firms observed after 2010. Under this sample restriction, I observe the annual board composition of approximately 4000 companies (see Table A1), which represents the near universe of domestic listed companies.[27]

I use BoardEx data to assess compliance with the quota and understand the characteristics of directors added after SB826. As displayed in Table 7, director characteristics are measured over a range of dimensions, including education, experience, and prior employment connections at the start of the directorship. In contrast to most related papers, I directly observe whether directors added after the quota have prior employment relationships with sitting directors.[28] This relationship mapping allows me to describe the types of work experiences that directors typically obtain and to assess whether the female directors added post SB826 possessed distinctive work experiences.

To understand how the quota impacted financial outcomes, I link BoardEx's firm-year panel on board composition with Compustat's quarterly financial statements. Each year, more than 90 percent of companies

[21] A director from an underrepresented community is an individual who self-identifies as Black, African American, Hispanic, Latino, Asian, Pacific Islander, Native American, Native Hawaiian, or Alaska Native, or who self-identifies as gay, lesbian, bisexual, or transgender. AB979 imposes fines for non-compliance.

[22] I use the crosswalk provided by WRDS and deploy a conservative approach that requires matched companies to have have identical SEC identifiers (CIKs) and security level identifiers (CUSIPs) across BoardEx and Compustat. The crosswalk does not cover firms that enter BoardEx after 5/2020, so I append the crosswalk with companies that have identical CIKs and CUSIPs in BoardEx and Compustat.

[23] Unlike many administrative data sources, BoardEx does not track employment histories of all non-directors.

[24] Characteristics of the board are measured as of the month the company files its annual report.

[25] Gender is not imputed based on first name. Instead, gender is based on self identification or pronouns used in official reports. See Figure A1 for an example report where pronouns are used to classify gender.

[26] If such a connection exists, the exact start and stop dates of the connection are also provided.

[27] The number of domestic listed companies from BoardEx and CRSP are approximately equal. See Jay Ritter's website for measurements from CRSP.

[28] For exceptions in contexts outside of CA's SB826, see Smith (2021), Chevrot-Bianco (2021), and Hallock (1997).

from BoardEx can be linked to Compustat (Table A1, Col 3), reflecting a comprehensive crosswalk and demonstrating that both data sources cover the near universe of domestic listed companies. Using the quarterly Compustat data, I construct measures of Firm Value and Accounting Performance. Following existing literature, I consider Market Value and Tobin's Q as of fiscal quarter end as measures of Firm Value.[29] I use Return on Assets (Net Income divided by Total Assets), Net Income, Book Value, Revenues, Cost of Goods Sold, Total Assets, and Total Liabilities as measures of Accounting Performance. In rare instances, companies report non-positive Total Assets or Book Value, in which case the observation is dropped.

My identification strategy compares changes in outcomes between listed CA-based firms and listed non-CA-based firms as of 2017. To implement this strategy, I require historical information on each company's headquarter location and the listing exchange of its securities. I acquire this data from Compustat's Snapshot and SEC history files. The listing exchange of a company's securities are derived from the SEC history files; missing values are filled in with reports from Compustat Snapshot. Geographic identifiers include both the state of the company's principal executive offices and the country of incorporation. These values are taken from Compustat Snapshot. If missing, geographic identifiers are taken from the WRDS SEC Analytics Suite. [30] If the geographic identifier is still missing and the year is past 2019, the value is taken from Boardex's header-level information provided in the Company Profile files. Through this extensive data construction process, 93 to 96 percent of firm-year observations from BoardEx can be matched to quarterly financial data, historical listing exchange identifiers, and historical geographic identifiers every year, as seen in Column 6 of Table A1.

3.2 Identifying Firms Affected by The Quota

Despite the fact that SB826 regulates board gender composition for all listed firms based in California, many legally covered firms are unlikely to actually modify their boards to respond to the gender quota. CA-based listed companies with at least one female board member prior to the legislation's passage (10/30/2018) would not need to make any changes to be compliant with SB826. In theory, the gender quota may deter firms already compliant with SB826 from transitioning to an all-male board. However, historical data demonstrates that firms overwhelmingly add (rather than remove) women to the board as the firm ages. Table A5 shows that in each year between 2010 - 2019, only 1 to 3 percent of domestic listed companies transition from having a gender diverse board to an all-male board in the following year. Figure A2 corroborates this argument, showing that older firms are more likely to have gender diverse boards in the 2017 cross-section. Thus, I define firms affected by the quota ("treated firms") to be CA listed companies with all-male boards in 2017, the year prior to the legislation's passage.[31]

3.3 Sample Description

Table 1 shows the sample size by year, once I restrict listed companies incorporated in the US that report the firm's headquarter location and board gender composition. All firms considered in my analysis are US incorporated ("domestic") and listed, so I drop these adjectives going forward.[32] Columns 2 and 3 from Table 1 indicate that 16 to 18 percent of all firms in the sample are headquartered in California between 2015 -

[29] I calculate "Simple Tobin's Q" as Market Value divided by Book Value. Bartlett and Partnoy (2020) cogently argue that Tobin's Q does not accurately capture Firm Value.

[30] WRDS SEC data are linked to the matched BoardEx-Compustat data using the cik-gvkey linking table provided by WRDS

[31] I avoid classifying CA listed firms with all-male boards prior in 2016 as "treated", since 20 percent of these companies have gender diverse boards the following year (Table 2). Since CA-based listed companies with all-male boards (AMBs) as of 2016 are not affected by the quota, clearly CA-based listed companies with AMBs prior to 2016 are not affected. My classification of treated firms as those companies that need to make changes to comply with the law follows the tradition of Stevenson (2010).

[32] BoardEx does collect board gender information for some private firms, but coverage is not universal. To avoid making cross country comparisons, I do not collect board information on companies incorporated outside the US.

2020. Furthermore, in the three years prior to the legislation (2015 - 2017), 31 - 39 percent of CA-based firms had all-male boards, with a combined Market Value of approximately 123 billion dollars as of 2017 Q1. These numbers collectively demonstrate that the legislation impacted a non-trivial portion of firms.

In my preferred identification strategy, I compare changes in outcomes between the 196 California-based firms with all-male boards as of 2017 ("treated firms") to the 928 non-California-based firms with all-male boards as of 2017 ("control firms"). Some of these firms may not appear in my constructed firm-year panel outside of 2017 due to firm entry into and exit from listed status (ie. some firms IPO, go private, or dissolve). Table A7 presents annual attrition rates between 2015 - 2020 for the treatment and control groups separately. Two-sided t-tests reject the presence of differential attrition in any year, although 22 percent of treated and control firms exit my sample by 2020.[33] As observed in 2017, treated firms are younger, have smaller boards, lower market capitalization, and are more concentrated in manufacturing than control firms, reflecting underlying differences between firms headquartered inside and outside California (see Tables A4, A11). Despite pre-quota differences in firm characteristics, Table 9 presents evidence that the directors who joined treatment and control firms between 2010 - 2017 generally have similar attributes, though directors who join treated firms are more likely to have prior board and C-Suite experience.

4 How Did Firms Comply with SB826?

While SB826 allows companies to maintain all-male corporate boards by paying annual penalties, the legislation is clearly intended to increase the gender diversify of California corporate boards. Section 1(f) states "If measures are not taken to proactively increase the numbers of women serving on corporate boards, studies have shown that it will take decades, as many as 40 or 50 years, to achieve gender parity among directors." Section 1(c) references five independent studies that claim publicly-held companies perform better when women serve on the board. To further encourage companies to add female board members, the California Secretary of State has set up a website that publicly discloses the companies that maintain all-male boards or shift headquarter location.[34]

Studies of board gender quotas in other countries suggest that companies may restructure to avoid adding female directors. For example, Norway passed a gender quota in 2003 that required all public limited liability companies to have at least 40 percent representation of each gender. Any public limited liability company that failed to meet the requirements as of 2008 would be forced to dissolve. Bertrand et al. (2014) document sizable evasion: of the 563 public limited liability companies affected by the quota in 2003, only 179 maintained corporate form by 2008. Unlike the Norwegian context, the first tranche of SB826 only required affected firms to add one female director. Moreover, SB826's monetary penalties for non-compliance are mild relative to forced dissolution. As a result, one would expect far less evasive behavior among California-based firms affected by the gender quota.[35]

Using the firm-year panel described in Section 3, I start by studying whether the policy achieved its intended effect of gender diversifying boards. I observe that only 7 percent of companies affected by SB826 delisted or changed headquarter location between 2017 and 2020; of the 196 CA-based listed firms with all-male boards in 2017, 9 companies went private and 6 companies changed headquarter location. In fact,

[33]In this paper, I remain consistent in using an unbalanced panel so as to have sufficient statistical power. Firms in the balanced panel tend to be older and larger than those in the unbalanced panel, as seen in Table A12. . "Differential attrition" refers to the idea that firms in the treatment and control groups may exit the sample at different rates.

[34]A substantial number of CA listed firms have not disclosed their 2020 (2019) board gender composition with the CA Secretary of State, according to the CA Secretary of State's March 2021 (2020) report. As a result, I identify listed companies with all-male boards in 2019 and 2020 using data from BoardEx.

[35]In CA context, affected firms can evade, comply, or not comply. I refer to "evasion" as corporate restructure (ie. changing headquarter location or going private), "compliance" as the addition of female board members without corporate restructure, and "non-compliance" as payment of SB826 monetary penalties while maintaining the status quo. Note all three actions place companies within the letter of the law.

listed firms headquartered outside of California were *more likely* to change headquarter location and equally likely to go private (Table 4). These results support the idea that Californian affected firms, who had to add just one director to comply, faced lower costs of compliance than Norwegian affected firms.[36]

Quota-affected firms in CA did not systematically evade the legislation through corporate restructure, but did they actually add women into their boards? After all, affected firms that desire to maintain all-male boards have the option of paying the monetary fines described in Section 2. Several summary statistics provide initial suggestive evidence that the quota *caused* firms to add female directors. First, there were 196 California companies with all-male boards in 2017, but only 29 in 2020 (Table 1). Of the 196 treated companies, 14 maintain all-male board status in 2020. Second, Table 2 shows the probability that a California-based company maintains an all-male board the subsequent year declines from 93 percent in 2010 to 36 percent in 2019. Third, female directors joining treated firms are more likely to be hired during off-peak hiring seasons. Among treated firms, the most common hiring months are June, July, and December. However, among all listed companies, the most popular hiring months are January, May, and June.[37]

While increases in female board representation among treated companies are prominent, these changes may not solely reflect the causal effect of the gender quota. Overall shifts in attitudes about women in leadership positions that occur during the sample period could be a confounding factor. To investigate the contribution of SB826 to the dramatic decline of Californian companies with all-male boards, I consider changes in board composition among non-CA-based firms with all-male boards in 2017 ("control firms"). Formally, using the firm-year panel from 2015 - 2020, I estimate the parameters of the following OLS regression:

$$Y_{fti} = \gamma_0 + \sum_{t \neq 2017} \beta^t \Big(1[Year = t] \times CA\ HQ_{2017}\Big) + \delta_f + \delta_{ti} + \epsilon_{fti}, \tag{1}$$

where Y_{fti} is the board composition of firm f in year t and industry i, δ_f are firm fixed effects, δ_{ti} are industry by year fixed effects, and γ_0 is a constant. I use industry by year, as opposed to the more standard year fixed effects, to account for different industry compositions between treatment and control firms (see Table A4). Estimates of β^t will represent differences in board composition between treatment and control firms in year t relative to 2017. For these estimates to identify the causal effect of SB826, it is necessary that the variables excluded from Equation 1 trend similarly between treatment and control firms within the same industry ("Parallel Trends Assumption").[38] All regressions use an unbalanced panel of firms and cluster standard errors at the firm level.[39] To visualize some of the assumptions made in Equation 1 more clearly, observe that

$$Y_{fti}(0) = \gamma_0 + \delta_f + \delta_{ti} + \epsilon_{fti} \tag{2}$$

$$Y_{fti} = Y_{fti}(0) + \sum_{t \neq 2017} \beta^t \Big(1[Year = t] \times CA\ HQ_{2017}\Big) \tag{3}$$

where $Y_{fti}(0)$ refers to board composition if a firm were to not be affected by SB826.[40] Equation 2

[36] The results are also consistent with California firms facing lower costs of non-compliance. However, since most firms did comply with the legislation, I favor the interpretation in the main text.

[37] See Figure 4 for details. The time period considered is Jan 1st, 2019 through Dec 31st, 2019. Data on month of appointment derived from BoardEx's employment history files, as described in Section 3

[38] This assumption would be violated, for example, if attitudes about women in leadership shift differentially in treated manufacturing firms relative to control manufacturing firms.

[39] Similar results with standard errors clustered at the one digit industry level (8 industries) are available upon request. See Footnote 33 for an explanation for why I use an unbalanced panel.

[40] It is further assumed that $E[\epsilon_{fti} = 0]$

restates the parallel trends assumption, which is fundamentally un-testable because counterfactual outcomes are not observed for treated firms after 2017. However, if the parallel trends assumption holds true and treated firms did not anticipate SB826, then estimates of β^t for $t < 2017$ should be close to 0 (Borusyak et al. 2021).[41] More subtly, Equation 2 also incorporates the SUTVA ("no spillover effects") assumption, which states that board composition for firms headquartered outside of CA is unaffected by SB826 (Cox 1958). Further, Equation 3 highlights Equation 1's assumption that the effects of SB826 can vary over time, but not over firms.

Table 5 presents estimates of the parameters in Equation 1. Taken at face value, SB826 reduced the share of all-male boards by 30 percentage points (pp) and raised the female board share by 6 pp within one year. By 2019, treated firms increased their board size by an average of .25 seats and were 12 pp more likely to have an expanded board due to the quota.

These estimates may understate or overstate the true effects of the gender quota. If, for example, SB826 created social pressure for firms based outside of California to gender diversify their boards, then the numbers from Table 5 would be underestimates. This story would be consistent with the discussion in von Meyerinck et al. (2021), who document that California often sets policy trends that are adopted by other states. In contrast, SB826 adoption may be associated with attitudinal shifts about women in leadership that occur in California but not elsewhere. Under this "Social Change" hypothesis (Donohue and Heckman 1991; McCrary 2007), increased female board representation among treated firms would have occurred even absent SB826. In this scenario, the numbers from Table 5 would overestimate the true effect of SB826. Below I investigate whether social trends or spillover effects create bias in parameter estimates from Equation 1.

Table 6 presents results when I re-estimate Equation 1, but further restrict the control group to firms headquartered in Democratic states.[42] As conjectured by von Meyerinck et al. (2021), Democratic states are more likely to adopt gender quotas like SB826 than Republican states.[43] Furthermore, attitudes about progressive causes are more likely to be concordant within Democratic states. As a result, if spillover effects or broad shifts in attitudes particular to Democratic states are at play, then estimates from Table 6 should be muted relative to those in Table 5.

In fact, the estimated effects of SB826 on board gender composition are *larger* when I restrict the control group to firms based in Democratic states.[44] These numbers provide evidence that the effects documented in Table 5 are not overestimated due to omitted variables particular to Democratic states. While reassuring, Table 5 may still overestimate the effects of SB826 in the presence of Social Change. This concern motivates me to consider changes in board composition among CA-based firms not affected by the quota, as defined in Subsection 3.2.

To understand whether the relationships described above reflect the effects of SB826 or other social trends, I implement a series of "placebo" regressions – re-estimating Equation 1 but where treatment and control groups are defined based on board gender composition *prior to 2017*. Consistent with the causal interpretation of Table 5, Figure 5 shows that the 1-3 year estimated effects for the 2017 all-male board cohort far exceed those for cohorts prior to 2016.[45] However, within the pre-treatment period (2010 - 2015), F tests do indicate that later cohorts of CA-based all-male board companies are less likely to persist than earlier cohorts. Specifically, there appears to be a trend break in 2013, the year when California passed

[41] Greene et al. (2020) argue firms did not anticipate the governor's signing of SB826, documenting the distinctive absence of abnormal market returns for quota-affected companies prior to Gov. Brown's approval on 9/30/2018.

[42] These are states that voted for Hillary Clinton in the 2016 election.

[43] Interestingly, no state besides California has passed a gender quota between 2015 - 2020.

[44] Table 6 documents that SB826 reduced the share of all-male boards by 32 pp by 2020, while Table 5 documents a reduction of 28 pp. Similarly, the former table shows SB826 increased female board share by 8pp, while the latter table shows a 7pp increase.

[45] The three year effect for 2016 cohort is clearly an outlier. This result can be rationalized by the fact that prior to SB826, there is substantial persistence in all-male board status (as seen in Table A5).

SCR62 encouraging companies to add female board members (see Table A6). These results illustrate that CA-based companies added female board members to comply with SB826, but posit that the point estimates in Table 5 may be overstated because California-based companies gender diversify their boards more quickly than comparable firms. To check whether these point estimates are inflated, I use a triple differences research design.

If Social Change is driving the results in Table 5, then one would expect increases in female board representation among all CA companies (even those already compliant with SB826). I find that CA-based firms unaffected by the quota did not change board composition in response to SB826. Figure 6 tracks the average male board share over time among CA companies that already had female board representation in 2017. While the average female board share among the companies considered does modestly rise between 2017 and 2020 (by less than 10 pp), similar gains are also observed among non-CA-based companies without all-male boards in 2017. Figure 7 makes the same comparisons but plots the share of companies with all-male boards; similar conclusions hold. Given the visual evidence in Figures 6 and 7, it is not surprising that the triple differences point estimates presented in Table A8 fall within the 95 percent confidence interval of Table 5's estimates. These results corroborate that the magnitudes presented in Table 5 accurately capture causal effects of SB826.

To summarize, firms affected by SB826 overwhelmingly responded by adding female board members. In contrast to firm responses in Norway, firms in California did not take systematic actions to evade the scope of SB826. By 2020, the best estimates suggest that the quota raised the average share of female board members by 8 percentage points and reduced the share of all-male boards by 28 percentage points. To accommodate these female board members, affected firms were more likely to increase the size of their board. While noteworthy, these magnitudes imply that the first tranche of SB826 did not radically transform corporate boards. For context, among all US firms, the average female share increased by 9 percentage points from 12 percent in 2015 to 21 percent in 2020. Therefore, SB826 has accelerated national level trends towards increased board gender diversity.

5 Do Directors Appointed After SB826 Have Distinctive Characteristics?

A wave of recent studies have documented a negative share price reaction to SB826 upon the legislation's announcement, with various explanations for the finding.[46] Greene et al. (2020) argue that the negative share price reaction partly reflects a pipeline issue – that there is an insufficient supply of qualified female candidates to fill the seats required by SB826. This view is contested by Gertsberg et al. (2020), documenting that shareholder support for male and female directors appointed after the quota is comparable.

The director-level data I consider allows me to distinguish between the two views presented above. If there is an insufficient supply of qualified female candidates to fill the seats required by SB826, then one might expect traits typical of board members (such as prior board and C-Suite experience) to not be present among directors appointed after the quota.[47] In this scenario, the firms who comply with SB826 last might be especially burdened, as they face an even more limited pool of female director candidates. Such evidence would reaffirm the conclusion by Greene et al. (2020).

Evidence that female directors appointed after SB826 have similar qualifications as their peers would corroborate the argument by Gertsberg et al. (2020). However, if a reservoir of qualified female board candi-

[46] See Hwang et al. (2018), von Meyerink et al. (2021), Gertsberg et al. (2020), Greene et al. (2020).

[47] Recall the first tranche of SB826 requires 196 companies to add one female director.

dates exists, the question arises: why did 31 percent of California-based companies have all-male boards prior to the legislation? One explanation is that prior employment connections with company leadership help candidates attain board positions, and that female candidates are less likely to have these types of connections. Von Essen and Smith (2021) find evidence of this "Old Boys Network" in the Danish board context, who show that gendered connection patterns increase the likelihood that male candidates achieve board positions. Similarly, Cullen and Perez-Truglia (2021) show that gendered connection patterns advantage males in the promotion process.[48]

To investigate these considerations, I start by comparing the characteristics of all incoming male and female directors.[49] These characteristics are observed over three dimensions: education, experience, and connections. Next, I inquire whether the female directors appointed to quota-affected firms have distinctive characteristics relative to their peers. To conclude, I examine whether directors who join soon after SB826 passage (9/2018) have distinctive characteristics relative to those who join near the end of the compliance period (12/2019).

Table 7 shows that between 2015 - 2020, a period of gradual board gender diversification, new male hires still outpace new female hires by more than three to one.[50] Female new hires are equally qualified as their male counterparts in terms of education, as proxied by MBA, Law Degree, and Ivy League attainment. In fact, incoming female directors are 2pp more likely to have a Law Degree (9% male vs 11% female). However, there do appear to be substantial gender differences in experience. Compared to incoming female directors, incoming male directors are more likely to have prior Board (83% men vs 72% women), C-Suite (70% men vs 67% women), and Same Sector experience (56% men vs 43% women).

Given the experience gaps documented, it may not be surprising to see that incoming male board members are more likely to have employment relationships with existing company leadership. Men have a staggering 21pp advantage in having prior connections with the incumbent board and with the C-Suite. These gaps are exacerbated when considering the incidence of having a same-gender connection to the incumbent board: 58 percent of incoming male hires have a previous employment relationship with a sitting male director. In contrast, 13 percent of incoming female directors have previous employment relationships with a sitting female director. Further, 95 percent of incoming female directors are Non-Executive directors (compared to 82 percent of male directors), consistent with the theme that female directors are predominantly "outsiders." While not definitive, these numbers do hint that path dependence contributes to gender disparities in board membership: men are more likely to hold leadership positions, begetting connections to other company leaders, which in turn generate more leadership positions.

Having described the typical characteristics of male and female directors, I now study whether SB826 changed the types of directors companies typically hire. Ideally, one would identify the directors appointed *because of* the quota, and compare the characteristics of these directors to their peers. However, firm hiring decisions under counterfactual legal regimes are not observed, so this exercise is infeasible. To make headway, I restrict attention to the directors appointed to treatment and control firms between SB826 passage and the end of the sample period (12/31/2020). Among this set, I focus on the directors that would make companies compliant with SB826's gender requirements.[51] These sample restrictions ensure that the directors considered

[48] See also Drechsel-Grau and Holub (2020). Since the BoardEx director-level data I use contains the employment history of directors (but not of non-directors), I am unable to see if connections increase the probability of board membership. However, I can compare connection patterns between male and female board members.

[49] I restrict the analysis from 2015 - 2020 to be consistent with the period considered in Section 4.

[50] Column 2 of Table A2 shows a similar finding using the annualized board gender ratio. 5,067 listed companies hired 17,965 men to fill 22,229 board positions. In the same time frame, 3,944 listed companies hired 5,347 female directors to fill 7,146 positions.

[51] For example, if a company in the treatment or control group has no female directors upon SB826 passage and a board size of 6, the first three female hires are considered. As another example, if a company in the treatment or control group has 1 female director upon SB826 passage and a board size of 6, the first two female directors are considered. Recall that firms in the treatment and control groups have all-male boards as of the 2017 annual report.

are the ones more likely to be appointed due to the quota.

Table 8 displays mean characteristics of incoming female directors, subject to the restrictions described. To evaluate whether SB826 caused California firms to appoint less-qualified directors, I compare incoming female directors in the treatment and control groups. Recall that firms headquartered outside California did not face penalties for maintaining all-male boards. If US companies hire from the same pool of directors, female director characteristics in the control group provide a benchmark for director characteristics in the treatment group had treated firms not faced SB826's constraints. This comparison might understate the effect of SB826 on director quality if treated firms tend to hire from a more qualified pool of directors. As a result, I also compare the differences from Table 8 to underlying differences in director quality between treatment and control firms.[52]

I find that incoming female directors to treated firms are observably similar to those in control firms (Table 8). Women joining CA-based firms tend to be 1 year older, are 4 pp less likely to have prior board experience, and are 5 pp more likely to have prior C-Suite experience. None of these differences are statistically significant at conventional levels. Women in the two groups also appear similar on connections with the incumbent board; differences in the share with prior connections to existing company leadership are indistinguishable from zero.[53] Treated firms are much more likely to add female directors after SB826 passage (75% treated vs 43% control), consistent with the idea that the directors in the sample were hired due to the legislation.[54] Furthermore, 198 female directors filled 203 vacancies, indicating that treated firms pulled from a diverse array of board candidates.

Despite the muted differences observed in Table 8, SB826 may still have forced quota-affected firms to hire lower-quality female candidates. If California-based firms typically have higher quality board members, then the null differences described would suggest SB826 reduced director quality. To investigate this possibility, I examine the characteristics of all directors appointed to treatment and control firms between 2010 and 2017. Table 9 shows that directors hired by treated firms are more likely to have prior board, C-Suite, and Same Sector experience. I obtain similar conclusions upon comparing female directors joining CA versus non-CA-based firms prior to the quota (Table A10). None of these differences are larger than 13 percentage points, implying that SB826 may have induced slight reductions in director quality. Table 9 also shows that directors who typically join treated firms are 3 to 5 pp more likely to have prior employment connections with existing company leadership. These numbers imply that some unconnected directors earned board positions due to the legislation.

The qualifications of incoming female directors do not deteriorate over time, countering the theory that quota-affected firms faced a dearth of qualified candidates. Figure 8 and Figure 9 show the share of incoming female directors that have prior board and C-Suite experience by days relative to SB826 adoption. As before, I restrict attention to the directors that would make firms compliant with SB826's gender requirements. Among directors joining treated firms, there does not appear to be a declining trend in the proportion of directors with prior board and C-Suite experience. In fact, the share of incoming female directors to treated firms with prior C-Suite experience is higher midway through the compliance period than earlier in the compliance period. Furthermore, the experience measures of incoming directors to treated firms are similar to those joining control firms throughout the sample period.[55] These graphical results reinforce the initial

[52]In principle, I could compare the characteristics of incoming females in treated firms to those of incoming men in control firms. However, such a comparison would not reflect the effects of SB826 since there are underlying differences in director quality between men and women, as well as between directors joining treated versus control firms (see Table 9).

[53]It is noteworthy that incoming female directors post SB826 are less likely to be connected than incoming female directors pre-SB826. For example, 39 percent of all incoming female directors between 2015 and 2020 have a prior connection to the board, while fewer than 30 percent of the directors considered in Table 8 have a similar connection.

[54]The difference (32%) falls within the 95% confidence interval of the quota's 3 year effect on board composition. See Column 2 of Table 5.

[55]Compliance with the first tranche of SB826 is required 456 days after SB826 adoption. There are at least 40 directors in

conclusions drawn from Table 8.

Collectively, the results from this section provide tentative support to the claim that there are enough qualified women to fill the seats required by SB826.[56] Incoming female directors to treated and control firms are comparable on observable characteristics; further, the quality of female directors joining treated firms remains stable over time. Given this point, one wonders why all-male boards were prevalent in California prior to SB826. The fact that female directors are substantially less likely than male directors to have prior relationships with company leadership offers a candidate explanation. Incoming female directors are 21 (22) pp less likely to have prior employment connections with sitting board (C-Suite) members and 13pp more likely to be non-executive directors. Data limitations prevent me from examining whether gender disparities in board membership are due to gendered connection patterns.[57] However, the question of whether gendered network patterns *cause* gender disparities in board membership seems well suited for future research.[58]

6 How Do Gender Diverse Boards Affect Financial Performance?

The prior section examined the quality of directors appointed after SB826, as proxied by observable characteristics such as age and experience. But directors may contribute to firm performance in ways that are not captured by traditional measures of qualifications. Adams and Ferriera (2008) (henceforth AF (2008)) find that women directors are less likely to have attendance problems and suggest that gender diverse boards are tougher monitors of executives. This conclusion would be consistent with my observation that female directors are less likely to be inside directors and connected with incumbent leadership than their male counterparts (see Table 7). Because female directors change the way the board collectively monitors executives, even "token" female additions can have significant impacts on measures of board effectiveness. In an experimental setting, Niederle and Vesterlund (2007) show that women are less likely than men to select into competitive environments and consider whether women are less risk-loving or more averse to negative feedback. If so, female directors may be less willing to influence the collective decision making of the board. Unlike the AF (2008) conclusion, these results would support the claim that a critical mass of female directors are required before women start exercising their influence on the board (Torchia et al. 2011; Atif et al. 2020). The conflicting hypotheses provide impetus to empirically examine how gender diverse boards affect firm outcomes.

A hurdle in establishing causal impacts of gender diverse boards is the endogeneity of board composition. As stressed by Adams, Weisbach, and Hermalin (2008), the governance structure of a company is an equilibrium outcome designed to address the company's corporate governance problems. For example, shareholders may elect directors to optimally monitor company executives. Since board composition (including the gender of its directors) is not randomly assigned, comparisons between companies with more and fewer female directors will misstate the effects of gender diverse boards.

Within the US context, convincing causal estimates are scant due to the lack of natural experiments that affect a board's gender composition. This sentiment is reflected in Post and Byron's (2015) review of the literature, who call for studies to elucidate potential endogeneity in the board's determination. Widely cited estimates of the effects of gender diversity on Firm Value come from AF (2008), who use a firm fixed effects specification. Their econometric model attempts to identify the effects of gender diversity by

each of the first three 152 day bins, suggesting that the results are not an artifact of statistical noise.

[56] A note of caution: California-based companies have the option of meeting SB826's 2021 requirement by hiring female directors after 12/31/2020. If these directors are less qualified than the directors hired during the sample period (10/1/2018 - 12/31/2020), then the conclusion from this section may be overturned.

[57] Connection patterns in BoardEx are only available for board members. This restriction precludes a study of how the probability of board membership changes in response to an additional connection.

[58] See von Essen and Smith (2021) and Chevrot-Bianco (2021) for recent studies on the topic.

studying how firm outcomes change when a firm gender diversifies its board. For their estimates to have a causal interpretation, firm-specific omitted variables such as corporate culture must not vary over the sample period. Bernile et al. (2018) address a similar question but use an instrumental research design. They use the diversity of potential directors that live within a non-stop flight of a firm's headquarter as an instrument for board diversity. Through two stage least squares estimates, the authors find that increased board diversity results in better financial performance. My empirical analysis complements these two approaches to provide a more comprehensive understanding of how gender diversity affects firm outcomes.

Using a recent panel data set from 2010 to 2017, I study how firm outcomes change when firms transition to having gender diverse boards. The econometric specification uses firm and industry by year fixed effects, which parallels the method employed by AF (2008).[59] Since this method requires changes in board composition to be exogenous to firm performance, I also adopt an instrumental variables approach that takes advantage of shifts in the regulatory environment. California's SB826 mandated that companies have at least one woman on the board. In Section 4, I showed that firms with all-male boards prior to SB826 primarily responded to the legislation by adding female directors. Since these firms changed board composition to comply with SB826 (and not in response to changing corporate governance issues), I have an ideal experiment to assess how gender diverse boards affect firm performance.

Because gender quotas provide a laboratory to examine the effects of board gender diversity on firm outcomes, they have received much scrutiny from academic researchers. Ahern and Dittmar (2012) study Norway's requirement that female directors constitute at least 40 percent of the board. Within five years of the legislation's announcement, firms constrained by the quota had lower values, as measured by Tobin's Q. Like Norway, France instituted a board gender quota which required publicly listed firms to have at least 20% (40%) female directors by the end of 2013 (2017). Maghin (2019) studies the French context and finds that firms affected by the quota had higher TFP growth in the long-run. Other studies have examined Denmark's law that requires certain firms to have 40% female board representation (e.g. Chevrot-Bianco 2021).

Unlike the European context, the first tranche of SB826 only requires that firms add one female director. The majority of US listed companies have fewer than two female directors, so modest changes in board composition due to SB826 more closely align with natural changes in board gender composition (see Figure 2). Further, Bennedsen, Perez-Gonzalez, and Wolfenzon (2007) find no value effects from director deaths in U.S. firms, implying U.S. firms have access to a large pool of qualified directors. If women constitute a sizable fraction of this pool, as suggested by Table 8, then firms affected by SB826 should not experience value losses comparable to those observed in Norway.

6.1 Effects of Gender Diverse Boards on Firm Performance: OLS Estimates

Using the annual firm-year panel from 2010 - 2017, I study how firm outcomes evolve when firms transition to or away from having gender diverse boards.[60] I focus on the effects of gender diverse boards (as opposed to the impact of female directors more generally) since SB826's goal was to eliminate all-male boards. Given that corporate boards may take actions that affect long-run firm viability (e.g. Mace 1972), I allow firm outcomes to be determined by lagged board composition. More specifically, my econometric specification posits that changes in board composition today can influence firm outcomes for the next four years:

[59] AF (2008) use firm and year, rather than firm and industry by year fixed effects.

[60] As in previous sections, "gender diverse" boards refer to boards with at least 1 female director.

$$Y_{fti} = \theta_0 + \sum_{k=-2}^{k=4} \delta^k \Big(GenderDiverseBoard_{f(t-k)i} \Big) + \delta_f + \delta_{ti} + \epsilon_{fti}, \tag{4}$$

Since I include many leads and lags of whether a company has a gender diverse board, Equation 4 is a "Distributed Lag" specification (Schmidheiny and Siegloch 2019). This specification is well suited to contexts where the binary treatment variable can turn on and off over the sample period. If the identifying assumptions hold, the δ coefficients represent the effect of an additional year of exposure to a gender diverse board. Since common practice is to report cumulative effects relative to an event, I use the following transformation suggested by Schmidheiny and Siegloch (2019):

$$\beta^{-1} = 0, \tag{5}$$

$$\beta^k = \sum_{j=0}^{k} \delta^j, k \geq 0 \tag{6}$$

$$\beta^k = \sum_{j=k+1}^{-1} -\delta^j, k < -1. \tag{7}$$

The standard errors of Equation 4 are clustered at the firm level to account for potential correlation of the error term within firms. The standard errors of the transformed variables ("event study coefficients") in Equations 5 - 7 are calculated using the Delta Method.

In order for the β coefficients to represent the cumulative impact of gender diverse boards on firm outcomes, the firm's board gender composition must be unrelated to the excluded variables from Equation 4. This assumption could be violated for a couple of reasons. For example, firms may be more likely to transition away from all-male boards when firm performance is poor. Ryan and Haslam (2005) find support for this hypothesis among 100 firms listed on the FTSE 100 in 2003. They document that firms who added women directors consistently had worse performance in the preceding five months than those that appointed male directors. Firms may also add female directors as part of their broader Corporate Social Responsibility (CSR) efforts. If CSR activities can affect Firm Value (e.g. Jo and Harjoto (2011)), then estimates of the parameters in Equation 4 will be biased.

With these caveats in mind, I present estimates of the event study coefficients in Table 10. Following the literature, I consider Market Value of Common Equity, Tobin's Q, and Return on Assets (ROA) as proxies of Firm Value. I define Tobin's Q as the ratio of Market Value to Book Value (e.g. Bharath et al. 2015), and ROA as Net Income divided by Total Assets. These outcomes are tracked at the end of each company's fiscal year or quarter. I measure Operating Performance based on Net Income and Book Value – the bottom line metrics on the income and balance sheet respectively.[61] The sample is restricted to firm-year observations with positive Assets and Book Value to ensure ROA and Tobin's Q have meaningful interpretations. I also consider the log of Book Value, Assets, and Liabilities because these variables are right-skewed and only take positive values. All domestic listed firms observed between 2010 - 2017 that fit the criteria described are included in the sample.[62]

Table 10 suggests companies did not transition to or away from gender diverse boards in response to prior changes in firm performance. Across all 12 outcomes, there is not a single "pre-event" coefficient that is

[61] I further examine the constituents of these metrics, which are Revenues, Cost of Goods Sold (COGS), Assets, and Liabilities.
[62] The eight-year sample window I use parallels the one used by AF (2008). They use an unbalanced panel of firms observed between 1996 - 2003. The authors argue that the relatively short panel makes the identifying assumptions of Equation 4 more plausible.

statistically significant at conventional levels.[63] This result stands in contrast to Ryan and Haslem's findings in the European context. Moreover, Table 10 implies that gender diverse boards have an immediate and persistent impact in raising Market Value, Book Value, Assets, and Liabilities. In the preferred specification where I consider the log transform of these variables, $\hat{\beta}^0$ through $\hat{\beta}^4$ are all positive and statistically significant. The magnitudes indicate that gender diverse boards have an immediate impact in raising Market Value by 7%, Book Value by 11%, Assets by 9%, and Liabilities by 10%. These effects are not transitory since the magnitudes remain constant over time. I observe null effects for the Income Statement variables considered.

Taken at face value, Table 10 suggests that gender diverse boards swiftly and dramatically improve firm outcomes. However, an alternative reading is that growing firms adopt gender diverse boards. If the companies that gender diversify their boards would have experienced faster growth even absent changes in board composition, the parallel trends assumption permitting causal interpretations of Equation 4's estimates is not satisfied. This assumption is fundamentally un-testable and may be violated if changes in board composition coincide with changes in corporate objectives. Other studies exploiting shifts in board composition induced by gender quotas (e.g. Ahern and Dittmar (2012) pg 164, Bertrand et al. (2018) pg 48) show that changes in board composition do not immediately impact firm outcomes.[64] Adams (2003) finds that boards of growing firms modify their behavior to devote more time to strategic issues. These observations lead me to favor the interpretation that companies on faster growth trajectories adopt gender diverse boards. More generally, these results question whether observational studies that compare firm outcomes before and after shifts in board composition can adequately capture causal effects.

6.2 Effects of SB826 on Financial Performance: IV Estimates

To address the limitations of the previous subsection, I examine how firm outcomes respond to the passage of SB826. Since the legislation *mandated* the addition of female directors, changes in board composition among quota-affected firms are arguably unrelated to shifts in corporate objectives – an omitted variable that potentially impacts both firm outcomes and board gender composition.[65] Therefore, difference-in-differences estimates that compare changes in firm outcomes between the treatment and control groups plausibly capture the causal effect of SB826.

Using the unbalanced firm-quarter panel from 2015 Q1 through 2020 Q4, I estimate the parameters of the following regression using OLS:

$$Y_{fti} = \gamma_0 + \sum_{t \neq 2017Q1} \beta^t \Big(1[Quarter = t] \times CA\ HQ_{2017} \Big) + \delta_f + \delta_{ti} + \epsilon_{fti}, \tag{8}$$

where Y_{fti} is a financial performance measure for firm f in quarter t and industry i. Following Lee and Mas (2008), I transform the outcome variable to be in percentile terms. More specifically, the outcome variable is the percentile rank among all firms in the sample in a given quarter. This statistic is useful in assessing the performance of a company relative to others in the sample.[66] Estimates of β^t will represent differences in financial outcomes between treatment and control firms in quarter t relative to 2017 Q1. As in Section 4, the Parallel Trends Assumption is necessary for the β coefficients to represent the effects of

[63] In other words, $\hat{\beta}^{-3}$ and $\hat{\beta}^{-2}$ do not have p-values less than .1 for any outcome.

[64] My instrumental variable results from Subsection 6.2 also suggest gender diverse boards do not instantaneously impact firm outcomes.

[65] The assertion that the addition of quota-appointed directors is exogenous to corporate objectives would be violated if companies that added female directors after SB826 would have adopted gender diverse boards even absent the legislation. However, the evidence in Section 4 documenting substantial compliance with the quota casts doubt on the critique.

[66] Using the percentile measure, Table A4 shows that treated firms, on average, are smaller than control firms in the 2017 cross-section.

SB826. The other parameters have similar interpretations as in Equation 1.

Figure 10 displays results from the estimation procedure. The coefficients on the interaction terms prior to 2018 Q4 imply that firms in the treatment and control groups had similar financial trajectories prior to SB826.[67] Unlike the conclusions drawn from the previous subsection, Figure 10 does not imply that gender diverse boards have an immediate impact on financial outcomes. In fact, the reduced form results generally suggest that the legislation had zero impact on financial outcomes in the 9 quarters after its implementation. The important exception is Market Value. Column 1 implies that the legislation *raised* Market Values of quota-affected firms within one quarter and that these positive effects persist over time. By the end of the compliance period (2019 Q4), the legislation raised quota-affected firms' percentile rank in the Market Value distribution by 2.2 points. To develop a sense of the magnitudes associated with Column 1's estimates, I re-run equation 8 using Log Market Value as the dependent variable. Within 5 quarters, SB826 appears to have raised the average Market Value of quota-affected firms by 17% (Figure A7). The fact that SB826 affected Market Value but no other financial measures may not be surprising. Given rationality in the marketplace, the effects of events will immediately be reflected in security prices; in contrast, the effect of events on direct productivity related measures may require years of observation (MacKinlay 1997).

As a robustness check, I pool the post-treatment periods together and examine how SB826 altered the distribution of financial outcomes. Concretely, I estimate the parameters of the following regression using quantile regression:

$$Y_{fti} = \beta^{\tau} * Treated_f * 1(t >= 2018Q3) + \lambda_{ti} + \alpha_f + e_{fti} \tag{9}$$

I consider $\tau \in \{0.25, 0.50, 0.75\}$ to study how SB826 affected the first, second, and third quartile of financial outcomes. I also estimate Equation 9's parameters through OLS. Since parameters estimated through quantile regression are less susceptible to outliers than those estimated via OLS, the outcome variables are not percentile transformed (Koenker 2001). Instead, I include all outcome variables in either log or level form.[68]

Table 11 displays results, and generally corroborates the conclusions suggested by Figure 10. None of the metrics relating to Operating Performance are statistically significant. The assertion that SB826 raised the Market Value of quota-affected firms is reinforced; the point estimates from row 2 imply that SB826 increased market valuations of treated firms by 14% - 18% between 2018 Q3 and 2020 Q4. The magnitudes of these shifts are stable across the Market Value distribution. Positive and statistically significant estimates are also present for Market Value Returns (row 1) and Return on Assets (row 3). Interestingly, the legislation had a larger impact in shifting the 75th percentile of returns than the 25th percentile ($\hat{\beta}^{75} > \hat{\beta}^{50} > \hat{\beta}^{25}$). To check whether California-based companies with all-male boards are systematically more likely to grow in Market Value than non-CA-based companies with all-male boards, I implement the placebo regressions suggested by Stevenson (2010). Figure 11 shows that only the 2017 cohort of CA-based companies experienced abnormal returns, implying that the positive Market Value effects are not driven by differential growth trajectories between CA and non-CA-based firms. Event study estimates from a triple differences specification (shown in Figure A8) further support the theory that SB826 raised Market Values of quota-affected firms.

To summarize, the results from this section indicate that investors react positively to companies that gender diversify their boards. This finding is consistent with Byron and Post's (2015) meta-analysis, where

[67] Out of the 126 regression coefficients with interaction terms prior to 2018 Q4, only 17 are statistically significant at the 10 percent level (13% of coefficients). The similar trajectories prior to SB826 adoption suggest, but do not prove, that the Parallel Trends Assumption holds.

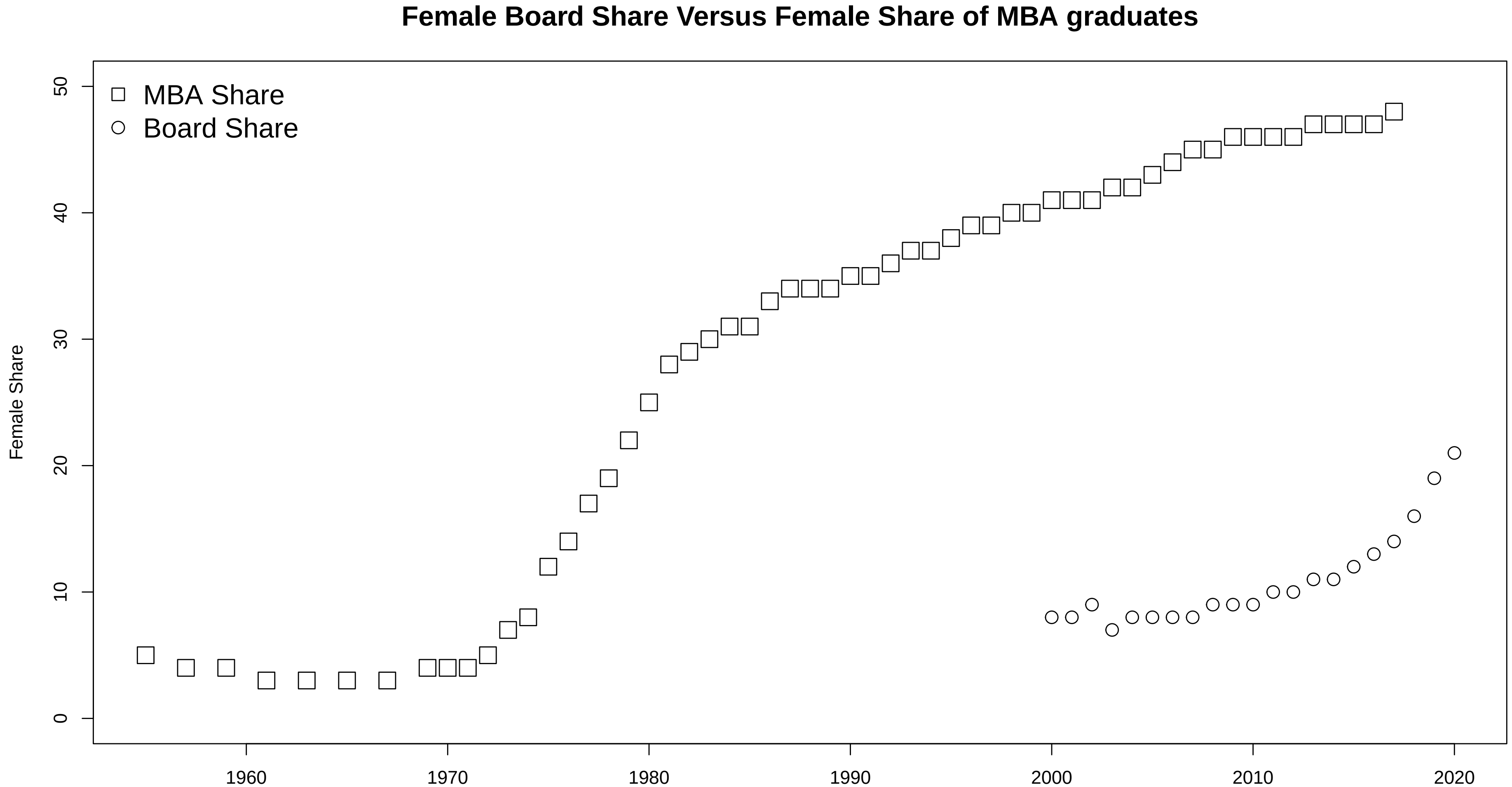
[68] I use the **rqpd** package in the R programming language to estimate the parameters of Equation 9. Homoskedastic standard errors are presented for parameters estimated via quantile regression.

they find that the relationship between female board representation and market performance is positive only in countries with greater gender parity. The companies that voluntarily transition away from all-male boards appear to be on faster growth trajectories. Further, SB826 did not have any deleterious impacts on Operating Performance in the 2 years after its implementation.

7 Conclusion

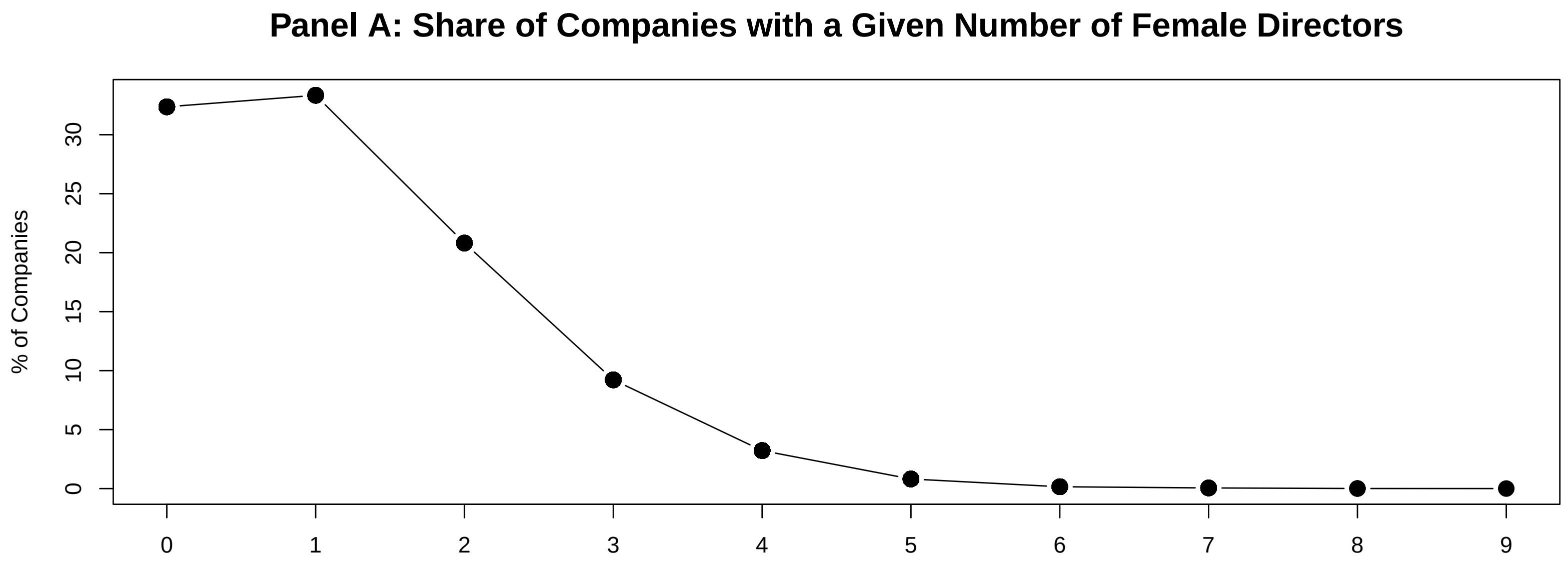
Investors reward companies that gender diversify their boards, but this paper does not answer why this phenomenon occurs. Do female directors contribute to firm productivity in ways not traditionally measured? Or do investors view companies with gender diverse boards as socially responsible actors? Related literature has argued that female directors improve collective board attendance and foster investment in fruitful Research and Development activities (Adams and Ferriera 2008; Bernile et. al. 2018), supporting the former view. In addition, a wave of research has documented that firms benefit from being socially responsible actors (e.g. El Ghoul et al. (2011); Gompers (2003); Fisman et al. (2003)), supporting the latter view. Both theories would help to explain existing rates of female board participation despite gender gaps in top-level experience.

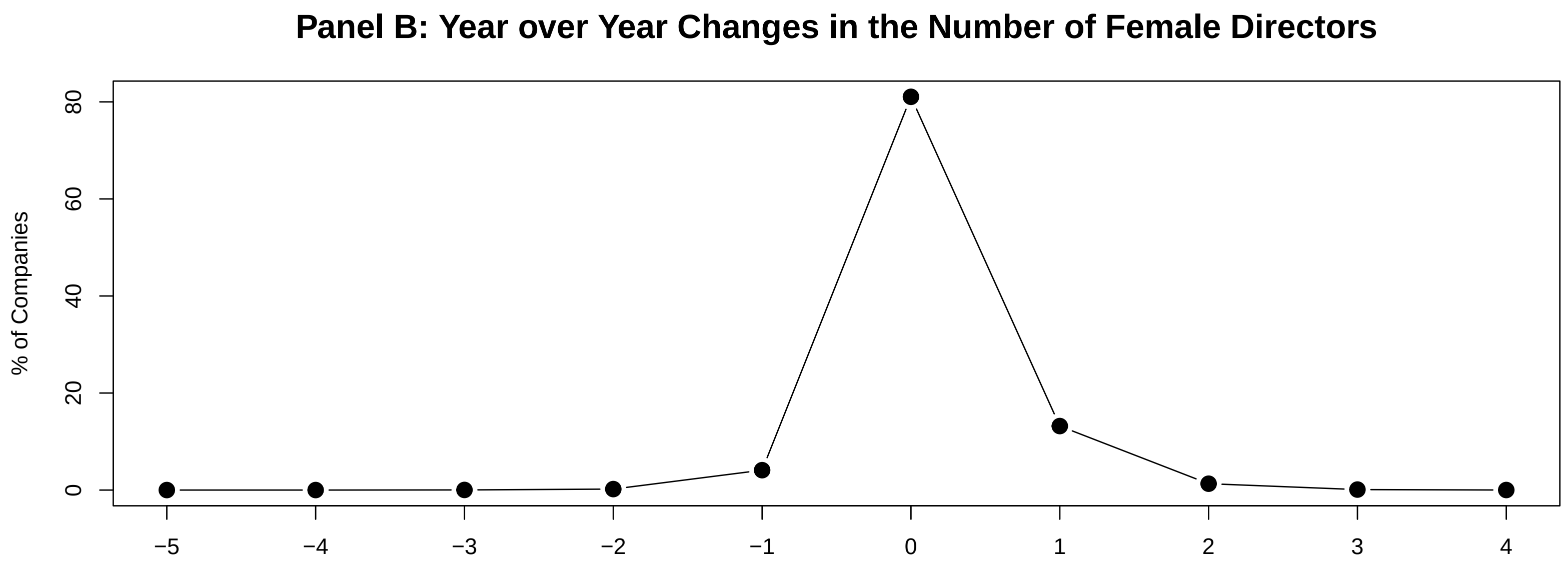
Figure 1



Female share of MBA graduates taken from NCES Table 325.25, which tracks postsecondary institutions participating in Title IV federal financial aid programs.
Female board share of domestic, listed companies derived from BoardEx.

Figure 2





Note: The sample consists of all domestic listed companies between 2010 and 2020.

Figure 3: Companies Bound by SB826

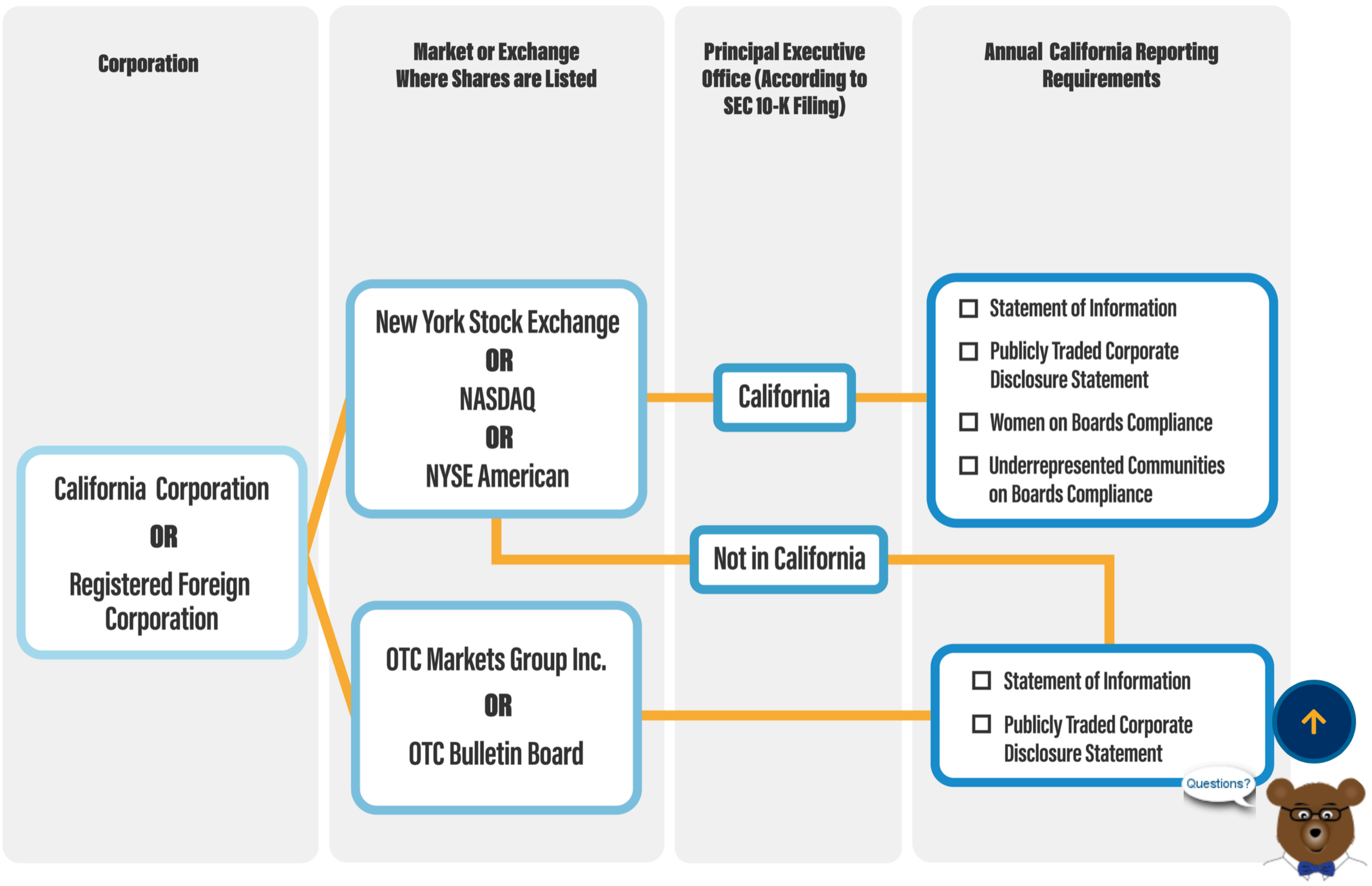


Table 1: Sample Size

Year	N	N: CA HQ	N: Non-CA HQ	N: All Male Board with CA HQ	N: All Male Board without CA HQ	Pr(All Male Board|CA HQ)	Pr(All Male Board|without CA HQ)
Pre-SB826							
2015	3947	642	3305	253	1112	0.39	0.34
2016	3813	628	3185	232	996	0.37	0.31
2017	3802	625	3177	196	929	0.31	0.29
Post-SB826							
2018	3786	646	3140	164	753	0.25	0.24
2019	3788	671	3117	59	581	0.09	0.19
2020	3858	706	3152	29	487	0.04	0.15

Note:
The gender composition of firms is provided by BoardEx, and the headquarter location is contained in Compustat Snapshot. The sample restricts to US incorporated listed companies that report board gender and headquarter location.

Table 2: Persistence of All-Male Boards: Pr(All-Male Board in Year t+1|All-Male Board Status in Year t)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
CA-based companies										
All-Male Board	0.93	0.94	0.92	0.87	0.86	0.84	0.80	0.74	0.29	0.36
Not All-Male Board	0.03	0.04	0.03	0.02	0.04	0.04	0.03	0.02	0.01	0.01
Non-CA-based companies										
All-Male Board	0.91	0.91	0.89	0.90	0.89	0.88	0.85	0.77	0.70	0.73
Not All-Male Board	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01

Note:
The sample restricts to domestic listed companies where annual board gender information is available.

Table 3: Share of Companies that Add Board Seats by Year and Treatment Status

	California HQ	Outside of California HQ	Difference	P Value
Pre-SB826				
2015	0.18	0.19	-0.01	0.78
2016	0.16	0.16	0.00	0.97
2017	0.20	0.16	0.04	0.24
Post-SB826				
2018	0.33	0.30	0.04	0.34
2019	0.42	0.26	0.17	0.00
2020	0.23	0.21	0.02	0.54

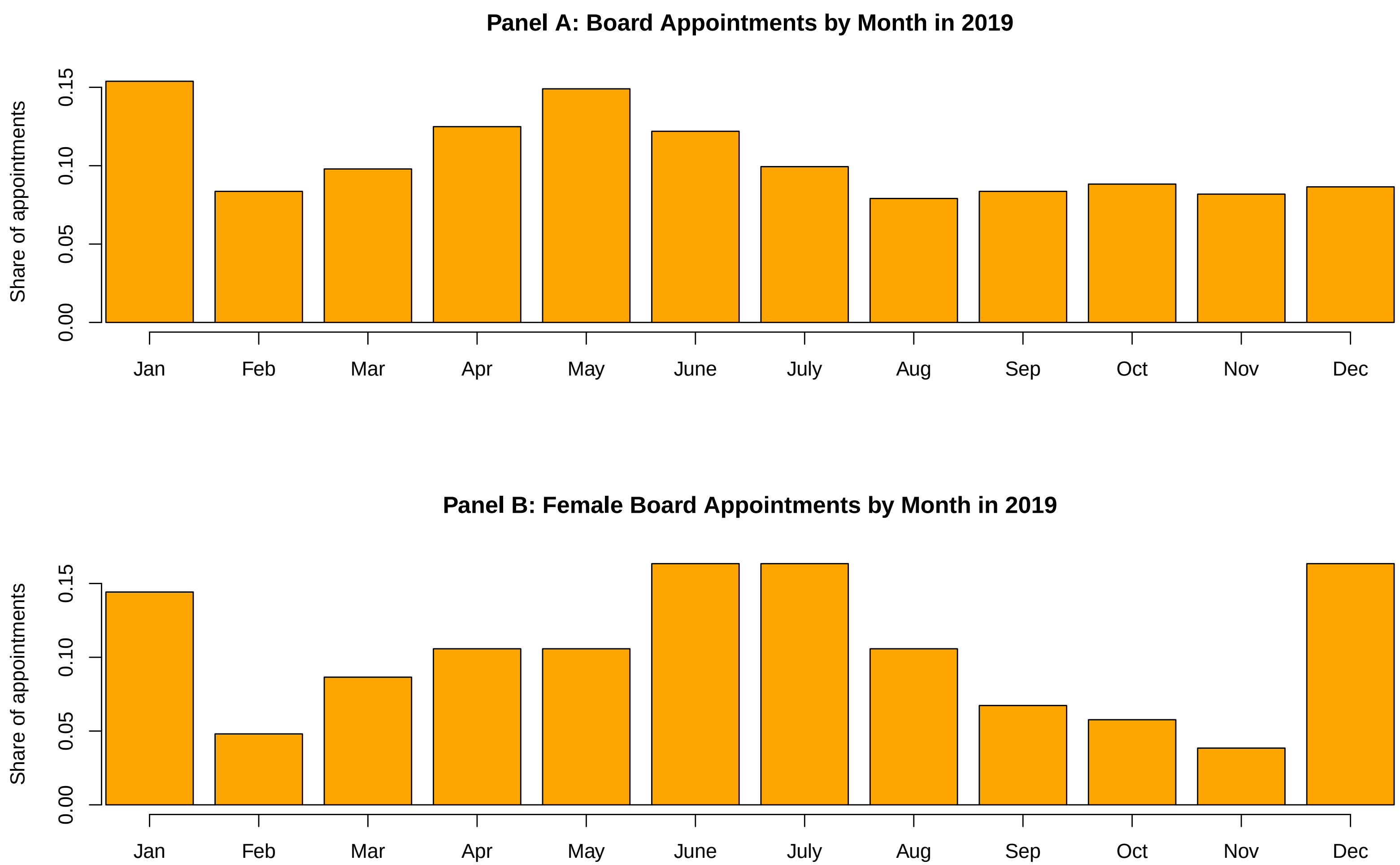
Note:
The sample restricts to companies that i) had all-male boards in 2017 and ii) were listed and US incorporated in 2017. Raw means and p-values from a two sided t-test reported. All values rounded to two digits. Board size taken from BoardEx annual reports.

Table 4: Likelihood of Changing Corporate Form Between 2017 and 2020

Headquarter State	Share that Delist or Chg HQ	Share that delist	Share that Chg HQ	N: Delist or Chg HQ	N: Delist	N: Chg HQ	N: All-Male Board
California	0.07	0.05	0.03	14	9	6	196
Outside of California	0.09	0.05	0.06	87	42	52	925

Note:
The sample restricts to companies that i) had All-Male boards in 2017, ii) were listed and US incorporated in 2017 and iii) were active in 2020.

Figure 4



Note: Panel A considers all board appointments to listed companies,
while Panel B restricts to female appointments within treated firms.

Table 5: Effects of the Gender Quota on Board Composition

Dependent Variables:	Male Share of Board	1(All-Male Board)	Board Size	1(Expand Board)
Model:	(1)	(2)	(3)	(4)
Variables				
CA HQ $\times$ Year = 2015	-0.0034	-0.0216	0.0587	-0.0573
	(0.0048)	(0.0283)	(0.1083)	(0.0508)
CA HQ $\times$ Year = 2016	-0.0013	-0.0089	-0.0172	-0.0498
	(0.0033)	(0.0206)	(0.0860)	(0.0470)
CA HQ $\times$ Year = 2018	-0.0076	-0.0324	0.0565	0.0036
	(0.0062)	(0.0369)	(0.0873)	(0.0560)
CA HQ $\times$ Year = 2019	-0.0569***	-0.2975***	0.2537**	0.1229**
	(0.0077)	(0.0387)	(0.1172)	(0.0533)
CA HQ $\times$ Year = 2020	-0.0780***	-0.2854***	0.2457*	-0.0364
	(0.0083)	(0.0316)	(0.1256)	(0.0524)
Fixed-effects				
Firm	Yes	Yes	Yes	Yes
Year-1 digit SIC	Yes	Yes	Yes	Yes
Fit statistics				
Observations	5,930	5,930	5,930	5,702
Dependent variable mean	0.96009	0.75784	6.8781	0.220

Clustered (Firm) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

The sample restricts to an unbalanced panel of firms that were domestic, listed, and had all-male boards in 2017. The time period covered is 2015 - 2020, with reported effects relative to the 2017 baseline. Standard errors clustered at the firm level. The 'Expand Board' indicator equals one if board size increases year over year.

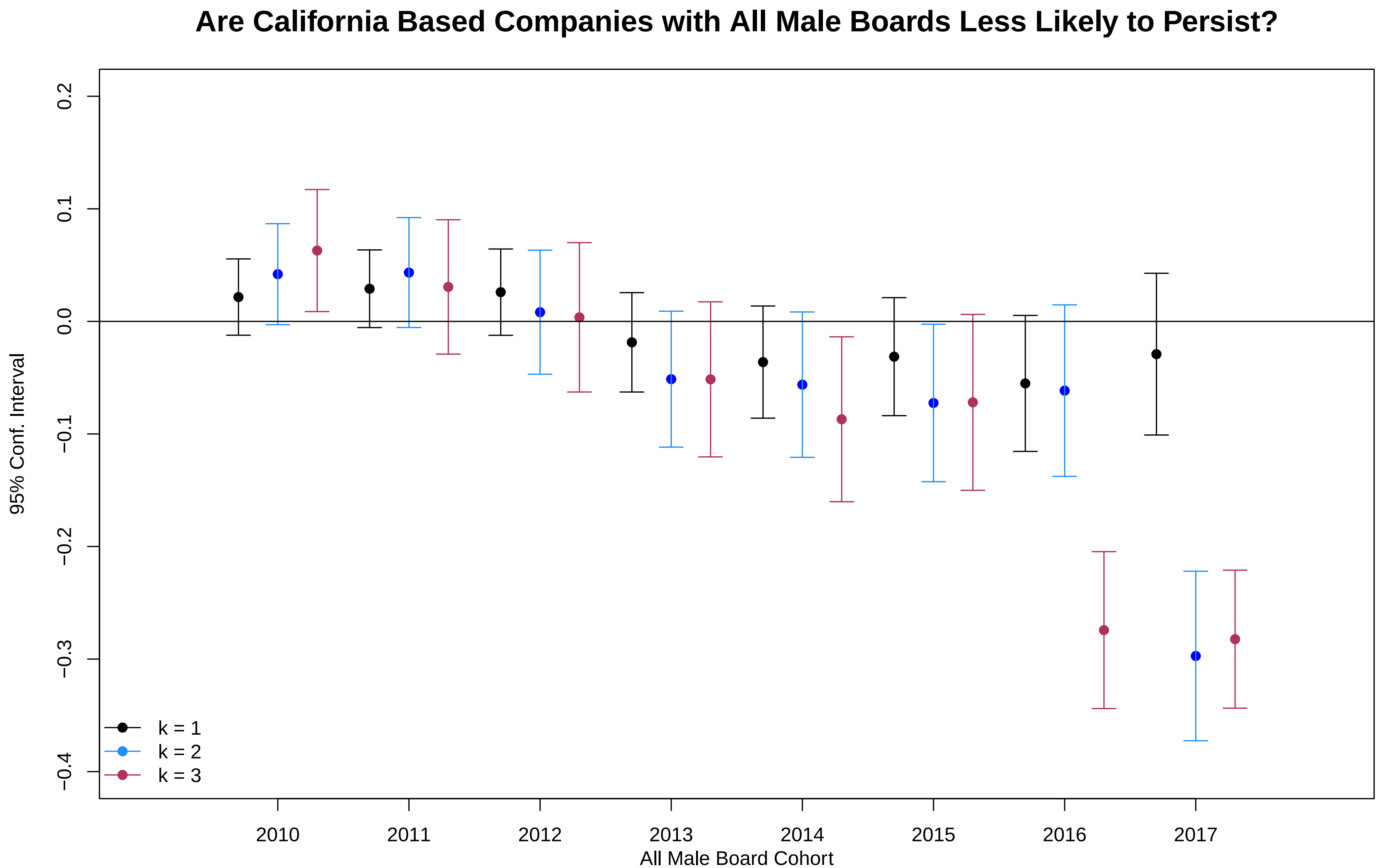
Table 6: Effects of the Gender Quota on Board Composition: Subsample of Firms in Democratic States

Dependent Variables:	Male Share of Board	1(All-Male Board)	Board Size	1(Expand Board)
Model:	(1)	(2)	(3)	(4)
Variables				
CA HQ × Year = 2015	-0.0040	-0.0196	0.0424	-0.0815
	(0.0054)	(0.0311)	(0.1130)	(0.0549)
CA HQ × Year = 2016	-0.0020	-0.0136	-0.0169	-0.0567
	(0.0036)	(0.0222)	(0.0905)	(0.0506)
CA HQ × Year = 2018	-0.0079	-0.0440	0.1086	0.0156
	(0.0067)	(0.0395)	(0.0927)	(0.0600)
CA HQ × Year = 2019	-0.0609***	-0.3283***	0.2640**	0.0854
	(0.0085)	(0.0429)	(0.1233)	(0.0577)
CA HQ × Year = 2020	-0.0808***	-0.3195***	0.2605**	-0.0389
	(0.0093)	(0.0376)	(0.1308)	(0.0565)
Fixed-effects				
Firm	Yes	Yes	Yes	Yes
Year-1 digit SIC	Yes	Yes	Yes	Yes
Fit statistics				
Observations	3,477	3,477	3,477	3,337
Dependent variable mean	0.95740	0.75180	6.7492	0.222

Clustered (Firm) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

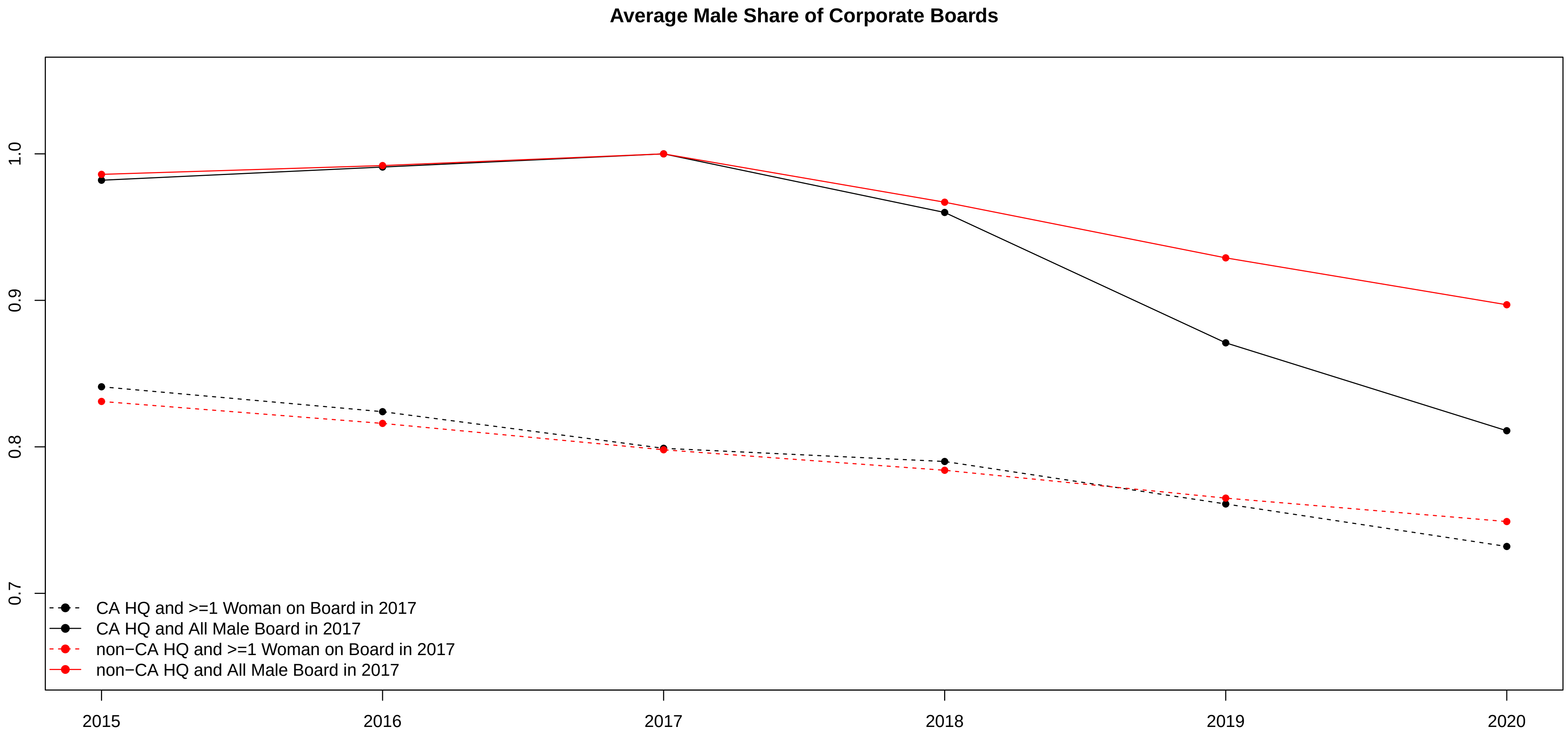
The sample restricts to an unbalanced panel of firms that were domestic, listed, and had all-male boards in 2017. The time period covered is 2015 - 2020, with reported effects relative to the 2017 baseline. Standard errors clustered at the firm level. The 'Expand Board' indicator equals one if board size increases year over year. Furthermore, all firms are headquartered within states that voted for Hillary Clinton in the 2016 presidential election.

Figure 5



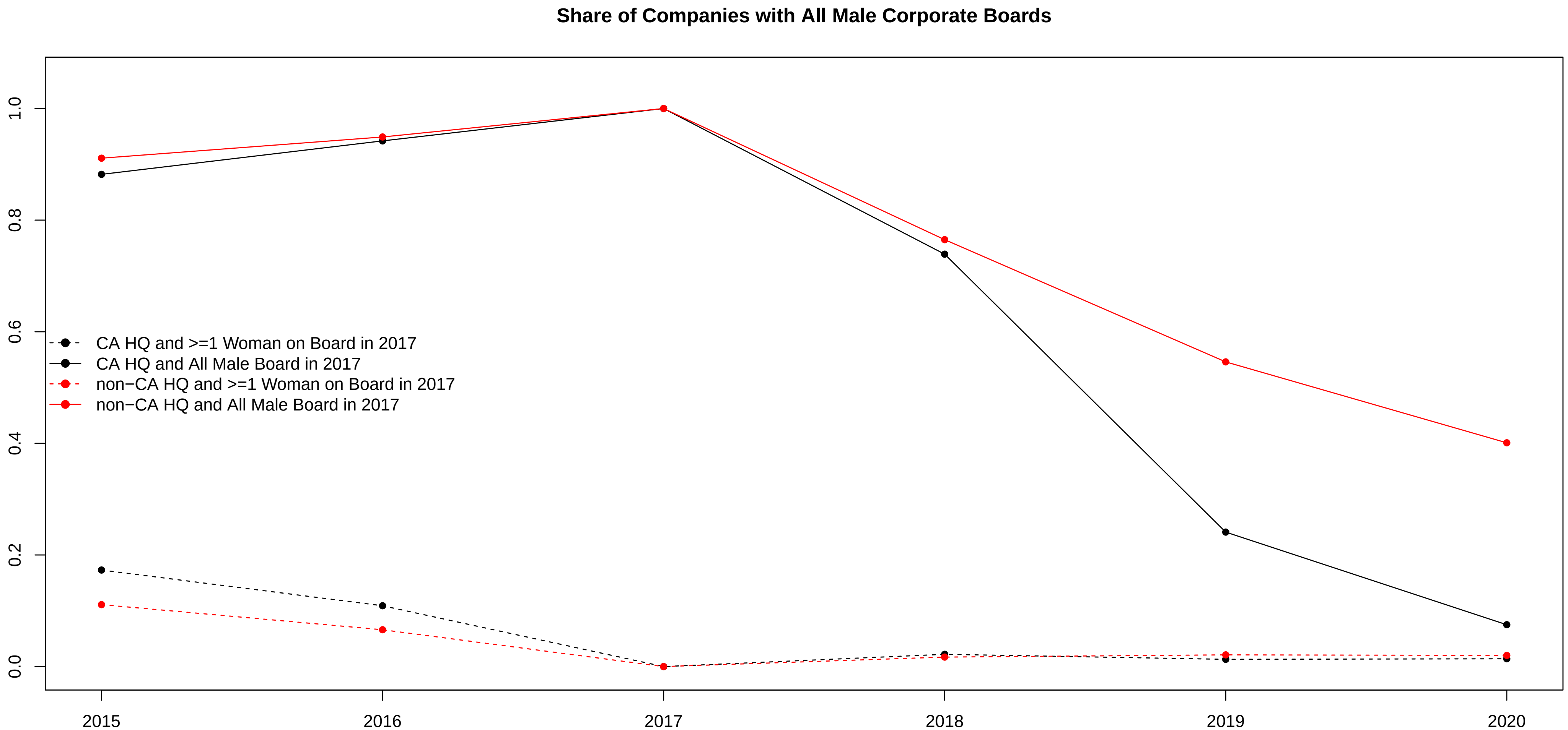
Note: Point estimates for cohort t represent β_{tk}:=Pr(AMB_{t+k}|AMB_t, CA HQ) − Pr(AMB_{t+k}|AMB_t, non−CA HQ)

Figure 6



Notes: CA SB 826, approved on 9/30/2018, mandated at least 1 woman be on the corporate board of any publicly held company with HQ in CA by 12/31/2019. Publicly held corporations have shares listed on the NASDAQ, NYSE, or NYSE American. The sample tracks an unbalanced panel of firms that were listed in 2017, the year before SB 826 was signed.

Figure 7



Notes: CA SB 826, approved on 9/30/2018, mandated at least 1 woman be on the corporate board of any publicly held company with HQ in CA by 12/31/2019. Publicly held corporations have shares listed on the NASDAQ, NYSE, or NYSE American. The sample tracks an unbalanced panel of firms that were listed in 2017, the year before SB 826 was signed.

Table 7: Observable Characteristics of Incoming Directors by Gender: 2015 - 2020

	Male	Female	Difference	P Value
Age & Education				
Age	57.07	56.12	0.95	0.00
MBA Degree	0.38	0.38	0.00	0.70
Ivy League Degree	0.27	0.27	0.00	0.61
Law Degree	0.09	0.11	-0.02	0.00
Experience				
Prior Firm Tenure	0.08	0.04	0.04	0.00
Prior Board Experience	0.83	0.72	0.11	0.00
Prior C-Suite Experience	0.70	0.67	0.04	0.00
Prior Same Sector Experience	0.56	0.43	0.13	0.00
Connections				
Prior Connection to Incumbent Board	0.60	0.39	0.21	0.00
Prior Board Connection with Incumbent Board	0.40	0.19	0.22	0.00
Prior Connections to the C-Suite	0.49	0.27	0.22	0.00
Prior Same-Gender Connection to Incumbent Board	0.58	0.13	0.45	0.00
Non-Executive Director	0.82	0.95	-0.13	0.00
Network Size	1489.62	1913.83	-424.21	0.00
Sample Size				
Number of Positions	20961	6779		
Number of Directors	16880	5080		
Number of Companies	4704	3739		

Note:
The sample restricts to incoming directors within domestic listed companies. Time period considered is 2015 - 2020. Raw means and p-values from a two-sided t-test reported.

Table 8: Observable Characteristics of Incoming Female Directors by Treatment Status: 10/1/2018 - 12/31/2020

	Female Treated	Female Control	Difference	P Value
Age & Education				
Age	56.83	55.83	1.00	0.13
MBA Degree	0.31	0.33	-0.02	0.59
Ivy League Degree	0.23	0.26	-0.02	0.52
Law Degree	0.11	0.13	-0.03	0.33
Experience				
Prior Firm Tenure	0.06	0.06	0.01	0.66
Prior Board Experience	0.53	0.57	-0.03	0.42
Prior C-Suite Experience	0.65	0.60	0.05	0.24
Prior Same Sector Experience	0.48	0.42	0.07	0.11
Connections				
Prior Connection to Incumbent Board	0.28	0.30	-0.02	0.66
Prior Board Connection with Incumbent Board	0.05	0.09	-0.04	0.07
Prior Connections to the C-Suite	0.16	0.18	-0.02	0.59
Prior Same-Gender Connection to Incumbent Board	0.03	0.03	0.00	0.82
Non-Executive Director	0.94	0.94	0.00	0.85
Network Size	1851.39	1834.67	16.72	0.91
Sample Size				
Number of Positions	203	488		
Number of Directors	198	468		
Number of Companies	146	397		
Number of Companies with AMBs in 2017	196	929		

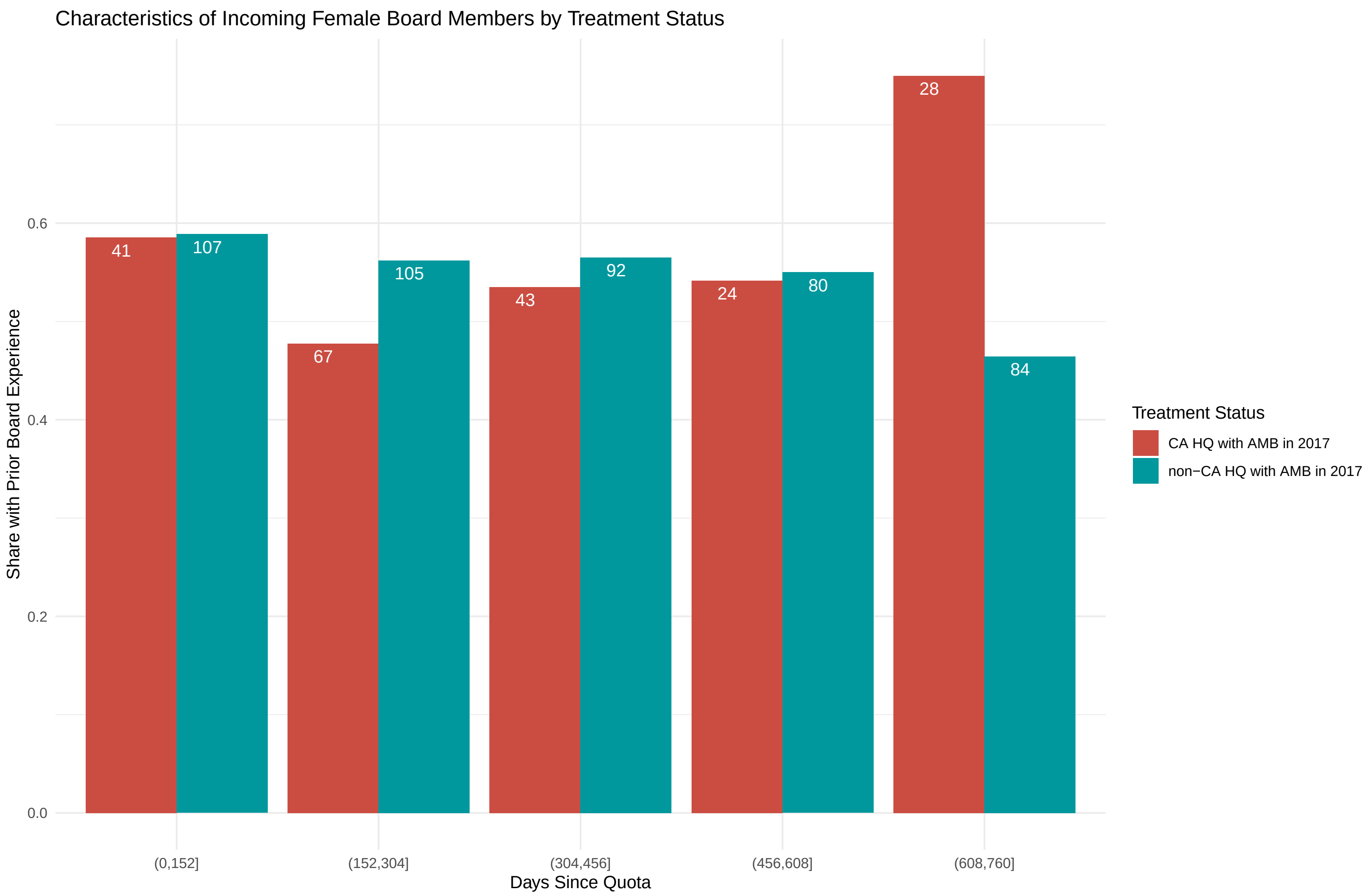
Note:
The sample restricts to incoming directors within domestic listed companies that had All-Male boards in 2017. Companies that would be compliant with SB826's gender requirements by 10/1/2018 not considered. Female directors that would make companies compliant with SB826 gender requirements not considered. Raw means and p-values from a two-sided t-test reported.

Table 9: Observable Characteristics of Incoming Directors by Treatment Status: 2010 - 2017

	Male & Female Treated	Male & Female Control	Difference	P Value
Age & Education				
Age	56.26	56.34	-0.09	0.78
MBA Degree	0.40	0.36	0.03	0.03
Ivy League Degree	0.25	0.26	-0.02	0.20
Law Degree	0.09	0.12	-0.03	0.00
Experience				
Prior Firm Tenure	0.06	0.06	-0.01	0.42
Prior Board Experience	0.86	0.82	0.04	0.00
Prior C-Suite Experience	0.73	0.64	0.08	0.00
Prior Same Sector Experience	0.59	0.50	0.09	0.00
Connections				
Prior Connection to Incumbent Board	0.64	0.60	0.03	0.03
Prior Board Connection with Incumbent Board	0.48	0.45	0.03	0.03
Prior Connections to the C-Suite	0.54	0.50	0.05	0.00
Prior Same-Gender Connection to Incumbent Board	0.62	0.59	0.03	0.03
Non-Executive Director	0.82	0.82	0.00	1.00
Network Size	1372.88	1097.03	275.85	0.00
Sample Size				
Number of Positions	1295	5745		
Number of Directors	1226	5299		
Number of Companies	187	894		
Number of Companies with AMBs in 2017	196	929		

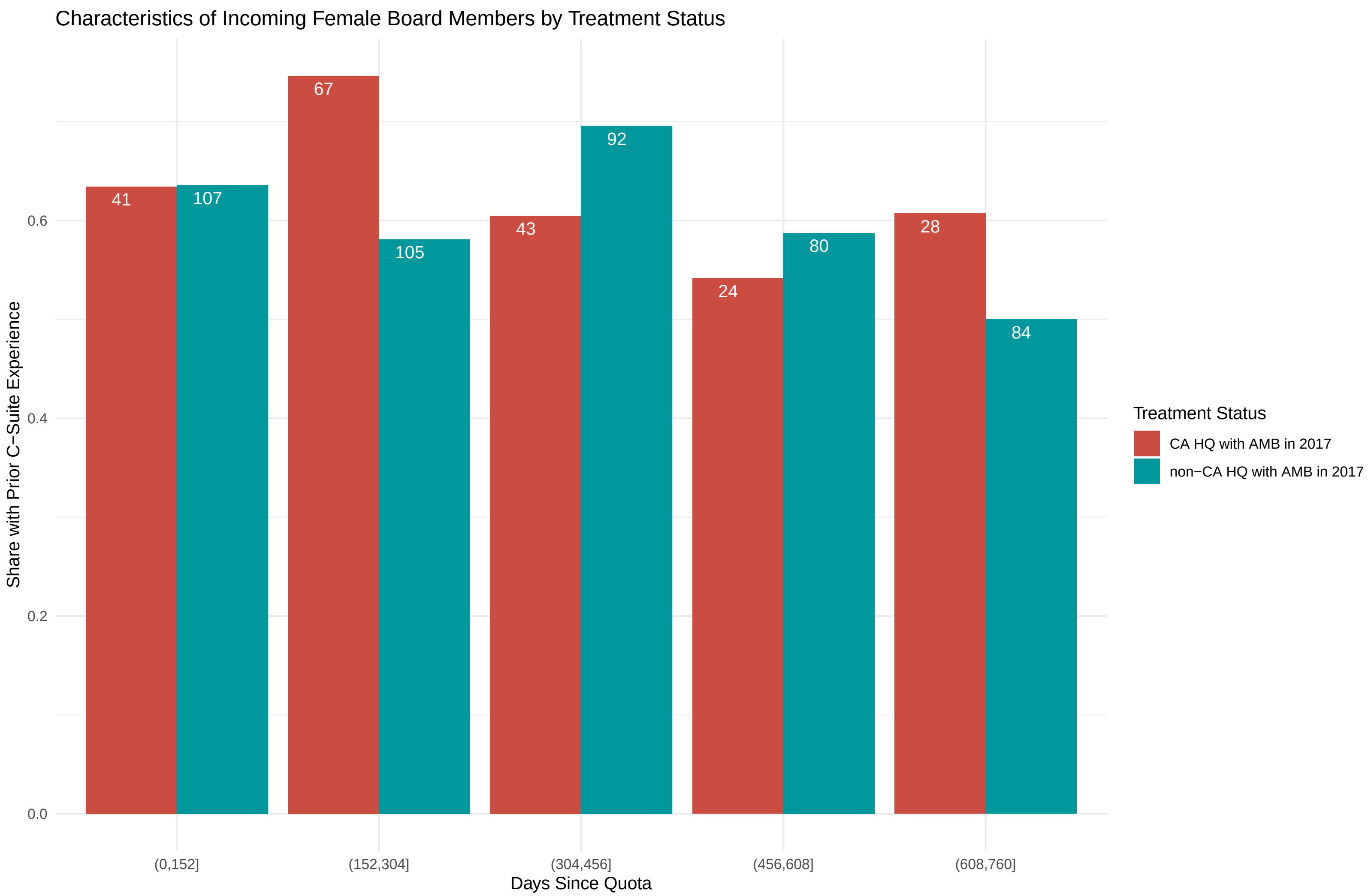
Note:
The sample restricts to incoming directors within domestic listed companies that had All-Male boards in 2017. Companies that would be compliant with SB826's gender requirements by 10/1/2018 not considered. Raw means and p-values from a two-sided t-test reported.

Figure 8



Note: The compliance period ended 456 days after the quota's passage. Text inside bars represent number of female directors added in a given 152 day window.

Figure 9



Note: The compliance period ended 456 days after the quota's passage. Text inside bars represent number of female directors added in a given 152 day window.

Table 10: How Does Financial Performance Respond to Gender Diverse Boards?: OLS Results

	$\hat{\beta}^{-3}$	$\hat{\beta}^{-2}$	$\hat{\beta}^{0}$	$\hat{\beta}^{1}$	$\hat{\beta}^{2}$	$\hat{\beta}^{3}$	$\hat{\beta}^{4}$	Dep Var Mean	N
Firm Value Measures									
Log(Market Value)	-0.004 (0.012)	-0.001 (0.009)	0.069 (0.021)	0.068 (0.023)	0.076 (0.025)	0.078 (0.025)	0.072 (0.025)	6.49	30455
ROA	-0.079 (0.049)	-0.013 (0.024)	0.008 (0.106)	-0.041 (0.127)	-0.035 (0.096)	0.033 (0.111)	0.019 (0.093)	-0.04	32053
Tobin's Q	-1.659 (2.518)	1.136 (1.179)	-8.66 (8.438)	-6.454 (10.386)	-3.401 (8.035)	-1.433 (6.175)	-6.247 (7.327)	6.72	30455
Income Statement Measures									
Net Income	1.606 (11.943)	2.367 (7.503)	-21.489 (15.043)	-26.728 (19.288)	-11.176 (22.311)	-2.405 (22.72)	-19.071 (21.259)	273.4	32053
Revenues	20.284 (53.538)	-13.426 (34.207)	-2.151 (76.701)	25.744 (90.835)	63.238 (115.111)	22.817 (109.88)	-26.184 (101.889)	3670.57	32053
COGS	25.991 (41.852)	-3.288 (26.345)	40.816 (60.551)	83.518 (71.582)	103.601 (92.577)	69.677 (89.09)	30.912 (83.583)	2445.99	32053
Balance Sheet Measures									
Book Value	-59.758 (47.682)	-58.849 (32.909)	-22.089 (59.727)	0.164 (79.073)	52.035 (85.609)	117.687 (97.623)	110.435 (93.912)	2493.11	32087
Log(Book Value)	-0.01 (0.011)	-0.006 (0.009)	0.108 (0.02)	0.109 (0.022)	0.113 (0.023)	0.109 (0.023)	0.102 (0.023)	5.84	32087
Assets	-46.996 (195.356)	-134.853 (95.015)	-551.761 (217.072)	-387.488 (270.748)	-122.92 (302.943)	-160.523 (304.606)	-251.053 (307.089)	11272.79	32087
Log(Assets)	-0.006 (0.009)	-0.004 (0.007)	0.09 (0.016)	0.091 (0.018)	0.094 (0.018)	0.086 (0.019)	0.084 (0.019)	6.8	32087
Liabilities	7.923 (168.601)	-78.754 (78.048)	-533.828 (179.115)	-387.945 (214.712)	-172.592 (242.062)	-271.119 (238.251)	-359.634 (247.02)	8778.33	32025
Log(Liabilities)	0.004 (0.011)	0 (0.01)	0.102 (0.022)	0.11 (0.024)	0.116 (0.024)	0.105 (0.025)	0.106 (0.025)	6	32025

Note:
Event study coefficients shown in the columns are generated from the following distributed lag specification: $Y_{fti} = \sum_{k=-2}^{4} \delta^k * GenderDiverseBoard_{f(t-k)} + \lambda_{ti} + \alpha_f + e_{fti}$. Standard Errors clustered at the firm level are reported in parenthesis. $\beta^{-1} = 0; \beta^k = \sum_{j=0}^{k} \delta^j, k \geq 0; \beta^k = sum_{j=k+1}^{-1} - \delta^j, k < -1$. Standard Errors of the event study coefficients generated from the Delta Method. The sample restricts to an unbalanced panel of domestic listed firms. The time period covered is 2010 - 2017. Sample restricts to companies with positive assets and Book Value. ROA is Net Income/Assets, Tobin's Q is calculated as Market Value/Shareholders' Equity. All other unscaled variables reported in millions. Outcome variables derived from Compustat Annual Fundamental files.

Figure 10

Table 1: Reduced Form Effects of SB826 on Firm Performance

Dependent Variables:	Mkt Value	ROE	Q	Profits	Revenues	COGS	Book Val.	Assets	Liabilities
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2015									
Treated × Period = 2015Q1	0.0052	-0.0491**	-0.0353	-0.0147	-0.0041	-0.0136**	0.0034	0.0017	-0.0039
	(0.0093)	(0.0234)	(0.0227)	(0.0157)	(0.0049)	(0.0069)	(0.0080)	(0.0054)	(0.0063)
Treated × Period = 2015Q2	0.0099	-0.0345	-0.0291	-0.0023	-0.0020	-0.0121*	0.0009	1.51×10^{-5}	-0.0060
	(0.0087)	(0.0245)	(0.0232)	(0.0156)	(0.0048)	(0.0067)	(0.0088)	(0.0063)	(0.0067)
Treated × Period = 2015Q3	-0.0020	-0.0294	-0.0232	0.0059	-0.0033	-0.0106	0.0011	-0.0009	-0.0049
	(0.0078)	(0.0227)	(0.0223)	(0.0148)	(0.0053)	(0.0073)	(0.0064)	(0.0046)	(0.0059)
Treated × Period = 2015Q4	-0.0003	-0.0476**	-0.0323	0.0023	-0.0030	-0.0128*	-0.0013	-0.0020	-0.0037
	(0.0073)	(0.0234)	(0.0237)	(0.0152)	(0.0054)	(0.0072)	(0.0059)	(0.0041)	(0.0055)
2016									
Treated × Period = 2016Q1	0.0020	-0.0378*	-0.0191	-0.0074	-0.0009	-0.0126**	0.0014	-0.0036	-0.0068
	(0.0064)	(0.0197)	(0.0231)	(0.0126)	(0.0038)	(0.0052)	(0.0053)	(0.0036)	(0.0051)
Treated × Period = 2016Q2	0.0018	-0.0065	-0.0258	0.0022	-0.0005	-0.0116**	-0.0018	-0.0045	-0.0056
	(0.0059)	(0.0216)	(0.0218)	(0.0132)	(0.0041)	(0.0052)	(0.0052)	(0.0035)	(0.0048)
Treated × Period = 2016Q3	0.0068	-0.0114	0.0026	0.0032	0.0008	-0.0070	-0.0036	-0.0035	-0.0034
	(0.0052)	(0.0216)	(0.0220)	(0.0146)	(0.0046)	(0.0054)	(0.0045)	(0.0032)	(0.0041)
Treated × Period = 2016Q4	7.12×10^{-5}	-0.0144	-0.0197	-0.0054	0.0003	-0.0093*	0.0028	0.0028	0.0025
	(0.0033)	(0.0184)	(0.0177)	(0.0125)	(0.0030)	(0.0048)	(0.0033)	(0.0020)	(0.0018)
2017									
Treated × Period = 2017Q2	-0.0035	-0.0071	-0.0317**	-0.0003	-0.0046*	-0.0064**	-0.0061*	-0.0004	0.0021
	(0.0029)	(0.0191)	(0.0149)	(0.0108)	(0.0026)	(0.0032)	(0.0033)	(0.0023)	(0.0026)
Treated × Period = 2017Q3	1.56×10^{-5}	-0.0188	-0.0264	-0.0051	0.0003	-0.0057	-0.0037	-0.0002	0.0027
	(0.0047)	(0.0206)	(0.0174)	(0.0129)	(0.0040)	(0.0037)	(0.0042)	(0.0028)	(0.0035)
Treated × Period = 2017Q4	-0.0031	-0.0042	-0.0414**	-0.0050	-0.0002	-0.0083**	-0.0044	-0.0020	-0.0007
	(0.0057)	(0.0247)	(0.0198)	(0.0175)	(0.0039)	(0.0035)	(0.0048)	(0.0033)	(0.0039)
2018									
Treated × Period = 2018Q1	0.0031	-0.0428**	-0.0294	-0.0274***	-0.0056	-0.0104*	-0.0017	-0.0006	-0.0031
	(0.0068)	(0.0182)	(0.0209)	(0.0105)	(0.0043)	(0.0062)	(0.0056)	(0.0038)	(0.0046)
Treated × Period = 2018Q2	0.0077	-0.0134	-0.0197	-0.0163	-0.0027	-0.0113*	0.0025	0.0028	-0.0030
	(0.0079)	(0.0213)	(0.0221)	(0.0136)	(0.0050)	(0.0058)	(0.0067)	(0.0044)	(0.0048)
Treated × Period = 2018Q3	0.0086	-0.0269	-0.0174	-0.0158	-0.0014	-0.0070	0.0028	0.0019	-0.0053
	(0.0089)	(0.0211)	(0.0217)	(0.0129)	(0.0045)	(0.0061)	(0.0074)	(0.0047)	(0.0051)
Treated × Period = 2018Q4	0.0132	-0.0008	-0.0111	-0.0095	0.0048	-0.0055	0.0063	0.0074	0.0015
	(0.0095)	(0.0239)	(0.0230)	(0.0155)	(0.0053)	(0.0066)	(0.0081)	(0.0054)	(0.0059)

(Continues)

(Continued)

Dependent Variables:	Mkt Value	ROE	Q	Profits	Revenues	COGS	Book Val.	Assets	Liabilities
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2019									
Treated × Period = 2019Q1	0.0208**	-0.0034	0.0197	-0.0132	0.0016	-0.0033	0.0076	0.0053	-0.0012
	(0.0100)	(0.0231)	(0.0218)	(0.0141)	(0.0053)	(0.0071)	(0.0084)	(0.0056)	(0.0066)
Treated × Period = 2019Q2	0.0213*	-0.0151	0.0052	-0.0110	0.0012	-0.0053	0.0075	0.0055	-0.0018
	(0.0112)	(0.0226)	(0.0240)	(0.0141)	(0.0052)	(0.0071)	(0.0089)	(0.0058)	(0.0067)
Treated × Period = 2019Q3	0.0218**	-0.0134	-0.0075	-0.0159	0.0053	0.0017	0.0060	0.0065	-0.0009
	(0.0110)	(0.0256)	(0.0246)	(0.0149)	(0.0055)	(0.0075)	(0.0097)	(0.0060)	(0.0069)
Treated × Period = 2019Q4	0.0224*	-0.0002	0.0044	0.0070	0.0013	-0.0032	0.0032	0.0047	-0.0019
	(0.0115)	(0.0240)	(0.0270)	(0.0136)	(0.0056)	(0.0073)	(0.0102)	(0.0063)	(0.0071)
2020									
Treated × Period = 2020Q1	0.0336**	0.0222	-0.0034	0.0248	-0.0007	-0.0061	0.0067	0.0067	-0.0006
	(0.0132)	(0.0271)	(0.0283)	(0.0182)	(0.0074)	(0.0085)	(0.0115)	(0.0071)	(0.0076)
Treated × Period = 2020Q2	0.0403***	0.0609**	0.0099	0.0320*	0.0169**	0.0052	0.0106	0.0111	0.0036
	(0.0138)	(0.0264)	(0.0265)	(0.0171)	(0.0072)	(0.0086)	(0.0120)	(0.0075)	(0.0080)
Treated × Period = 2020Q3	0.0468***	0.0140	0.0068	0.0247	0.0114	0.0068	0.0135	0.0128*	0.0044
	(0.0150)	(0.0259)	(0.0286)	(0.0160)	(0.0073)	(0.0086)	(0.0123)	(0.0078)	(0.0082)
Treated × Period = 2020Q4	0.0535***	0.0319	-0.0041	0.0289*	0.0161*	0.0057	0.0187	0.0149*	0.0032
	(0.0155)	(0.0283)	(0.0287)	(0.0175)	(0.0083)	(0.0088)	(0.0132)	(0.0085)	(0.0085)
Fixed-effects									
Firm	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Period-Industry	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics									
Observations	23,198	23,350	23,194	23,350	21,972	23,335	23,408	23,412	23,411
Dependent variable mean	0.315	0.424	0.452	0.384	0.324	0.350	0.341	0.317	0.32212
Wald (joint nullity), stat.	1.83	1.56	1.25	1.49	1.70	2.28	1.07	1.37	1.0007
Wald (joint nullity), p-value	0.008	0.042	0.182	0.059	0.019	0.000	0.368	0.109	0.459

Clustered (Firm) standard-errors in parentheses

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

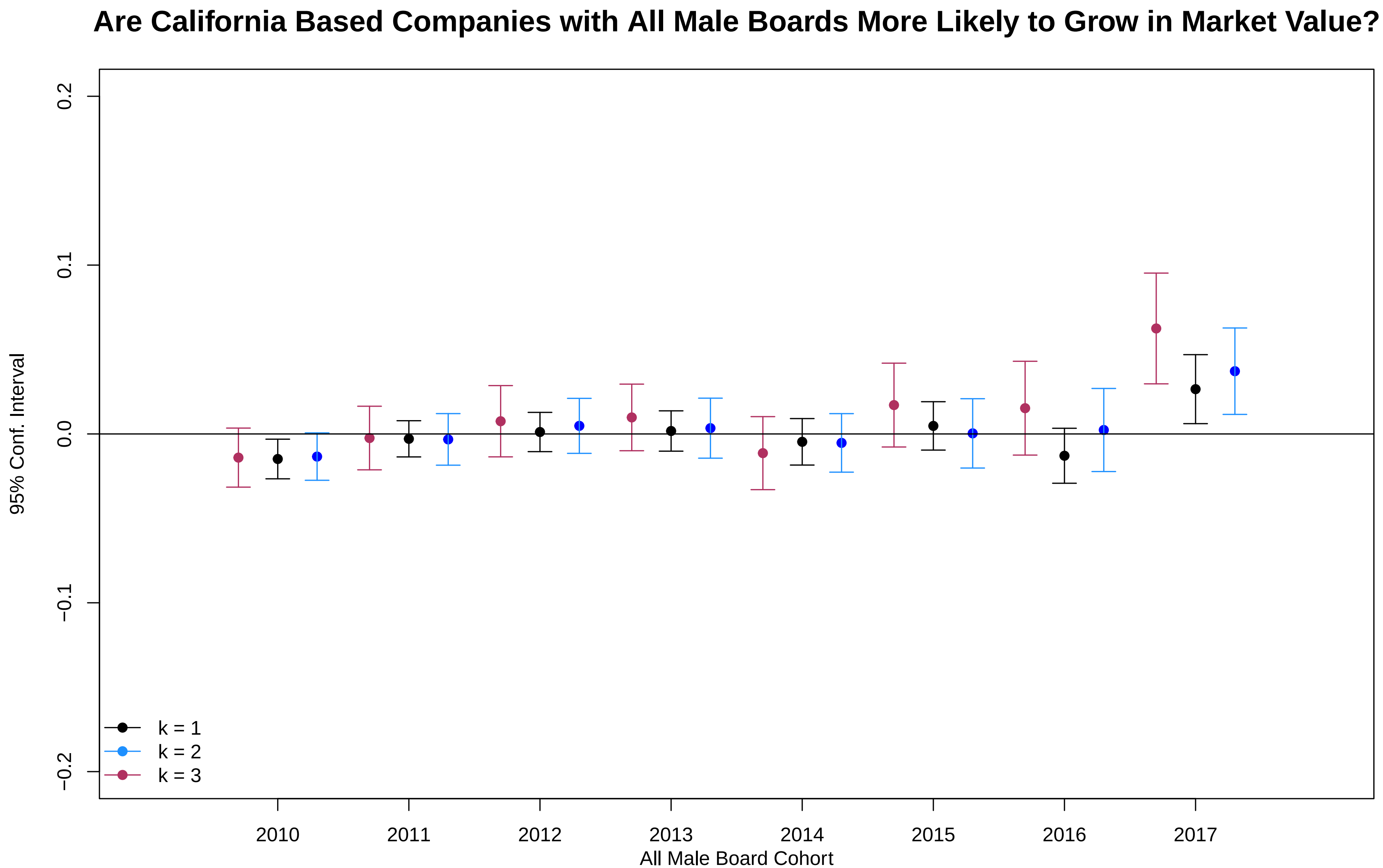
Notes: The sample restricts to an unbalanced panel of firms that were domestic, listed, and had all male boards in 2017. The time period covered is 2015 Q1 - 2020 Q4, with reported effects relative to 2017 Q1. Treated firms have all male boards in 2017. Standard errors are clustered at the firm level. All outcome variables are adjusted to represent percentiles within a quarter-year (among firms in the regression sample). Sample restricts to companies with positive assets. ROE is Net Income/Assets, Tobin's Q is calculated as Market Value/Shareholders' Equity.

Table 11: Quantile Regression: How did SB826 Alter the Distribution of Financial Performance?

	$\hat{\beta}^{25}$	$\hat{\beta}^{50}$	$\hat{\beta}^{75}$	$\hat{\beta}^{OLS}$	N
Firm Value Measures					
Market Value Returns	0.099 (0.042)	0.084 (0.048)	0.13 (0.076)	0.166 (0.067)	21786
Log(Market Value)	0.142 (0.085)	0.162 (0.065)	0.175 (0.068)	0.188 (0.074)	21845
ROA	0.012 (0.003)	0.002 (0.001)	0.003 (0.002)	0.019 (0.01)	21987
Tobin's Q	0.118 (0.078)	0.077 (0.076)	0.161 (0.173)	-37.102 (30.335)	21841
Income Statement Measures					
Net Income	-0.017 (0.781)	0.075 (0.371)	0.591 (0.702)	0.033 (1.943)	21987
Revenues	0.172 (0.356)	0.219 (0.873)	2.26 (4.001)	-24.63 (14.861)	20682
COGS	0.18 (0.312)	0.332 (0.645)	2.133 (2.191)	-21.454 (11.946)	21974
Balance Sheet Measures					
Book Value	2.658 (4.095)	6.161 (4.947)	34.893 (21.739)	12.286 (29.696)	22036
Assets	6.901 (5.352)	10.895 (9.639)	61.164 (47.476)	-35.188 (88.325)	22040
Log(Assets)	0.068 (0.047)	0.064 (0.04)	0.065 (0.05)	0.083 (0.05)	22040
Liabilities	0.525 (2.026)	2.389 (3.439)	10.922 (19.434)	-45.405 (74.727)	22039
Log(Liabilities)	0.004 (0.047)	0.009 (0.038)	0.018 (0.054)	0.025 (0.063)	22039

Note:
Standard Errors reported in parenthesis. (HAC) Adjustments for within-firm correlation of the error term are made in Col 4 but not Cols 1-3. β coefficients generated from the following regression: $Y_{fti} = \beta^{\tau} * Treated_f * 1(t >= 2018Q3) + \lambda_{ti} + \alpha_f + e_{fti}$. Cols 1-3 estimated via quantile regression, while Col 4 estimated via OLS. Market Value Returns are calculated relative to 2018Q2, and are Winsorized to the 95th percentile of each period's returns. The sample restricts to an unbalanced panel of firms that were domestic, listed, and had All-Male boards in 2017. The time period covered is 2015 Q1 - 2020 Q4. Treated firms have All-Male boards in 2017. Sample restricts to companies with positive assets. ROA is Net Income/Assets, Tobin's Q is calculated as Market Value/Shareholders' Equity. All other unscaled variables reported in millions. Outcome variables derived from Compustat Quarterly Fundamental files.

Figure 11



Notes: One, Two, and Three Year effects generated from the baseline DD regression. See text for details.
Market value is adjusted to represent the percentile within a year among firms in the regression sample of interest. Market Value sourced from Compustat Annual Fundamental Files.

Table A1: Share of BoardEx Companies Matched with the Following:

(1)	(2)	(3)	(4)	(5)	(6)
Year	BoardEx N	Quarterly Financials	Listing Exchange	Geographic Identifiers	All of (3-5)
2010	4120	0.952	0.954	0.959	0.948
2011	4070	0.954	0.955	0.961	0.951
2012	4030	0.955	0.956	0.962	0.951
2013	4059	0.959	0.959	0.963	0.954
2014	4165	0.960	0.961	0.964	0.955
2015	4183	0.959	0.961	0.965	0.954
2016	4024	0.964	0.966	0.969	0.959
2017	3994	0.971	0.973	0.972	0.966
2018	3971	0.968	0.972	0.971	0.964
2019	3964	0.959	0.966	0.966	0.957
2020	4040	0.933	0.957	0.956	0.931

Note:

Note: Column (2) restricts to BoardEx 'Quoted' companies that report annual board gender ratios. Quarterly Financials derived from the Compustat Quarterly Fundamental files. Listing exchange pulled from the Compustat's SEC History and Snapshot files. The listing exchange takes the value provided in the SEC history (unless missing, in which case the value is provided by Compustat Snapshot). Geographic identifiers include both the state of the company's principal executive offices and the country of incorporation. These values are taken from Compustat Snapshot. If missing, geographic identifiers taken from the WRDS SEC Analytics Suite (item regstatehdq). If still missing and the year is past 2019, the value is taken from Boardex's header-level information provided in the Company Profile files.

Figure A1: Example Director Profile in SEC 10-K Reports

election of directors

Wanda M. Austin

Retired President and Chief Executive Officer, The Aerospace Corporation

Age: 66
Director Since: December 2016
Independent: Yes

Chevron Committees:
- Board Nominating and Governance
- Public Policy and Sustainability (Chair)

Current Public Company Directorships:
- Amgen Inc.
- Virgin Galactic Holdings, Inc.

Prior Public Company Directorships (within last five years):
- None

Other Directorships and Memberships:
- Horatio Alger Association
- National Academy of Engineering
- University of Southern California (transitions to Life Trustee as of May 15, 2021)

Dr. Austin has held an adjunct Research Professor appointment at the University of Southern California's Viterbi School's Department of Industrial and Systems Engineering since 2007. She has been Co-founder and Chief Executive Officer of MakingSpace, Inc., a leadership and STEM (science, technology, engineering, and math) consulting firm, since December 2017. She is a World 50 executive advisor, fostering peer-to-peer discussions among senior executives from some of the world's largest companies. She served as Interim President of the University of Southern California from August 2018 until July 2019. She served as President and Chief Executive Officer of The Aerospace Corporation ("Aerospace"), a leading architect for the United States' national security space programs, from 2008 until her retirement in 2016. From 2004 to 2007, she was Senior Vice President, National Systems Group, at Aerospace. Dr. Austin joined Aerospace in 1979.

skills and qualifications

Business Leadership / Operations: Eight years as CEO of Aerospace. Thirty-seven-year career with Aerospace included numerous senior management and executive positions. CEO of MakingSpace, Inc., since December 2017.

Finance: More than a decade of financial responsibility and experience at Aerospace. Audit Committee member at Amgen Inc.

Global Business / International Affairs: Internationally recognized for her work in satellite and payload system acquisition, systems engineering, and system simulation. Former CEO of a company that provides space systems expertise to international organizations. Director of companies with international operations.

Government / Regulatory / Public Policy: Served on the President's Council of Advisors on Science and Technology and the President's Review of U.S. Human Space Flight Plans Committee. Appointed to the Defense Policy Board, the Defense Science Board, and the NASA Advisory Council.

Science / Technology / Engineering: Ph.D. in Industrial and Systems Engineering from the University of Southern California, Master of Science in both Systems Engineering and Mathematics from the University of Pittsburgh. Thirty-seven-year career in national security space programs. Director at Amgen Inc., a biotechnology company, and Virgin Galactic Holdings, Inc., the world's first commercial space line and vertically integrated aerospace company. Fellow of the American Institute of Aeronautics and Astronautics. Member of the National Academy of Engineering.

Research / Academia: Adjunct Research Professor at the University of Southern California's Viterbi School of Engineering. Former Interim President of the University of Southern California.

Table A2: Gender Composition of Corporate Boards

Year	Mean Male Share	Mean Male Share: CA HQ	Mean Male Share: quota-affected	Median Male Share	Median Male Share: CA HQ	Median Male Share: quota-affected
Pre-SB826						
2015	0.88	0.89	0.98	0.88	0.89	1.00
2016	0.87	0.88	0.99	0.88	0.88	1.00
2017	0.86	0.86	1.00	0.86	0.88	1.00
Post-SB826						
2018	0.84	0.84	0.96	0.86	0.86	1.00
2019	0.81	0.79	0.87	0.82	0.80	0.86
2020	0.79	0.75	0.81	0.80	0.75	0.80

Note:
The gender composition of firms is provided by BoardEx, and the headquarter location is contained in Compustat Snapshot. The sample restricts to US incorporated listed companies that report board gender and headquarter location. quota-affected firms are listed, have CA headquarters, and All-Male boards as of 2017.

Table A3: Size of Corporate Boards

Year	Mean Board Size	Mean Board Size (CA HQ)	Mean Board Size (Quota-Affected)	Median Board Size	Median Board Size (CA HQ)	Median Board Size (Quota-Affected)
Pre-SB826						
2015	8.42	7.73	6.65	8	8	7
2016	8.45	7.75	6.47	8	8	6
2017	8.41	7.81	6.39	8	8	6
Post-SB826						
2018	8.45	7.86	6.66	8	8	7
2019	8.48	8.05	6.97	8	8	7
2020	8.44	8.06	6.97	8	8	7

Note:
The gender composition of firms is provided by BoardEx, and the headquarter location is contained in Compustat Snapshot. The sample restricts to US incorporated listed companies that report board gender and headquarter location. Quota-Affected firms are listed, have CA headquarters, and All-Male boards as of 2017.

Table A4: Observable Firm Characteristics at the 2017 Cross Section by Treatment Status

	California HQ	Outside of California HQ	Difference	P Value
Board Size & Age				
Board Size	6.39	6.78	-0.39	0.00
Age	16.10	19.40	-3.30	0.00
Financial Information				
Net Income Percentile	0.40	0.52	-0.12	0.00
Total Revenues Percentile	0.44	0.52	-0.08	0.00
Cost of Goods Sold Percentile	0.44	0.52	-0.08	0.00
Book Value Percentile	0.44	0.51	-0.07	0.00
Total Assets Percentile	0.42	0.52	-0.09	0.00
Total Liabilities Percentile	0.43	0.52	-0.09	0.00
Market Value Percentile	0.47	0.51	-0.03	0.16
Industry Composition				
Agriculture, Forestry, Fishing Ind	0.01	0.00	0.01	0.21
Mining or Construction Ind	0.01	0.11	-0.11	0.00
Manufacturing Ind	0.60	0.38	0.22	0.00
Transport, Comm., Elec., Gas, Sanit. Ind	0.04	0.07	-0.03	0.05
Wholesale or Retail Trade Ind.	0.03	0.07	-0.04	0.01
Finance, Insurance, or Real Estate Ind.	0.14	0.23	-0.09	0.00
Services Ind	0.17	0.12	0.04	0.13
Non-classified Ind	0.01	0.01	0.00	0.64
Sample Size				
Number of Firms	196	929		

Note:
The sample restricts to companies that i) had All-Male boards in 2017 and ii) were listed and US incorporated in 2017. Raw means and p-values from a two-sided t-test reported. Financial variables derived from Compustat annual fundamental files. Percentiles calculated relative to the 2017 AMB sample considered.

Table A5: Persistence of All-Male Boards: Pr(All-Male Board in Year t+1|All-Male Board Status in Year t)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Not All-Male Board	0.02	0.03	0.02	0.02	0.02	0.03	0.02	0.02	0.01	0.01
All-Male Board	0.92	0.92	0.90	0.90	0.88	0.87	0.84	0.76	0.62	0.70

Note:
The gender composition of firms is provided by BoardEx, and the headquarter location is contained in Compustat Snapshot. The sample restricts to US incorporated listed companies that report board gender and headquarter location.

Table A6: Are California-based Companies With All-Male Boards Less Likely to Persist?

	$k = 1$	$k = 2$	$k = 3$
$F : \beta_{tk} = 0, \forall t$	1.34 (0.243)	3.14 (0.008)	3.85 (0.002)
$F : \beta_{tk} = 0, \forall t >= 2013$	1.33 (0.262)	4.91 (0.002)	6.11 (0)
$F : \beta_{2012k} = \beta_{2013k}$	1.48 (0.227)	3.17 (0.042)	5.11 (0.006)
$F : \beta_{tk} = \beta_{2010k}, \forall t > 2010$	1.53 (0.176)	3.96 (0.001)	5.02 (0)

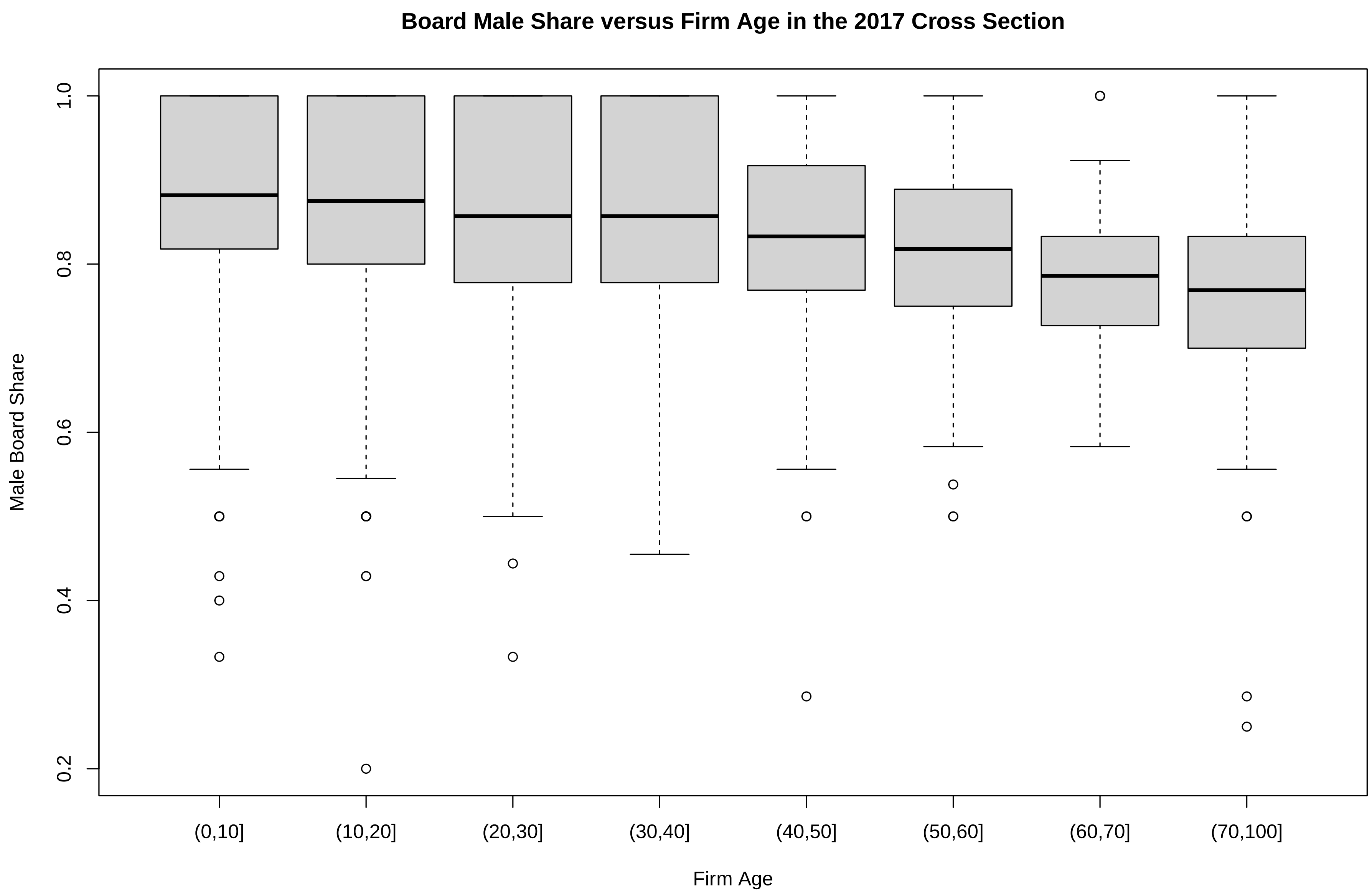
Note:
P values of the F test in parenthesis. β coefficients generated from the following ols regression: $1(AMB)_{ftc} = sum_{k>0}\beta_{ck} * Treated_{fc}1(t-c = k) + \lambda_{tc} + \alpha_{fc} + e_{ftc}$. Each cohort tracked up to 3 years after All-Male board status. 2010 - 2015 All-Male Board Cohorts Tracked.

Table A7: Board Gender Reporting Rates by Treatment Status and Year

Year	California HQ	Outside of California HQ	Difference	P Value	N: CA HQ	N: Outside of CA HQ
2015	0.86	0.85	0.01	0.74	168	787
2016	0.94	0.90	0.04	0.06	184	837
2017	1.00	1.00	0.00	1.00	196	928
2018	0.90	0.91	-0.01	0.71	177	846
2019	0.85	0.85	0.00	0.88	166	790
2020	0.78	0.78	0.00	0.94	153	722

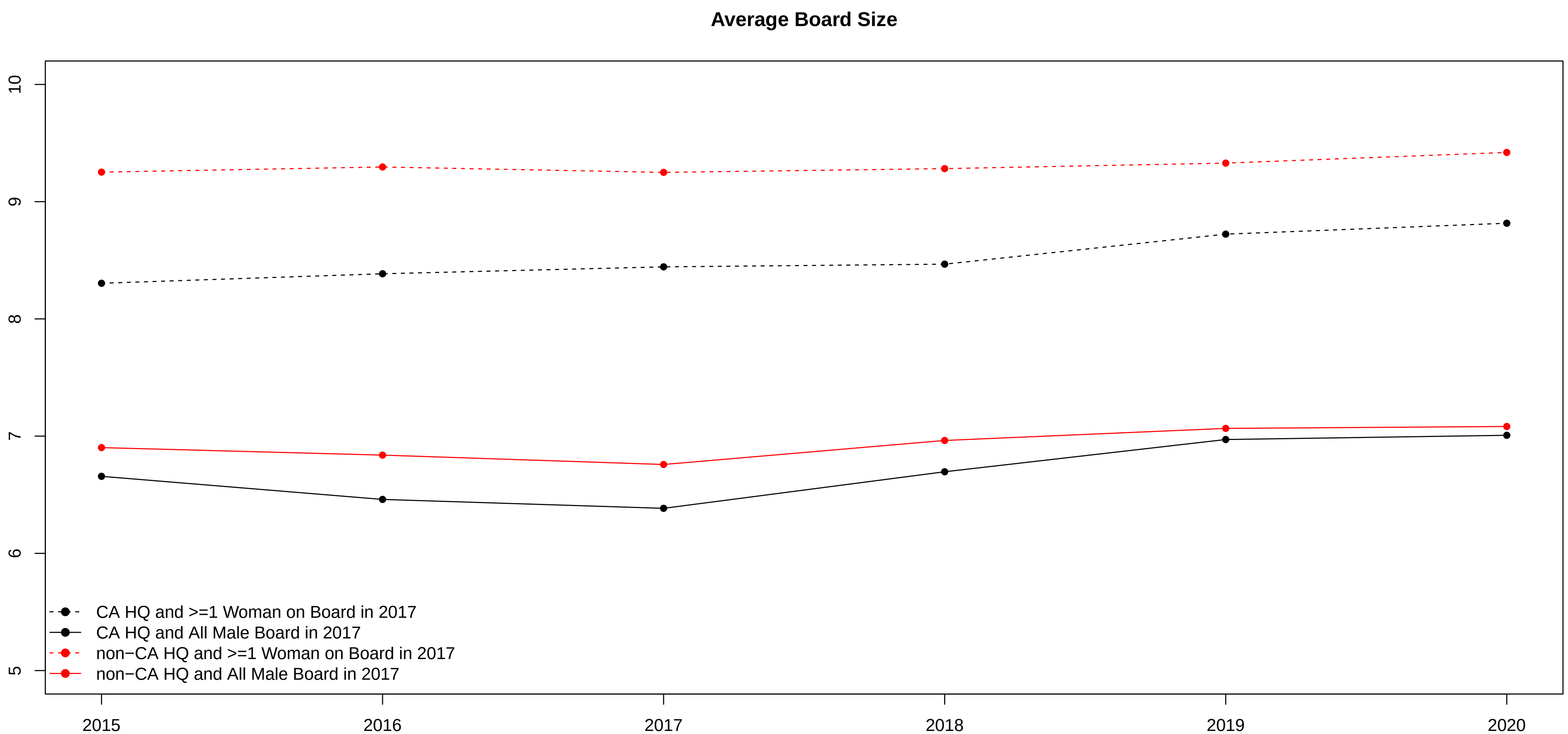
Note:
The sample restricts to companies that i) had All-Male boards in 2017 and ii) were listed and US incorporated in 2017. Raw means and p-values from a two-sided t-test reported.

Figure A2



Note: Sample restricts to domestic listed firms that report the board's gender composition in 2017.

Figure A3



Notes: CA SB 826, approved on 9/30/2018, mandated at least 1 woman be on the corporate board of any publicly held company with HQ in CA by 12/31/2019. Publicly held corporations have shares listed on the NASDAQ, NYSE, or NYSE American. The sample tracks an unbalanced panel of firms that were listed in 2017, the year before SB 826 was signed.

Table A8: Triple Differences: Effects of the Gender Quota on Board Composition

Dependent Variables:	Male Share of Board	1(All-Male Board)	Board Size	1(Expand Board)
Model:	(1)	(2)	(3)	(4)
Variables				
CA HQ $\times$ Year = 2015	-0.0143**	-0.0947***	0.2527*	-0.0491
	(0.0065)	(0.0343)	(0.1392)	(0.0614)
CA HQ $\times$ Year = 2016	-0.0065	-0.0500**	0.1476	-0.0193
	(0.0046)	(0.0252)	(0.1069)	(0.0585)
CA HQ $\times$ Year = 2018	-0.0127*	-0.0304	0.0914	0.0395
	(0.0068)	(0.0369)	(0.1049)	(0.0642)
CA HQ $\times$ Year = 2019	-0.0514***	-0.2922***	0.1127	0.0883
	(0.0088)	(0.0381)	(0.1432)	(0.0615)
CA HQ $\times$ Year = 2020	-0.0646***	-0.3108***	0.1454	0.0128
	(0.0096)	(0.0302)	(0.1562)	(0.0611)
Fixed-effects				
1(CA HQ)-Year	Yes	Yes	Yes	Yes
1(AMB)-Year	Yes	Yes	Yes	Yes
1(CA HQ)-1(AMB)	Yes	Yes	Yes	Yes
Fit statistics				
Observations	20,830	20,830	20,830	20,269
Dependent variable mean	0.83996	0.24671	8.5197	0.251

Clustered (Firm) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

The sample restricts to an unbalanced panel of firms that were domestic and listed in 2017. The time period covered is 2015 - 2020, with reported effects relative to the 2017 baseline. Standard errors clustered at the firm level. The 'Expand Board' indicator equals one if board size increases year over year.

Table A9: Effects of the Gender Quota on Board Composition: Restrict to Companies with All-Male Boards from 2015 - 2017

Dependent Variables:	Male Share of Board	1(All-Male Board)	Board Size
Model:	(1)	(2)	(3)
Variables			
CA HQ $\times$ Year = 2015	2.41×10^{-5}	-0.0010	-0.0075
	(0.0005)	(0.0022)	(0.1074)
CA HQ $\times$ Year = 2016	-8.96×10^{-5}	-0.0011	-0.1128
	(0.0004)	(0.0018)	(0.0769)
CA HQ $\times$ Year = 2018	-0.0037	-0.0285	0.0211
	(0.0063)	(0.0422)	(0.0964)
CA HQ $\times$ Year = 2019	-0.0567***	-0.3158***	0.3427***
	(0.0088)	(0.0451)	(0.1130)
CA HQ $\times$ Year = 2020	-0.0785***	-0.3128***	0.2038
	(0.0094)	(0.0359)	(0.1436)
Fixed-effects			
Firm	Yes	Yes	Yes
Year-1 digit SIC	Yes	Yes	Yes
Fit statistics			
Observations	4,666	4,666	4,666
Dependent variable mean	0.966	0.796	6.85

Clustered (Firm) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

Notes: The sample restricts to an unbalanced panel of firms that were domestic, listed, and had All-Male boards in 2015, 2016, and 2017. The time period covered is 2015 - 2020, with reported effects relative to the 2017 baseline. Standard errors clustered at the firm level.

Table A10: Observable Characteristics of Incoming Female Directors by State: 2010 - 2017

	CA HQ	non-CA HQ	Difference	P Value
Age & Education				
Age	55.06	55.46	-0.40	0.17
MBA Degree	0.40	0.38	0.02	0.43
Ivy League Degree	0.29	0.29	0.00	0.85
Law Degree	0.07	0.12	-0.05	0.00
Experience				
Prior Firm Tenure	0.04	0.04	0.00	0.87
Prior Board Experience	0.78	0.74	0.04	0.01
Prior C-Suite Experience	0.69	0.62	0.07	0.00
Prior Same Sector Experience	0.51	0.37	0.13	0.00
Connections				
Prior Connection to Incumbent Board	0.44	0.40	0.04	0.06
Prior Board Connection with Incumbent Board	0.24	0.22	0.02	0.15
Prior Connections to the C-Suite	0.33	0.29	0.05	0.01
Prior Same Gender Connection to Incumbent Board	0.13	0.14	-0.01	0.30
Non-Executive Director	0.92	0.94	-0.02	0.04
Network Size	2051.60	1545.43	506.18	0.00
Sample Size				
Number of Positions	782	4322		
Number of Directors	661	3242		
Number of Companies	498	2628		

Note:
The sample restricts to incoming female directors within domestic listed companies. Raw means and p-values from a two-sided t-test reported.

Table A11: Observable Firm Characteristics at the 2017 Cross Section by Headquarter Location

	California HQ	Outside of California HQ	Difference	P Value
Board Size & Age				
Board Size	7.81	8.53	-0.72	0.00
Age	19.06	25.17	-6.11	0.00
Financial Information				
Net Income Percentile	0.41	0.52	-0.11	0.00
Total Revenues Percentile	0.43	0.51	-0.08	0.00
Cost of Goods Sold Percentile	0.43	0.52	-0.08	0.00
Book Value Percentile	0.44	0.51	-0.07	0.00
Total Assets Percentile	0.42	0.52	-0.10	0.00
Total Liabilities Percentile	0.42	0.52	-0.10	0.00
Market Value Percentile	0.48	0.50	-0.03	0.03
Industry Composition				
Agriculture, Forestry, Fishing Ind	0.00	0.00	0.00	0.26
Mining or Construction Ind	0.02	0.06	-0.05	0.00
Manufacturing Ind	0.51	0.34	0.17	0.00
Transport, Comm., Elec., Gas, Sanit. Ind	0.03	0.08	-0.05	0.00
Wholesale or Retail Trade Ind.	0.05	0.09	-0.03	0.00
Finance, Insurance, or Real Estate Ind.	0.17	0.29	-0.11	0.00
Services Ind	0.21	0.13	0.08	0.00
Non-classified Ind	0.00	0.01	0.00	0.11
Sample Size				
Number of Firms	625	3177		

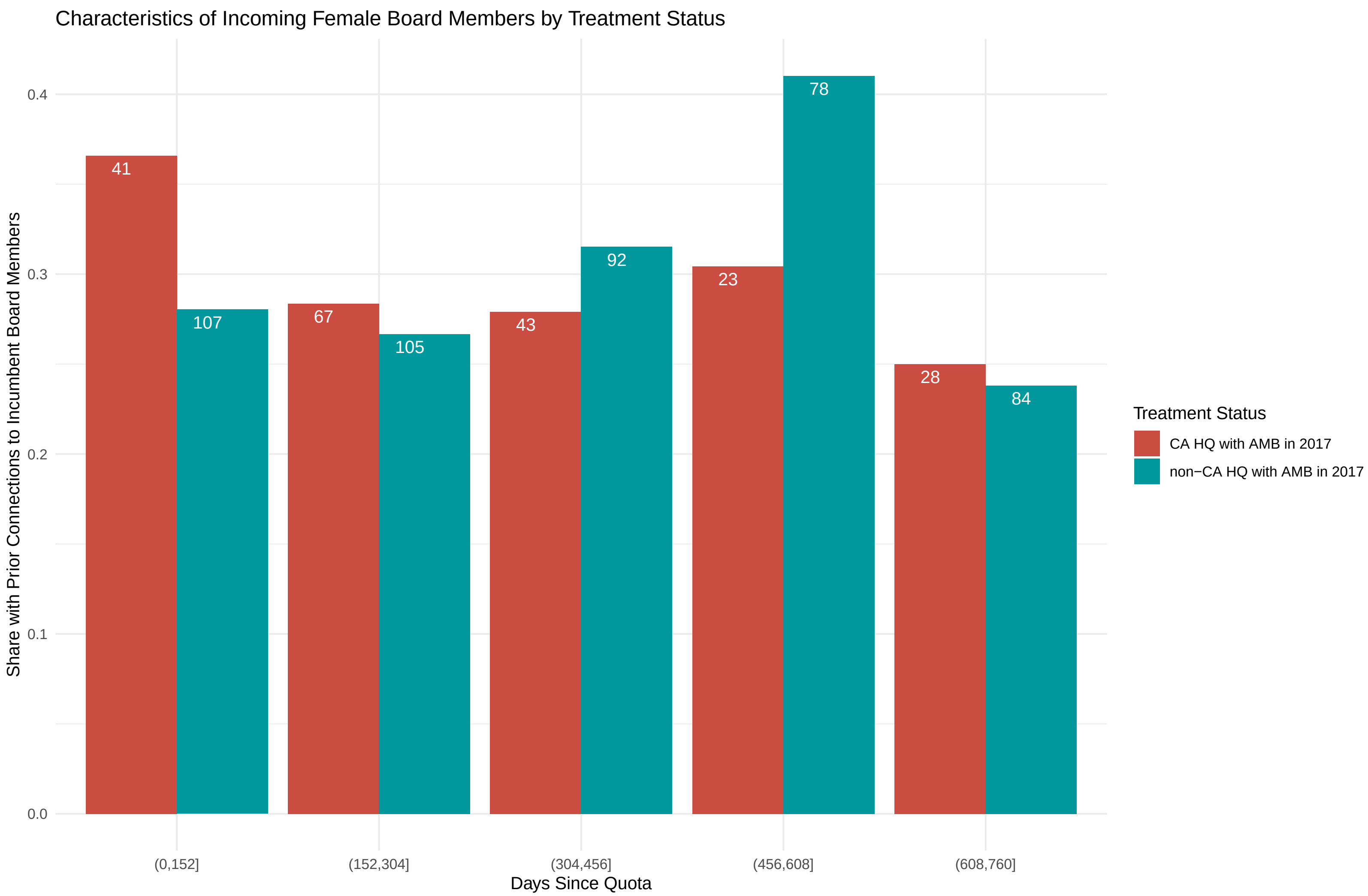
Note:
The sample restricts to companies that were listed and US incorporated in 2017. Raw means and p-values from a two-sided t-test reported. Financial variables derived from Compustat annual fundamental files. Percentiles calculated relative to the 2017 sample considered.

Table A12: Observable Firm Characteristics in 2017 by Status in the Balanced Panel

	Firms in Balanced Panel	Firms not in Balanced Panel	Difference	P Value
Board Size & Age				
Board Size	8.60	7.88	0.72	0.00
Age	27.09	15.72	11.37	0.00
Financial Information				
Net Income Percentile	0.53	0.41	0.12	0.00
Total Revenues Percentile	0.53	0.42	0.11	0.00
Cost of Goods Sold Percentile	0.53	0.42	0.10	0.00
Book Value Percentile	0.53	0.42	0.11	0.00
Total Assets Percentile	0.53	0.42	0.11	0.00
Total Liabilities Percentile	0.53	0.42	0.10	0.00
Market Value Percentile	0.53	0.42	0.11	0.00
Industry Composition				
Agriculture, Forestry, Fishing Ind	0.00	0.00	0.00	0.96
Mining or Construction Ind	0.05	0.08	-0.03	0.00
Manufacturing Ind	0.37	0.37	0.01	0.69
Transport, Comm., Elec., Gas, Sanit. Ind	0.08	0.07	0.01	0.34
Wholesale or Retail Trade Ind.	0.08	0.09	-0.01	0.33
Finance, Insurance, or Real Estate Ind.	0.29	0.20	0.09	0.00
Services Ind	0.13	0.17	-0.04	0.00
Non-classified Ind	0.00	0.02	-0.02	0.00
Sample Size				
Number of Firms	2824	978		

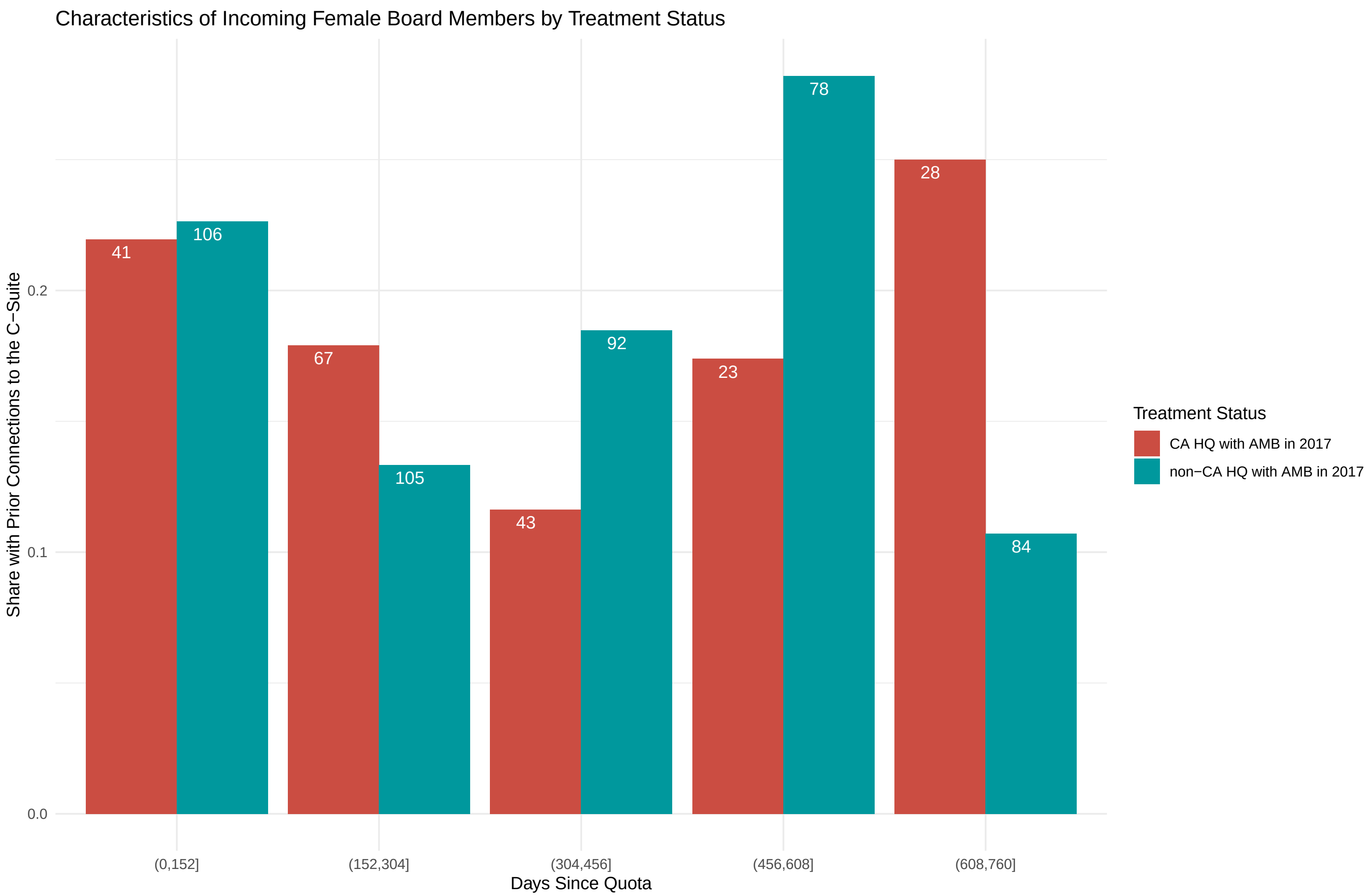
Note:
The sample restricts to companies that were listed and US incorporated in 2017. Raw means and p-values from a two-sided t-test reported. Firms in the balanced panel report gender for all years between 2015-2020. Financial variables derived from Compustat annual fundamental files. Percentiles calculated relative to the 2017 sample of domestic, listed firms considered.

Figure A4



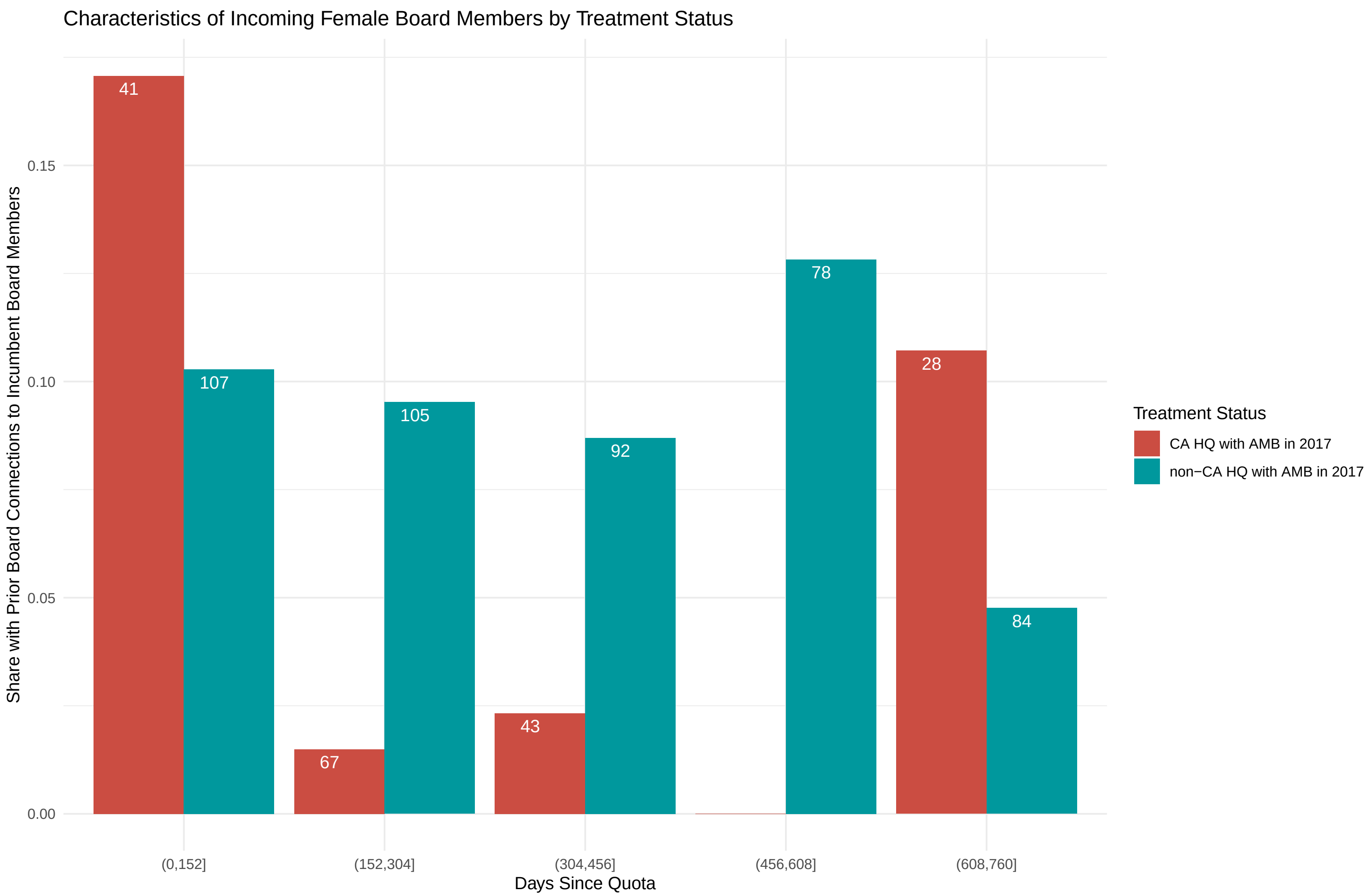
Note: The compliance period ended 456 days after the quota's passage. Text inside bars represent number of female directors added in a given 152 day window.

Figure A5



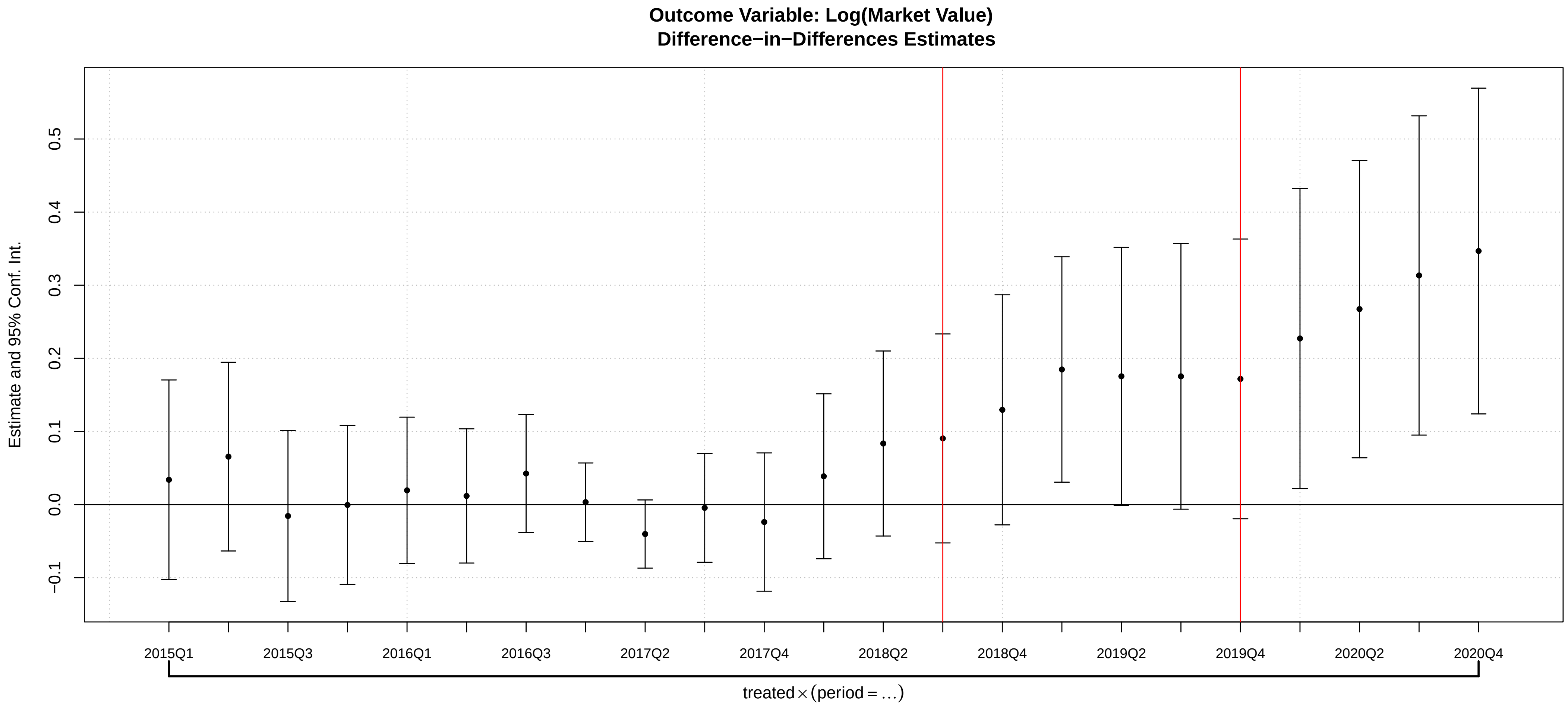
Note: The compliance period ended 456 days after the quota's passage. Text inside bars represent number of female directors added in a given 152 day window.

Figure A6



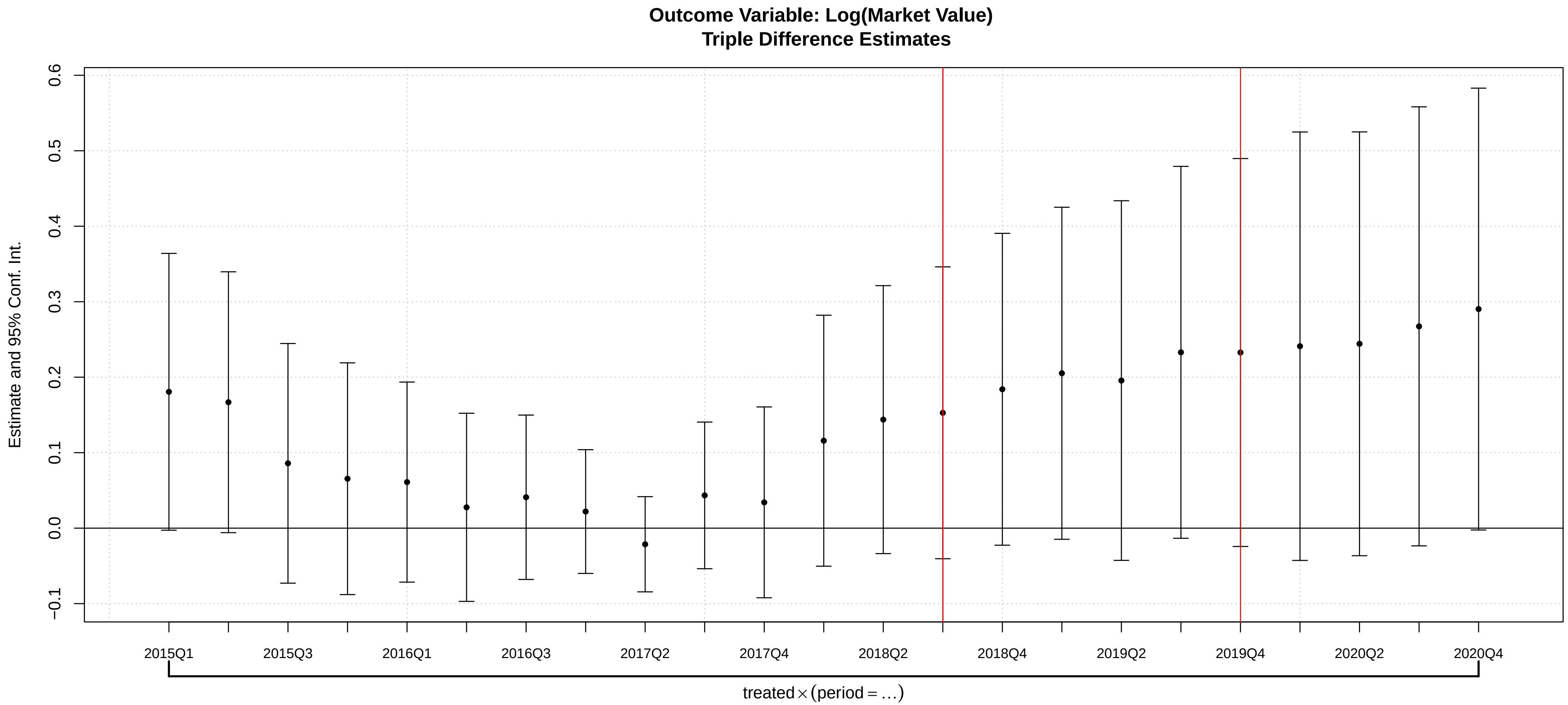
Note: The compliance period ended 456 days after the quota's passage. Text inside bars represent number of female directors added in a given 152 day window.

Figure A7



The sample restricts to an unbalanced panel of firms that were domestic, listed, and had all male boards in 2017.
The time period covered is 2015 Q1 − 2020 Q4, with reported effects relative to 2017 Q1. Treated firms have a California HQ in 2017.
Standard errors are clustered at the firm level. Regression contains additive firm and period x industry fixed effects.
Sample restricts to companies with positive assets.

Figure A8



The sample restricts to an unbalanced panel of firms that were domestic and listed in 2017.
The time period covered is 2015 Q1 − 2020 Q4, with reported effects relative to 2017 Q1. Treated firms have an all male board and a California HQ in 2017.
Standard errors are clustered at the firm level. Regression contains interacted HQ state−period fixed effects, AMB status−period fixed effects, and HQ state − AMB status fixed effects.
Sample restricts to companies with positive assets.

Table 2: Triple Difference: Are Reduced Form Financial Performance Effects Driven by California Specific Trends?

Dependent Variables:	Mkt Val	ROA	Q	Net Income	Revenues	COGS	Shareholders' Equity	Assets	Liabilities
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2015									
Treated × Period = 2015Q1	0.0244*	-0.0300	0.0025	-0.0148	0.0098	0.0016	0.0142	0.0099	0.0035
	(0.0132)	(0.0273)	(0.0268)	(0.0203)	(0.0108)	(0.0120)	(0.0132)	(0.0110)	(0.0115)
Treated × Period = 2015Q2	0.0230*	-0.0237	0.0007	-0.0075	0.0130	0.0019	0.0134	0.0089	0.0026
	(0.0124)	(0.0288)	(0.0268)	(0.0207)	(0.0105)	(0.0118)	(0.0130)	(0.0111)	(0.0115)
Treated × Period = 2015Q3	0.0117	-0.0301	-0.0056	-0.0044	0.0043	-0.0075	0.0115	0.0076	0.0029
	(0.0114)	(0.0277)	(0.0258)	(0.0208)	(0.0105)	(0.0120)	(0.0115)	(0.0101)	(0.0109)
Treated × Period = 2015Q4	0.0062	-0.0466*	-0.0038	-0.0173	0.0025	-0.0124	0.0140	0.0056	0.0020
	(0.0109)	(0.0275)	(0.0264)	(0.0212)	(0.0106)	(0.0119)	(0.0106)	(0.0099)	(0.0106)
2016									
Treated × Period = 2016Q1	0.0080	-0.0067	0.0059	0.0089	0.0047	-0.0100	0.0151*	0.0035	-0.0023
	(0.0092)	(0.0220)	(0.0254)	(0.0165)	(0.0077)	(0.0089)	(0.0085)	(0.0072)	(0.0081)
Treated × Period = 2016Q2	0.0034	-0.0084	0.0033	0.0033	0.0075	-0.0093	0.0085	0.0029	0.0018
	(0.0086)	(0.0243)	(0.0242)	(0.0179)	(0.0076)	(0.0085)	(0.0082)	(0.0068)	(0.0076)
Treated × Period = 2016Q3	0.0045	-0.0192	-0.0004	-0.0062	-0.0015	-0.0094	0.0027	-0.0009	-0.0019
	(0.0072)	(0.0247)	(0.0238)	(0.0187)	(0.0075)	(0.0081)	(0.0075)	(0.0065)	(0.0069)
Treated × Period = 2016Q4	0.0034	-0.0251	-0.0017	-0.0233	-0.0025	-0.0135*	0.0047	0.0049	0.0032
	(0.0054)	(0.0220)	(0.0188)	(0.0172)	(0.0067)	(0.0077)	(0.0067)	(0.0061)	(0.0057)
2017									
Treated × Period = 2017Q2	-0.0023	0.0023	-0.0215	0.0052	0.0002	-0.0027	-0.0012	0.0046	0.0063
	(0.0042)	(0.0213)	(0.0157)	(0.0143)	(0.0042)	(0.0045)	(0.0048)	(0.0039)	(0.0041)
Treated × Period = 2017Q3	0.0068	-0.0073	-0.0067	0.0018	0.0008	-0.0040	0.0018	0.0026	0.0046
	(0.0066)	(0.0233)	(0.0179)	(0.0172)	(0.0060)	(0.0057)	(0.0058)	(0.0043)	(0.0050)
Treated × Period = 2017Q4	0.0075	0.0248	-0.0281	0.0105	0.0014	-0.0048	0.0063	0.0028	0.0004
	(0.0084)	(0.0293)	(0.0217)	(0.0248)	(0.0066)	(0.0063)	(0.0071)	(0.0052)	(0.0059)
2018									
Treated × Period = 2018Q1	0.0167	-0.0397*	-0.0167	-0.0220	0.0023	0.0003	0.0142	0.0132*	0.0094
	(0.0109)	(0.0218)	(0.0243)	(0.0160)	(0.0083)	(0.0095)	(0.0096)	(0.0076)	(0.0081)
Treated × Period = 2018Q2	0.0197*	-0.0028	-0.0153	-0.0011	0.0067	0.0010	0.0174*	0.0150*	0.0061
	(0.0117)	(0.0250)	(0.0254)	(0.0189)	(0.0090)	(0.0093)	(0.0104)	(0.0080)	(0.0085)
Treated × Period = 2018Q3	0.0190	-0.0341	-0.0057	-0.0259	0.0027	0.0023	0.0151	0.0128	0.0042
	(0.0127)	(0.0251)	(0.0254)	(0.0181)	(0.0087)	(0.0096)	(0.0112)	(0.0083)	(0.0087)
Treated × Period = 2018Q4	0.0221*	-0.0332	0.0019	-0.0469**	0.0040	0.0026	0.0169	0.0167*	0.0095
	(0.0132)	(0.0279)	(0.0266)	(0.0213)	(0.0095)	(0.0103)	(0.0120)	(0.0089)	(0.0093)

(Continues)

Figure A9

(Continued)

Dependent Variables:	Mkt Val	ROA	Q	Net Income	Revenues	COGS	Shareholders' Equity	Assets	Liabilities
Model:	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
2019									
Treated × Period = 2019Q1	0.0273*	-0.0016	0.0132	-0.0195	0.0042	0.0086	0.0189	0.0132	0.0032
	(0.0147)	(0.0264)	(0.0262)	(0.0190)	(0.0110)	(0.0118)	(0.0138)	(0.0109)	(0.0113)
Treated × Period = 2019Q2	0.0263*	-0.0198	0.0070	-0.0169	0.0059	0.0060	0.0182	0.0131	0.0026
	(0.0156)	(0.0266)	(0.0282)	(0.0196)	(0.0109)	(0.0118)	(0.0142)	(0.0111)	(0.0114)
Treated × Period = 2019Q3	0.0310**	-0.0234	-0.0007	-0.0337	0.0013	0.0053	0.0145	0.0124	0.0017
	(0.0157)	(0.0294)	(0.0287)	(0.0214)	(0.0110)	(0.0120)	(0.0146)	(0.0112)	(0.0115)
Treated × Period = 2019Q4	0.0321**	-0.0158	0.0072	-0.0209	-0.0078	-0.0054	0.0127	0.0076	-0.0039
	(0.0162)	(0.0290)	(0.0306)	(0.0214)	(0.0114)	(0.0121)	(0.0150)	(0.0115)	(0.0118)
2020									
Treated × Period = 2020Q1	0.0382**	-0.0057	-0.0100	-0.0338	-0.0068	0.0042	0.0186	0.0102	6×10^{-5}
	(0.0186)	(0.0318)	(0.0319)	(0.0251)	(0.0139)	(0.0143)	(0.0170)	(0.0134)	(0.0137)
Treated × Period = 2020Q2	0.0405**	0.0203	0.0096	-0.0316	6.8×10^{-5}	0.0057	0.0202	0.0119	0.0014
	(0.0192)	(0.0322)	(0.0304)	(0.0248)	(0.0145)	(0.0145)	(0.0176)	(0.0138)	(0.0140)
Treated × Period = 2020Q3	0.0446**	-0.0228	0.0021	-0.0204	-0.0064	0.0042	0.0213	0.0120	0.0011
	(0.0200)	(0.0314)	(0.0323)	(0.0239)	(0.0143)	(0.0145)	(0.0177)	(0.0139)	(0.0142)
Treated × Period = 2020Q4	0.0508**	-0.0161	0.0080	-0.0360	-0.0059	-0.0062	0.0227	0.0107	-0.0025
	(0.0203)	(0.0338)	(0.0319)	(0.0251)	(0.0149)	(0.0145)	(0.0185)	(0.0144)	(0.0144)
Fixed-effects									
$1(CA\ HQ)_{2017}$-Period	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$1(AMB)_{2017}$-Period	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$1(CA\ HQ)_{2017}$-$1(AMB)_{2017}$	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fit statistics									
Observations	80,500	81,070	80,492	81,070	72,923	81,027	81,155	81,164	81,158
Dependent variable mean	0.500	0.500	0.500	0.500	0.501	0.500	0.500	0.500	0.50015
Wald (joint nullity), stat.	0.855	0.858	0.398	0.832	0.806	1.23	0.609	1.06	1.2463
Wald (joint nullity), p-value	0.661	0.656	0.995	0.693	0.727	0.197	0.926	0.375	0.191

Clustered (Firm) standard-errors in parentheses
*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*
Notes: The sample restricts to an unbalanced panel of firms that were domestic and listed in 2017. The time period covered is 2015 Q1 - 2020 Q4, with reported effects relative to 2017 Q1. Treated firms have an all male board and a California HQ in 2017. Standard errors are clustered at the firm level. Regression contains interacted HQ state-period fixed effects, AMB status-period fixed effects, and HQ state - AMB status fixed effects. outcome variables are adjusted to represent percentiles within a quarter-year (among firms in the regression sample). Sample restricts to companies with positive assets. ROA is Net Income/Assets, Tobin's Q is calculated as Market Value/Shareholders' Equity.