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Continuity and Change on Corporate Boards

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Abstract

The number of women on public company boards has increased dramatically in recent years. We study where these women directors came from and how they were absorbed. Since 2018, women with board experience have obtained significantly more board seats than their male counterparts. Women directors are also more likely to have no previous board experience than men, indicating movement on both the intensive and extensive margins. Adding a woman director is associated with a transitory increase in board size roughly one third of the time. This increase is offset when an existing director rolls off, which typically happens within 1 year.

I. Introduction

The board of directors occupies a central role in corporate governance. Its duties include hiring and supervising the executives that run the company, determining their compensation, setting high-level corporate strategy, navigating key corporate transactions (such as mergers and takeovers), and generally representing shareholders' interests.

It is well established that the number of women directors at public companies has increased substantially over time and that larger companies tend to have more women directors than smaller ones (Knyazeva, Knyazeva, and Naveen (2021), Jiang (2023)). While this increase long predates the contemporary discussion of diversity and inclusion, commentators often point to State Street's 2017 "fearless girl" campaign as the beginning of a concerted effort to increase the number of women on corporate boards, particularly at smaller companies. Since then, a

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number of legal and regulatory interventions have sought to accomplish the same thing, including legislative action in California (Klick (2025)) and regulatory action by the NASDAQ stock exchange.[1]

We study the dynamics of this transition. Using data from BoardEx, we document three sets of patterns. The first represents change. We find that, starting toward the end of the 2010s, women with board experience see a jump in their subsequent board positions relative to their male counterparts. This is consistent with the idea that many companies began to more aggressively seek out female candidates in that period. Women directors are also more likely to be "newcomers" (i.e., to have no previous board experience). Hence, the increase in women directors is coming both through additional positions for existing women directors of public companies and through the addition of women from outside that pool. Two recent diversity initiatives—California Senate Bill 826 and campaigns by the "Big Three" asset managers—especially benefit newcomer women directors.

The second set of patterns—which focus on board committees—speaks to gradual evolution. The rising share of women directors is coupled with a commensurate increase in women serving on or chairing important board committees, with the exception of the executive committee. We also show that women's committee leadership has increased over time. While relevant experience (measured either as a committee chair or tenure as a member) benefits women less than men in the early part of our sample, this difference has decreased substantially over time.

The third set of patterns represents continuity. Average board size has remained reasonably stable over the last nine decades (Holderness, Kroszner, and Sheehan (1999), Graham, Kim, and Leary (2020)), potentially reflecting both the stickiness of the company characteristics that systematically determine board size and the stability of company-specific idiosyncratic factors (Boone, Field, Karpoff, and Raheja (2007)). A company can add women to its board in two ways: by expanding the board or by replacing existing male directors with women. While we find evidence of both, the increase in board size is transitory and disappears quickly. The addition of women, therefore, has largely occurred through replacement. Replacement can occur either through natural attrition (retirement or ordinary board refreshment) or by the removal of men who would otherwise have stayed on as directors. We find no evidence of a decline in the average tenure of departing male directors, suggesting that the former is the norm.

This third set of patterns highlights a tradeoff in board construction: a larger board may benefit from more diversity, but size may also come with costs. It also suggests that companies tend not to remove incumbent directors prematurely to make room for new candidates. Last, our results point to a second reason why efforts to change board composition are likely to be gradual: not only must companies identify new candidates, they may also need to wait for a seat to open up (or be on the verge of opening up) through retirement or the standard board refreshment process.

Our work contributes to two strands of the literature. We add to the literature on board diversity (Knyazeva et al. (2021)). A growing literature examines the causes (Hillman, Shropshire, and Cannella Jr. (2007), Giannetti and Wang (2023)) and

[1]Both of these interventions have since been invalidated by courts.

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consequences (Adams and Ferreira (2009), Kim and Starks (2016), Ferreira, Ginglinger, Laguna, and Skalli (2017), Bernile, Bhagwat, and Yonker (2018), Hwang, Shivdasani, and Simintzi (2018), Greene, Intintoli, and Kahle (2020), Bakke, Field, Mahmudi, and Virani (2021), Gertsberg, Mollerstrom, and Pagel (2021), Kuzmina and Melentyeva (2021), and Maghin (2022)) of greater board diversity, using a variety of settings and identification strategies. Greene, Intintoli, and Kahle (2023) show that women appointed by firms in response to a diversity initiative (California SB 826) are not underqualified relative to other directors and that the market response to the two groups of directors is the same. Their results challenge the findings of Boyallian, Dasgupta, and Homroy (2020), who argue that recruiting first-time women directors is particularly costly, suggesting supply frictions in the director labor market.

Our contribution is twofold. First, we use descriptive evidence on the U.S. director labor market for over three decades to show that over time, firms become significantly more likely to add women to their boards who had previous experience at smaller firms, or who had no previous director experience. Smaller firms become especially likely to add women directors who have no director experience. Second, we exploit two quasi-natural experiments—Big Three institutional ownership and California SB 826—and find that both benefit women without previous director experience.

Our results also advance the literature on board size and structure (Lipton and Lorsch (1992), Jensen (1993), John and Senbet (1998), Raheja (2005), and Boone et al. (2007)). A larger board can allow for more diversity of both biography and expertise (Fos, Jiang, and Nie (2024)). However, shareholders react positively (negatively) to large reductions (expansions) in board size (Yermack (1996)), suggesting that a larger board can be value-destroying (Gertner and Kaplan (1996), Jenter, Schmid, and Urban (2023)). We shed new light on the interaction between board size, board composition—notably, the percentage of women—and committee structure.

We make three contributions to this literature. First, we show that over time, especially after 2017, women are more likely to join, or even lead, influential board committees. Second, Field, Souther, and Yore (2020) show that qualifications are less predictive of selection as committee chair for women than for men. Our results indicate that this gap between the value of women's and men's qualifications shrinks (and, in some cases, even disappears) during 2018–2022. Third, we show how firms balance the desire to add more women to their boards with preferences to remain at their optimal board size. Absent a preference for a particular board size, firms could add any number of new directors in response to internal or external pressures. In contrast, a strong preference for an optimal board size would lead to a swift reversion to the optimum. Our results are consistent with the latter pattern, suggesting that even as preferences for board diversity change, firms adhere to what they believe is an optimal board size. Conceptually, our analysis of board size is akin to the literature on optimal capital structure and the speed of adjustment toward a target leverage ratio (Fischer, Heinkel, and Zechner (1989), Leary and Roberts (2005), and Flannery and Rangan (2006)).

Our findings present an interesting contrast with those in Linck, Netter, and Yang (2009), which studies changes on corporate boards as a response to the

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Sarbanes-Oxley Act of 2002. They find that companies responded to this shock to both the demand for independent directors and director workload at public companies with a modest but persistent increase in board size. In contrast, we study a period during which demand for women directors increases substantially with no concomitant increase in board workload and find only a transitory increase in board size.

II. Research Questions

The focus of our article is the construction and evolution of corporate boards, amid shifting shareholder preferences for board diversity. First, we study where firms find women directors. Firms can add new board members who have experience as independent directors of similar-sized firms, at smaller firms (only), or no such experience at all. We examine how the previous experience of newly appointed women independent directors changes over time. We extend this analysis by exploring the committee assignments of women compared to men.

Second, we study how women directors are added to boards, shedding light on how companies and their shareholders weigh the preference for women directors against the costs of a larger board. Firms can add women directors by increasing the size of the board—temporarily or permanently—or by replacing incumbent board members when their terms end, leading to no change in board size. To understand how firms navigate this tradeoff, we first analyze how board size has changed over the last three decades, particularly as the percentage of women directors increased. Then, we look at how board size changes around the addition of women directors. Last, if firms replace male directors with women, men may be leaving prematurely, before their term was intended to end. To examine this possibility, we study changes in the average tenure of departing male directors when a woman is added.

III. Data Sources and Variable Construction

We obtain data on director biographical information (gender and age), director positions (including tenure), board composition, and committee assignments from BoardEx. We focus on U.S. firms for 1990–2022. We use data on share prices and the number of shares outstanding from CRSP to calculate equity market capitalization, which is our proxy for size. Accounting data are from the CRSP/Compustat Merged Database. Data on classified boards and director attendance are from Institutional Shareholder Services (ISS), which focuses on S&P 500 index firms, yielding a narrower cross section than BoardEx. We link BoardEx and CRSP in three steps. First, we use the BoardEx-CRSP linking file from Wharton Research Data Services (WRDS). We perform a secondary merge using CUSIP and year. Last, we use fuzzy matching for the remaining firms and manually inspect matches with scores below 80%. We use a similar three-step process to match directors between BoardEx and ISS.[2]

We separate firms into four size groups for the empirical analyses. The largest group (mega-cap firms) consists of firms ranked 1–50 by size in a given year, where

[2]We thank Laura Field, Matt Souther, and Adam Yore for graciously sharing their ISS-BoardEx bridge file for their sample period of 2006–2017.

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1 is the largest firm by market capitalization that year. The second largest group (large-cap firms) contains firms ranked 51–500. The remaining two groups are firms ranked 501–1000 (mid-cap firms) and those ranked 1001 and below (small-cap firms). For individual director-level analyses, an individual's size group in a given year is based on the size of the largest company that the individual served as a director of that year. For firm-level analyses, a firm's size group is based on firm size that year.

Table 1 describes our sample. Panel A summarizes director characteristics for each director-firm-year observation in our sample. Eleven percent of our sample directors are women, falling between the 9% value in Adams and Ferreira (2009) for 1996–2006 and the 15%–16% mark in Fedaseyeu, Linck, and Wagner (2018) and

TABLE 1

Descriptive Statistics

Table 1 presents descriptive statistics for our sample of directors in BoardEx 1990–2022, with a 2-year lookback window. Panel A describes director characteristics. The unit of observation in Panel A is director × firm × year. Panel B provides firm-level descriptives for our sample firms, based on data from BoardEx, CRSP, and Compustat. Panel C compares the careers of managers entering the sample through an affiliation with S&P 500 index firms and non-S&P 500 index firms. The unit of observation in Panels B and C is firm × year. All dollar values are in millions of 2022 dollars. *Age* is the director's age in years. *Tenure* is the number of years served by the director in this position. *Board size* is the total number of board members. *% Outside directors* is the number of directors who are not employees of the firm divided by board size. *Sales* is total sales. *Market Capitalization* is the number of shares outstanding multiplied by share price. *Leverage* is total debt divided by total assets. *Market-to-book* is the market value of the firm divided by book assets. *ROA* is return on assets calculated as operating income divided by total assets. *CapEx/Assets* is capital expenditures divided by total assets. *R&D/Assets* is research and development expenses divided by total assets. The sample consists of 997,307 director × firm × year observations from 129,049 firm × years. There are 84,613 unique directors and 11,303 unique firms in our sample.

Panel A. Director Characteristics (Director-FirmYears)

	Mean	Median	Std. Dev.	p25	p75
Female (d)	0.11	0.00	0.32	0.00	0.00
Age	59.40	60	9.95	53	66
Tenure	6.27	4.00	6.73	1.00	9.00
Nominating/governance committee	0.28	0.00	0.45	0.00	1.00
Audit committee	0.31	0.00	0.46	0.00	1.00
Executive committee	0.06	0.00	0.25	0.00	0.00
Chair nom./gov. comm.	0.07	0.00	0.25	0.00	0.00
Chair audit comm.	0.08	0.00	0.27	0.00	0.00
Chair other comm.	0.19	0.00	0.39	0.00	0.00

Panel B. Firm Characteristics (Firm-Years)

Board size	7.76	8.00	3.52	5.00	10.00
% Outside directors	0.78	0.83	0.18	0.71	0.89
Sales	2,719	236	13,333	46	1,177
Market capitalization	6,096	514	35,312	118	2,359
Leverage	0.22	0.16	0.31	0.03	0.34
Market-to-book	2.33	1.37	44.98	1.04	2.23
ROA	0.01	0.08	0.53	0.01	0.15
CapEx/assets	0.05	0.03	0.07	0.01	0.06
R&D/assets	0.06	0.00	0.21	0.00	0.05

Panel C. Firm Characteristics (Firm-Years) by Size Group

	1–50	51–500	501–1000	1001+
Board size	12.67	10.56	9.26	7.06
% Outside directors	0.83	0.83	0.81	0.77
Sales	63,714	11,499	2801	439
Market capitalization	208,257	23,084	4448	573
Leverage	0.26	0.27	0.25	0.21
Market-to-book	2.81	2.45	4.22	2.02
ROA	0.16	0.14	0.12	−0.02
CapEx/assets	0.05	0.05	0.05	0.05
R&D/assets	0.04	0.02	0.03	0.07

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Field et al. (2020) for 2006–2010 and 2006–2017, respectively. The average director in our sample is aged 59 and has served 6 years in their position. Roughly 30% of independent directors sit on each of the nominating or governance committee (the "Nom/Gov" committee) and the audit committee, and 6% sit on the executive committee. Seven (eight) percent chair the nom/gov (audit) committee, while 19% chair another committee.

Panel B of Table 1 describes our sample of firms. The average (median) board has 7.76 (8) members and 78% independent directors. The latter matches the numbers in Fedaseyeu et al. (2018) and Field et al. (2020) very closely. Our sample characteristics are similar to those in previous work (Adams and Ferreira (2009), Fedaseyeu et al. (2018), Field et al. (2020), Cziraki and Robertson (2021), and Jiang (2023)), with slightly more coverage of small listed firms (Bogan, Potemkina, and Yonker (2021)). Panel C of Table 1 breaks down sample averages by firm size groups.

IV. Results

A. Change: New Appointments

We first examine whether women receive more new independent directorships than men, conditional on having similar experience. This analysis is similar in spirit to Field et al. (2020), with one structural difference. Because firms can reach outside the set of individuals who are already directors at other companies, we separately analyze two potential pools that new directors may come from. First, we study the appointments of new directors with experience at other firms. Second, we examine the addition of "newcomer" directors—those with no previous board experience.

In our first test, we proxy for experience using the size rank of the largest company on which the individual serves as a director (measured by equity market capitalization) in a given year. We then measure the number of independent director appointments the individual has 2 years later. Accordingly, the unit of observation is director × year. We focus attention on independent director positions because executive positions—which involve working as a top executive at the company —typically involve a more complex search and selection process.[3] We control for the number of current positions, director age fixed effects, and whether the individual is currently an executive of a public company, as that may affect the amount of time she has to take on additional roles.[4] The regression model is, for each year t,

$$(1)\quad Number\ Positions_{i,t} = \delta \times Female_i + \gamma \times Number\ Positions_{i,t-2} + \Phi_{i,t-2} + \varepsilon_{i,t},$$

where $NumberPositions_{i,t}$ is the number of independent director positions individual i has in year t, $Female_i$ is an indicator variable equal to 1 if individual i is female. $\Phi_{i,t-2}$ is a vector of fixed effects for individual i in year $t-2$, and $\varepsilon_{i,t}$ is the error term. The fixed effects are individual i's age in year $t-2$ and an indicator variable equal to

[3]Figure IA.1 in the Supplementary Material repeats the analysis using all director positions and shows similar results.

[4]In untabulated tests, we find similar results if we instead use a linear control for age, or age category fixed effects with 2-year, 3-year, or 5-year categories.

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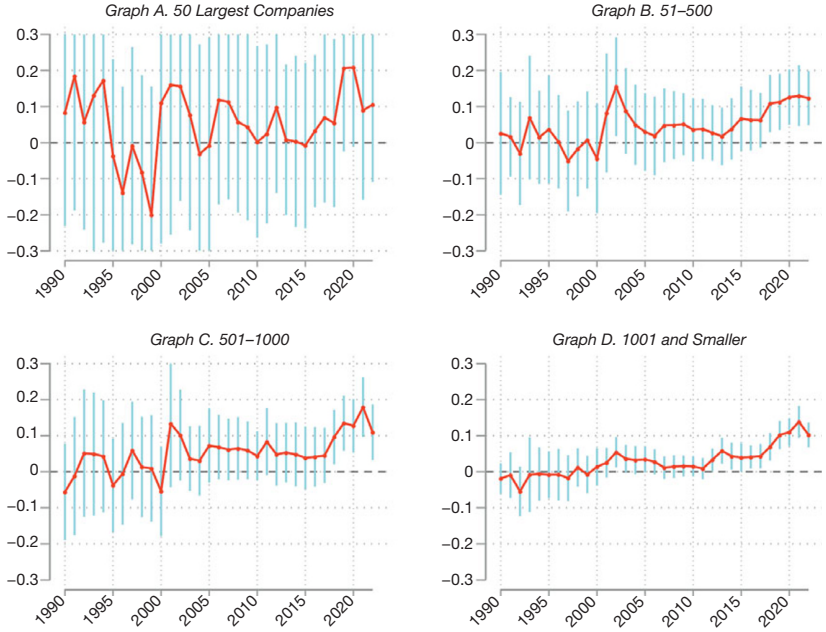
FIGURE 1

Relationship Between Independent Director Experience and Number of Positions 2 Years Later —Average Difference Between Women and Men

In Figure 1, the vertical axis represents the point estimate on the female indicator variable from cross-sectional OLS regressions using data from the year indicated on the *x*-axis for individuals in the indicated size category (1 to 50, 51 to 500, 501 to 1000, and 1001+). A director is assigned to the size rank of the largest company she is a director of in year $t-2$, where size is measured by equity market capitalization. The unit of observation is the individual director in the indicated year. The regression model is, for each year t,

$$Number\ Positions_{i,t} = \delta \times Female_i + \gamma \times Number\ Positions_{i,t-2} + \Phi_{i,t-2} + \varepsilon_{i,t},$$

where $NumberPositions_{i,t}$ is the number of independent director positions individual i has in year t, $Female_i$ and is an indicator variable equal to 1 if individual i is female. The coefficient on this variable, δ, is what we plot. $\Phi_{i,t-2}$ is a vector of fixed effects for individual i in year $t-2$, and $\varepsilon_{i,t}$ is the error term. The fixed effects are individual i's age in year $t-2$ and an indicator variable equal to 1 if the individual is an executive in year $t-2$. Error bars represent 95% confidence intervals around the point estimate, calculated using robust standard errors and a Bonferroni adjustment to account for the fact that we are displaying 33 different estimates (one for each year between 1990 and 2022). Confidence intervals are truncated at −0.3 and 0.3.



1 if the individual is an executive in year $t-2$. To study changes over time, we estimate this regression each year. Throughout our analysis, we use a Bonferroni correction to account for multiple hypothesis testing.

Figure 1 plots the coefficient of the $Female_i$ indicator, δ. Conditional on experience, women receive more *new* independent director positions than men, but only in the past few years; prior to that, there was no difference between men and women. With the exception of the first—representing women with experience at one of the 50 largest companies in the relevant year—each of the sub-figures shows a distinct upward trend toward the end of the sample period.[5] The upward trend is consistent across the remaining three sub-figures. Prior to about 2018 (corresponding

[5]The wide confidence intervals in the first sub-figure may be due in part to the smaller coverage in the early years of the sample. There are about 500 observations in each of the regressions beginning in 2015.

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to experience obtained in 2016), there was no statistically significant difference between the future career prospects of men and women with experience outside the 50 largest companies.[6]

Around 2018, this changed markedly.[7] The magnitudes of these differences are both meaningful and strikingly consistent. Women with experience at small-cap companies in 2020 obtained, on average, 0.1 additional board seats (or, alternatively, a 10% greater chance of an additional board seat) in 2022 compared to their male colleagues. The mean (median) number of board seats in 2022 in the regression sample is 1.01 (1), with a standard deviation of 0.65. The point estimates for women with experience at mid- and large-cap companies are similar: 0.11 and 0.12.[8]

When seeking out new directors, many companies prefer candidates who already have board experience (Cziraki and Robertson (2021)). They might be particularly aggressive in recruiting women with board experience if they feel pressure to diversify their boards relatively quickly (Bakke et al. (2021), Kuzmina and Melentyeva (2021), and Maghin (2022)), as it is easy to identify directors of other public companies. This might explain the differences we observe between men and women.

The increase in future board positions for experienced women directors does not account for the entire increase in the number of women directors. Outside the very largest companies, we find that women directors are significantly more likely to be newcomers to the boardroom than their male colleagues. Figure 2 plots, for each year, the average percentage of men and women directors with no previous director experience at any of the companies in our sample. Outside the very largest companies, we find that the percentage of newcomers is substantially higher among women than men.[9] While this is not an entirely new phenomenon (in contrast to the results in Figure 1, it is particularly pronounced in the last few years, and particularly at smaller companies.[10]

Overall, these results indicate that companies have considered a wider range of candidates when adding women—but not men—directors. These patterns are consistent with companies coming under intense pressure to add women to their boards beginning in the mid-2010s.

[6]This does not necessarily mean that men and women were treated equally, as there may have been differences in their treatment prior to obtaining that experience.

[7]Consistent with this phenomenon, in Section IA.1 of the Supplementary Material, we also document a modest shift to the right in the distribution of board seats concurrently held by woman directors relative to their male colleagues over time. This shift is most pronounced among women with experience at large- and mid-cap companies.

[8]The mean (median) number of board seats in 2022 in each of these regression samples is 1.27 (1) and 1.48 (1), with a standard deviation of 0.83 and 0.94, respectively. The point estimate for women with experience at the largest companies is also consistent, at 0.12. This is relative to a mean (median) of 1.71 (1) and a standard deviation of 1.09. For the largest firms, the standard errors of the estimates are larger due to the smaller sample size.

[9]We also find that newly appointed women directors tend to be somewhat younger than their male colleagues—see Figure IA.2 in the Supplementary Material. However, this difference has actually narrowed in recent years.

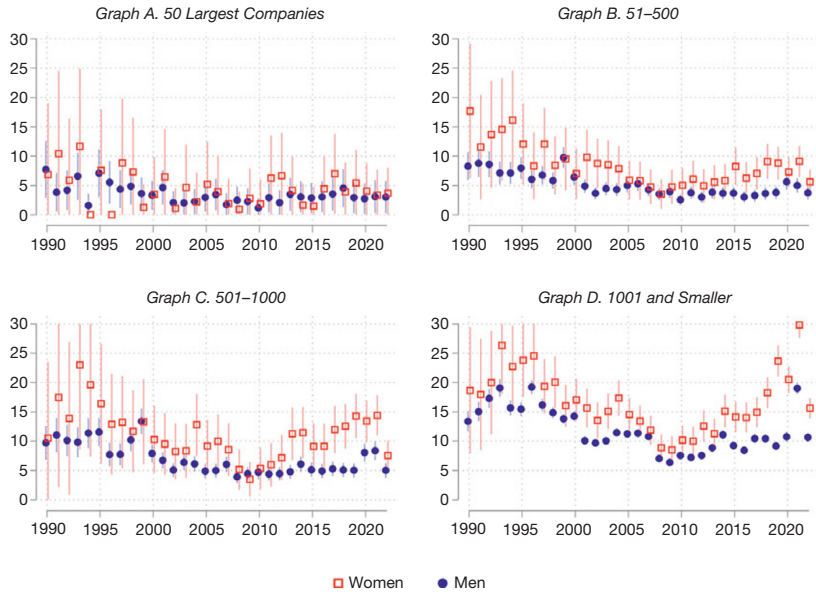
[10]We also observe that while women were more likely to be newcomers than men in the late 2010s, this gap closed at large- and mid-cap companies in 2020. This may be due to efforts to diversify boards along other dimensions—namely race—in the wake of the murder of George Floyd (e.g., Bogan et al. (2021)).

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FIGURE 2

Average Percentage of Directors with No Previous Board Experience, by Gender and Company Size

Figure 2 plots the average percentage of men (indicated with blue circles) and women (indicated with red squares) directors with no previous board experience per year. Companies are divided into four groups by equity market capitalization in the year in question, where 1 is the largest company. Error bars represent 95% confidence intervals around the estimates, calculated using a Bonferroni adjustment to account for the fact that we are displaying 33 different estimates (one for each year between 1990 and 2022). Confidence intervals are truncated at 0 and 30.



B. Gradual Evolution: Committee Membership

Even if women are elected to boards, their influence may be limited if they do not sit on the most important board committees (Nili (2019), Field et al. (2020)). Figures 3–5 show women's representation on the three most influential committees: the executive, the nominating/governance, and the audit committee. Figure 3 shows that the percentage of women serving on or chairing the executive committee increased much less than the percentage of women on boards. In contrast, Figures 4 and 5 show the percentage of women serving on and chairing the nom/gov and the audit committees increased more or less in lockstep with the percentage of women directors.

While the descriptive evidence is suggestive, it may mask changes in the composition of directors with the appropriate skills and experience required to chair various committees.[11] To address this point, we extend the analysis of Field et al. (2020) to examine whether the likelihood of women being selected to board leadership positions changes when controlling for a wide variety of relevant skills and experience. Table 2 compares the correlation between the female director

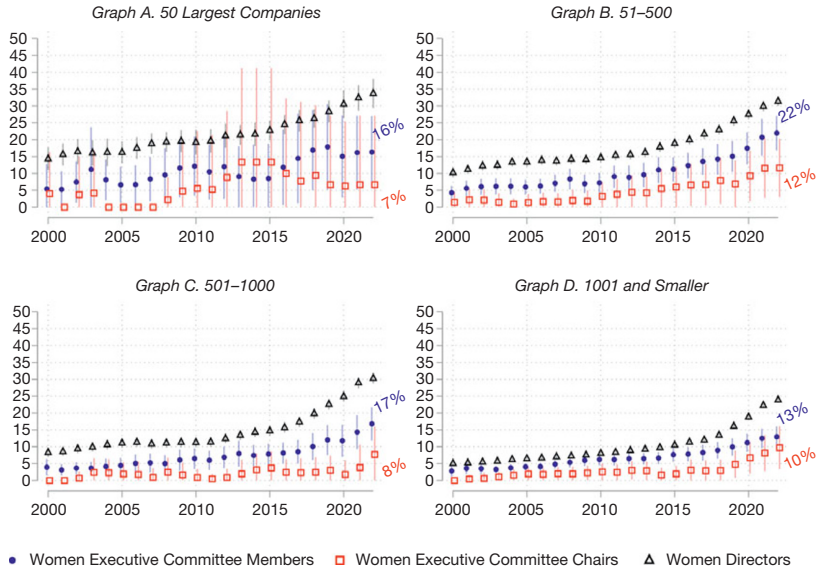
[11]We are grateful to the referee for raising this issue.

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FIGURE 3

Committee Membership of Women Directors: Executive Committee

Figure 3 plots the average percentage of women directors on the board's executive committee (indicated with blue circles), the average percentage of women executive committee chairs (indicated with red squares), and the average percentage of women on boards (indicated with black triangles) per year. Companies are divided into four groups by equity market capitalization in the year in question, where 1 is the largest company. Error bars represent 95% confidence intervals around the estimates, calculated using a Bonferroni adjustment to account for the fact that we are displaying 23 different estimates (one for each year between 1990 and 2022). Confidence intervals are truncated from below at 0. The mean values for 2022 are provided in the figure.



indicator and the likelihood of chairing an important board committee during 2006–2017, the sample period of Field et al. (2020), and the part of our sample after that, 2018–2022. Women are significantly less likely to chair the audit and the executive committees, both during 2006–2017 (columns 1 and 3) and the more recent period, 2018–2022 (columns 4 and 6). The only change we observe is that women are significantly *more* likely to chair the nom/gov committee during 2018–2022 (column 5), while we find no significant difference for 2006–2017 (column 2).[12] This is notable because investors often express dissatisfaction related to board composition by voting against the chair of the nom/gov committee (Lublin and Krouse (2017), Barzuza, Curtis, and Webber (2019)). The increase in women serving in these roles may therefore have reflected a prophylactic measure against such a withhold campaign.

Men and women directors may differ in the specific qualifications that boards look for when electing committee chairs (Field et al. (2020)). Further, even similar

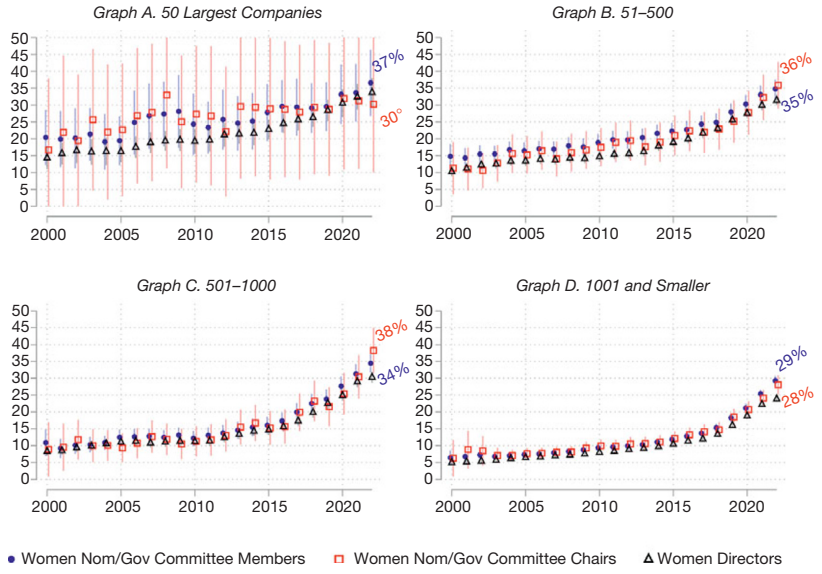
[12]In their sample of 126,044 observations, using ISS (RiskMetrics) as the primary data source, Field et al. (2020) find that women are *less* likely to be audit committee chairs during 2006–2017. Therefore, our finding of a positive coefficient for women in 2018–2022 represents an increased likelihood relative to both our and their estimates for 2006–2017. See Adams, Ragunathan, and Tumarkin (2021) for a comparison of BoardEx and ISS (RiskMetrics).

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FIGURE 4

Committee Membership of Women Directors: Nominating or Governance Committee

Figure 4 plots the average percentage of women directors on the board's nominating or governance committee (indicated with blue circles), the average percentage of women nominating or governance committee chairs (indicated with red squares), and the average percentage of women on boards (indicated with black triangles) per year. Companies are divided into four groups by equity market capitalization in the year in question, where 1 is the largest company. Error bars represent 95% confidence intervals around the estimates, calculated using a Bonferroni adjustment to account for the fact that we are displaying 23 different estimates (one for each year between 1990 and 2022). Confidence intervals are truncated at 0 and 50. The mean values for 2022 are provided in the figure.



credentials of men and women may be viewed differently in the director labor market (Cziraki and Robertson (2021)). Table 3 examines if women are more (or less) likely to be elected the chair of a committee conditional on relevant experience and time variation in these differences (if any). Panel A shows that having previously served as a member of the relevant committee is a statistically significant positive predictor of committee leadership on all three committees. However, it also shows significant negative coefficients for women with relevant experience on the audit (columns 1 and 4) and executive (columns 2 and 5) committees. These differences persist both during 2006–2017 and the later period 2018–2022.

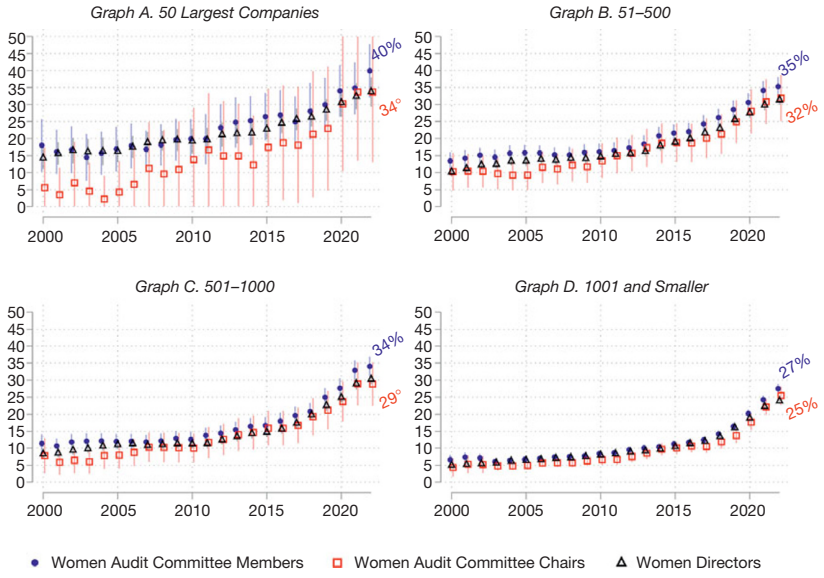
Panel B of Table 3 replaces the indicator for having previously served on the relevant committee with one for having previously chaired such a committee (on the board of another firm). As expected, directors who have previous experience as the chair of a committee are significantly more likely to be chosen to chair that type of committee again. Further, the size of the coefficient is appreciably larger for committee chair experience (Panel B) than for previous committee membership (Panel A). We, again, find that prior experience benefits women less: Panel B columns 1–3 show a significantly negative coefficient for the interaction of committee chair experience and the woman director dummy during 2006–2017. However, we find that the coefficient of the interaction term is not statistically significant

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FIGURE 5

Committee Membership of Women Directors: Audit Committee

Figure 5 plots the average percentage of women directors on the board's audit committee (indicated with blue circles), the average percentage of women audit committee chairs (indicated with red squares), and the average percentage of women on boards (indicated with black triangles) per year. Companies are divided into four groups by equity market capitalization in the year in question, where 1 is the largest company. Error bars represent 95% confidence intervals around the estimates, calculated using a Bonferroni adjustment to account for the fact that we are displaying 23 different estimates (one for each year between 1990 and 2022). Confidence intervals are truncated at 0 and 50. The mean values for 2022 are provided in the figure.



during 2018–2022 (columns 4–6), and the point estimate is positive in two out of three models. Hence, while committee chair experience is less beneficial for women during 2006–2017 than for men, there is no such gender difference in 2018–2022.

Table 3 Panel C shows that finance experience is associated with a 12% higher likelihood of being the chair of the audit committee, both during 2006–2017 (column 1) and 2018–2022 (column 2). However, we also find that finance experience is marginally less beneficial (at 1.5%–2%) for women directors, and this gender difference is similar across both periods.

Tenure on the relevant committee may also affect the likelihood of being elected its chair (Field et al. (2020)). Women's membership of key committees increased rapidly after 2015, as shown in Figures 3–5. If tenure on a committee is an important consideration when electing its chair, differences in tenure between men and women may explain why fewer women serve as committee chairs. To examine this possibility, in Table 3 Panel D, we control for a continuous measure of committee tenure and its interaction with the woman director indicator. One additional year of tenure on the relevant committee increases the likelihood of being the committee chair by 1–2 percentage points during 2006–2017 and 1 percentage point during 2018–2022. Consistent with Field et al. (2020), for 2006–2017, we find that the positive effect of tenure is significantly smaller for female directors. However, for 2018–2022, the difference is only negative for the executive committee (column 6),

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TABLE 2

Women as Board Committee Chairs

Table 2 presents the results of linear probability models of whether a director is the chair of the board committee specified in the column header. The table contains coefficient estimates and *t*-statistics underneath, in parentheses. Columns 1–3 show the results for 2006–2017, and columns 4–6 for 2018–2022. *Finance experience* includes having a Chartered Financial Analyst (CFA), Certified Public Accountant (CPA), or Chartered Accountant (CA) designation, and work experience in the financial industry, or in a finance-related executive role at any firm. *Management experience* is an indicator for current and former chief executive officers (CEOs). *Legal or consulting experience* is an indicator for current or former work experience as a lawyer, attorney, judge, or consultant. *Political experience* is an indicator for current or former service, employment, or consulting experience for the White House, Senators, or members of Congress. *Academic experience* is an indicator for holding a Ph.D. degree or current or former work experience at an academic institution. *Military experience* is an indicator for current or former service, employment, or consulting experience with the U.S. Armed Forces, the Department of Defense, or the Department of Homeland Security. *Experience on board in another industry* is an indicator for current or former director positions at firms in industries different from that of the focal firm. *Experience on board in another industry* is an indicator for current or former director positions at firms in industries different from that of the focal firm. *Other firm committee experience* is an indicator for service on a board committee at another firm. *Director network size* is the number of unique directors the focal person is connected to through their service across organizations. *Undergrad degree*, *MBA degree*, and *Advanced graduate degree* are indicator variables for the respective degrees. *% of years with attendance problems* is the percent of years in the director's career until the focal year that they attended less than 75% of board meetings for any company where they served as a director. *Number of other major company boards* is the number of other publicly listed firm boards that the director concurrently serves on. *Board size* is the total number of board members. *ln(Sales)* is the natural logarithm of sales. *Return on assets* is operating income divided by total assets. *Volatility* is the standard deviation of daily stock returns over the previous calendar year. All models also include fixed effects (FE) for firm, calendar year, and service on each of the audit, nominating/governance, and executive committees. Standard errors are clustered by individual director. The symbols *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	2006–2017			2018–2022		
	Audit	Nom/Gov	Executive	Audit	Nom/Gov	Executive
	1	2	3	4	5	6
Woman director	−1.36**	0.53	−0.30**	−1.10*	2.59***	−0.50**
	(−2.469)	(1.026)	(−2.222)	(−1.661)	(3.791)	(−2.312)
Finance experience	11.32***	−1.83***	−0.22	11.91***	−2.45***	0.43
	(27.568)	(−4.500)	(−1.322)	(22.580)	(−3.962)	(1.640)
Management experience	−6.21***	0.17	0.41***	−8.00***	0.67	0.82***
	(−12.875)	(0.420)	(2.791)	(−12.882)	(1.131)	(3.643)
Legal or consulting experience	−0.98**	1.97***	0.26	−0.02	2.54***	0.18
	(−1.974)	(4.311)	(1.402)	(−0.035)	(3.695)	(0.658)
Political experience	−2.68***	1.53	−0.29	−3.89***	2.83*	−0.36
	(−3.173)	(1.504)	(−0.947)	(−3.161)	(1.799)	(−0.828)
Academic experience	−1.85***	0.64	0.01	−2.25***	−0.25	0.30
	(−3.456)	(1.272)	(0.032)	(−2.995)	(−0.312)	(0.995)
Military experience	−2.93***	−0.57	−0.17	−4.05***	0.55	−0.49
	(−3.867)	(−0.712)	(−0.574)	(−3.846)	(0.416)	(−0.971)
Experience on board in another industry	−0.15***	0.16***	−0.03**	−0.14***	0.27***	−0.06***
	(−4.018)	(4.733)	(−2.287)	(−3.013)	(5.732)	(−3.039)
Other firm committee experience	7.43***	3.56***	0.18	7.67***	4.09***	0.51**
	(26.952)	(14.454)	(1.561)	(14.176)	(7.773)	(2.503)
Director network size	−0.00***	0.00***	−0.00	−0.00***	0.00	−0.00
	(−6.048)	(3.209)	(−1.163)	(−6.341)	(1.159)	(−1.630)
Undergrad degree	−1.32**	0.65	−0.15	−1.58**	1.06	0.15
	(−2.254)	(1.400)	(−0.704)	(−2.101)	(1.593)	(0.512)
MBA degree	0.29	0.42	−0.10	−0.36	0.17	−0.41*
	(0.609)	(1.073)	(−0.666)	(−0.584)	(0.296)	(−1.732)
Advanced graduate degree	−3.94***	−0.83*	0.24	−3.97***	−0.50	−0.11
	(−7.736)	(−1.769)	(1.324)	(−5.782)	(−0.707)	(−0.439)
% of years with attendance problems	−17.82***	−3.96	0.60	−23.99***	−6.78	−3.62
	(−5.280)	(−1.271)	(0.568)	(−4.176)	(−1.025)	(−1.551)
Number of other major company boards	0.70***	0.22*	0.28***	0.92***	−0.16	0.41***
	(3.282)	(1.665)	(2.649)	(3.744)	(−0.713)	(2.812)
Board size	−0.16***	−0.12*	0.05*	−0.21**	−0.25***	0.07*
	(−2.717)	(−1.859)	(1.927)	(−2.563)	(−2.582)	(1.828)
% independent directors	−2.53	−1.87	−0.31	−1.40	−4.57	−4.97***
	(−1.252)	(−0.870)	(−0.401)	(−0.481)	(−1.268)	(−3.430)
Director tenure	0.01	0.41***	−0.03	0.02	0.32***	−0.06**
	(0.252)	(11.325)	(−1.588)	(0.421)	(6.536)	(−1.967)

(continued on next page)

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TABLE 2 (continued)
Women as Board Committee Chairs

	2006–2017			2018–2022		
	Audit	Nom/Gov	Executive	Audit	Nom/Gov	Executive
	1	2	3	4	5	6
Director age	0.31***	0.07**	0.09***	0.31***	0.02	0.11***
	(10.703)	(2.514)	(7.764)	(7.755)	(0.582)	(5.901)
ln(Sales)	−0.38**	−0.24	0.00	−0.45	−0.31	−0.02
	(−2.175)	(−1.291)	(0.025)	(−1.552)	(−0.962)	(−0.191)
Return on assets	1.25	0.51	−0.32	0.44	1.25	−0.34
	(1.604)	(0.611)	(−1.368)	(0.352)	(0.752)	(−1.070)
CEO is chairman	−0.56	−0.32	−2.15***	−0.05	−0.12	−3.28***
	(−1.630)	(−0.891)	(−9.530)	(−0.103)	(−0.189)	(−7.173)
Volatility	1.01	0.12	0.05	0.01	0.87	−0.06
	(1.488)	(0.288)	(0.388)	(0.010)	(0.366)	(−0.129)
Fixed effects	Firm, year, committee					
Adjusted R^2	0.238	0.201	0.166	0.253	0.204	0.176
N	170,591	170,591	170,591	56,388	56,388	56,388

while the point estimate is positive for the audit committee and the nom/gov (columns 4 and 5, respectively) and even borders on statistical significance for the latter.

In sum, we document some modest evidence that women have taken more important committee assignments over time. Membership on key committees has improved substantially during our sample period. Outside of the executive committee, women directors do not appear to be lagging behind their male colleagues in terms of committee membership.[13] Committee leadership has also increased over time. First, women are significantly more likely to chair the nominating or governance committee, controlling for educational credentials and professional experience, in the 2018–2022 period than they were between 2006 and 2017. Second, while relevant experience (either as a committee chair or tenure as a member) benefits women less than men between 2006 and 2017, our results suggest that this difference decreases, or even disappears, by the 2018–2022 period.

C. Continuity: Board Size

Do companies increase board size to add women? Figure 6 shows that board size has increased only modestly over the past few decades. While we see substantial evidence of board expansion over the course of the 1990s, particularly outside of the very largest companies, this expansion slowed over the past 15 years, shown by the dashed lines at 2007 and 2022. If anything, the boards of the very largest companies have become slightly smaller (from 13.20 directors to 12.86), although this difference is not statistically significant. The small increase (from 8.36 to 8.46) at small-cap companies is also not statistically significant. Board size increased

[13]One reason for the under-representation of women on executive committees may be that many such committees include the CEO, and the majority of CEOs are men (Cziraki and Jenter (2021), He and Whited (2023)). We repeat the analysis excluding CEOs and find that the under-representation shrinks, but is not eliminated entirely.

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TABLE 3

Prior Experience and Committee Chair Positions

Table 3 presents the results of linear probability models of whether a director is the chair of the board committee specified in the column header. The table contains coefficient estimates and *t*-statistics underneath, in parentheses. The regression models are similar to those presented in Table 2 but add measures for relevant experience and their interaction with the woman director indicator. Panel A adds an indicator variable for experience on the corresponding type of committee (audit, nominating/governance, or executive) to date at the focal firm or another firm. Panel B adds an indicator variable for whether the director has previously chaired the corresponding type of committee. Panel C shows the indicator variable for whether the director has finance experience and its interaction with the woman director indicator. Panel D replaces the relevant experience indicator with a continuous variable measuring the director's tenure on the corresponding committee, in years. The sample period is shown at the top of each column. All regressions include all controls and fixed effects from Table 2. Standard errors are clustered by individual director. The symbols *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

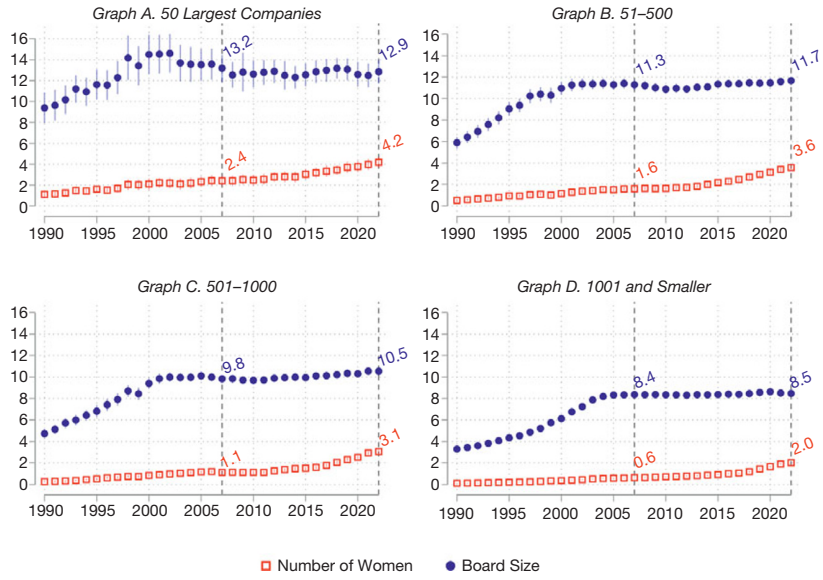
	2006–2017			2018–2022		
Panel A. Likelihood of Female Committee Chair Based on Past Relevant Committee Experience						
	Audit	Nom/Gov	Executive	Audit	Nom/Gov	Executive
	1	2	3	4	5	6
Relevant committee exp.	3.43***	1.85***	0.82***	1.32***	0.96**	1.32***
	(11.054)	(6.924)	(5.160)	(2.756)	(2.115)	(4.277)
Relevant committee exp. × woman	−4.88***	−0.44	−4.14***	−3.42***	1.23	−4.31***
	(−6.249)	(−0.599)	(−7.193)	(−3.517)	(1.279)	(−4.899)
Woman director	1.87***	0.79**	0.44***	1.39**	1.68***	0.35**
	(4.514)	(2.356)	(4.642)	(2.220)	(3.020)	(2.518)
Adjusted R^2	0.235	0.201	0.166	0.246	0.204	0.176
N	170,591	170,591	170,591	56,388	56,388	56,388
Panel B. Likelihood of Female Committee Chair Based on Past Relevant Committee Leadership on Other Boards						
	Audit	Nom/Gov	Executive	Audit	Nom/Gov	Executive
	1	2	3	4	5	6
Relevant chair exp.	28.00***	20.15***	10.57***	29.51***	24.27***	14.54***
	(49.208)	(47.614)	(21.342)	(35.244)	(36.021)	(18.102)
Relevant chair exp. × woman	−5.58***	−4.05***	−6.46***	0.56	−0.98	3.09
	(−4.198)	(−4.215)	(−4.206)	(0.357)	(−0.758)	(1.188)
Woman director	−0.01	0.78	0.53***	−1.13**	1.01	0.21
	(−0.032)	(1.579)	(4.733)	(−2.235)	(1.595)	(1.349)
Adjusted R^2	0.327	0.259	0.213	0.350	0.282	0.254
N	170,591	170,591	170,591	56,388	56,388	56,388
Panel C. Likelihood of Female Audit Committee Chair Based on Finance Experience						
	Audit Committee Chair					
	1				2	
Finance experience	11.56***				12.44***	
	(25.299)				(20.276)	
Finance experience × woman	−1.46				−2.14*	
	(−1.485)				(−1.838)	
Woman director	−0.51				0.21	
	(−0.911)				(0.295)	
Adjusted R^2	0.255				0.285	
N	170,591				56,388	
Panel D. Likelihood of Female Committee Chair Based on Relevant Committee Tenure						
	Audit	Nom/Gov	Executive	Audit	Nom/Gov	Executive
	1	2	3	4	5	6
Relevant committee tenure	1.77***	1.52***	0.90***	1.08***	0.80***	1.10***
	(24.182)	(18.704)	(10.449)	(13.739)	(8.960)	(9.437)
Relevant committee tenure × woman	−0.48***	0.25	−0.94***	0.07	0.27*	−0.71***
	(−3.077)	(1.507)	(−4.986)	(0.498)	(1.850)	(−2.979)
Woman director	0.12	−0.40	0.33***	−1.35**	1.51**	0.20
	(0.267)	(−0.986)	(3.059)	(−2.070)	(2.319)	(1.162)
Adjusted R^2	0.249	0.211	0.179	0.257	0.210	0.205
N	170,591	170,591	170,591	56,388	56,388	56,388

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FIGURE 6

Average Board Size and Number of Women Directors, by Company Size

Figure 6 plots the average board size (indicated with blue circles) and the average number of women (indicated with red squares) per year. Companies are divided into four groups by equity market capitalization in the year in question, where 1 is the largest company. Error bars represent 95% confidence intervals around the estimates, calculated using a Bonferroni adjustment to account for the fact that we are displaying 33 different estimates (one for each year between 1990 and 2022). Confidence intervals are truncated at 0 and 16. The mean values for 2007 and 2022 are provided in the figure. The difference in board size between 2022 and 2007 is not statistically significant in the first figure (representing the largest companies, $p = 0.534$). The difference is statistically significant in the second and third figures ($p = 0.039$ and $p = 0.000$, respectively), and is only very marginally significant in the fourth (representing the smallest companies, $p = 0.104$). The difference in the number of women directors between 2022 and 2007 is statistically significant in all four figures ($p = 0.000$ in all four).



only modestly among large-cap companies (from 11.28 to 11.66) and mid-cap companies (from 9.83 to 10.54).[14]

Meanwhile, the number of women directors has crept up steadily since the 1990s. The trend has accelerated in recent years, particularly outside the very largest companies. This is a well-known phenomenon (Kim and Starks (2016), Deloitte (2023)) and is consistent with much prior literature on corporate governance (e.g., Adams and Ferreira (2009), Gokulan (2021)).

It is apparent from Figure 6 that boards have not expanded enough over the past 15 years to account for the increase in the number of women directors. Over that period, mega-, large, and mid-cap companies all added between 1.8 and 2 women directors, on average. The small-cap companies were only slightly behind, adding an average of 1.4 women directors.[15] Unsurprisingly, the average number of women directors increases monotonically with company size.

[14]These differences are statistically significant at conventional levels ($p = 0.039$ and 0.000, respectively).

[15]All of these increases in the number of women directors are statistically significant beyond the 0.1% level.

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We study the relationship between the addition of women and board size more formally using an event study framework. The unit of observation is company × year. We regress board size (the number of independent directors) on company, year, and company size group fixed effects. We cluster standard errors at the company level and include a Bonferroni adjustment to account for multiple hypothesis testing. The regression model is

$$Size_{j,\tau} = \beta_{-2} \times T_{j,\tau-2} + \beta_0 \times T_{j,\tau+0} + \beta_1 \times T_{j,\tau+1} + \beta_2 \times T_{j,\tau+2} + \beta_3 \times T_{j,\tau+3} + \eta_j + \lambda_\tau + \Phi_{j,\tau} + \varepsilon_{j,\tau}, \quad (2)$$

where $T_{j,\tau+k}$ is an indicator equal to 1 if year τ represents event time k for company j. $Size_{j,\tau}$ is the size of company's board in year τ, η_j are company fixed effects, λ_τ are year fixed effects, and $\Phi_{j,\tau}$ are firm size category fixed effects for company j in year τ, and $\varepsilon_{j,\tau}$ is the error term.

Figure 7 plots the estimates of the event-time indicators β_k for women in red, with rectangular markers. In Graphs A and B (C and D), $t = 0$ refers to the year in which the number of women directors increased by one (two) and the number of men directors did not increase.[16] Graphs A and C show the results using data from 1990 to 2009; Graphs B and D use data from 2010 to 2022.

The results in Graphs A and B indicate that, on average, in the year in which a woman is added to a board, board size increases by 0.36, indicating that 36% of boards expanded to accommodate this addition. While the point estimate is slightly higher (0.38) in the 1990–2009 subsample, the confidence intervals overlap comfortably. This increase, however, is transitory: in the 2010–2022 period, board size drops more than halfway back to its pre-addition level (to 0.15) within 1 year, and the confidence intervals include zero by year 3. This drop is slightly less sharp in the 1990–2009 period (to 0.23 in the first year), but even in the earlier period, the effect of the additional woman is not statistically distinguishable from zero within 3 years.

Larger changes have a proportionately larger impact on board size, but if anything, dissipate even faster: Figure 7 Graphs C and D examine the addition of two women directors. The point estimates in year $t = 0$ are more than twice the magnitude of the ones in Grahps A and B, indicating that the transitory increase in board size "per woman director added" is larger: about 0.58 and 0.64 in the 1990–2009 and 2010–2022 periods, respectively. As in Graphs A and B, these increases drop substantially by $t = 1$, and continue to fall toward zero thereafter. The point estimates are not statistically distinguishable from zero in either subsample by $t = 2$.

All told, these results suggest that, on average, the addition of a woman director is associated with a temporary increase in board size. This increase, however, tends to revert the following year. The results for men—presented in blue with circle markers—tell a different story. The addition of one net man (Graphs A and B) is associated with an increase in total board size of 0.8 in the first half of the sample, and 0.94 in the second half. This increase also reverts over time, but remains elevated for the full 3 years. The differences between men and women

[16]We measure this as a net increase. For example, if, in year $t = 0$, one woman left the board and two women joined, the number of women directors increased by one.

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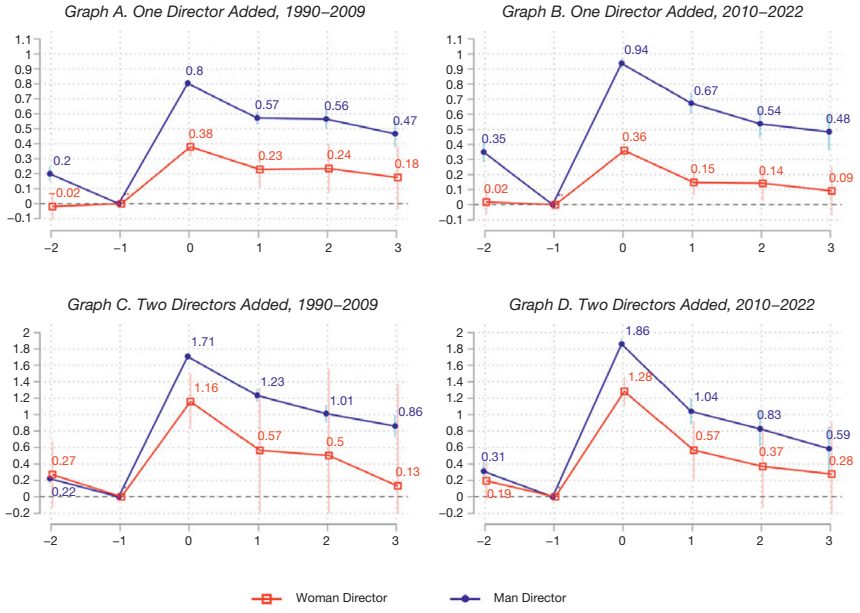
FIGURE 7

Change in Board Size After the Addition of Directors

Figure 7 plots the results of an event study analysis of the relationship between an increase in women directors (indicated with red squares) and board size, and the relationship between an increase in men directors (indicated with blue circles) and board size. The unit of observation is company × year. For the analysis of women directors, $t = 0$ represents the year that the number of women increased by one (two) while the number of men did not increase in Graphs A and B (C and D). The analysis for men is analogous, with the genders reversed. Graphs A and C use data from 1990 through 2009; Graphs B and D restrict the sample to 2010 through 2022. The regression model is

$$Size_{j,\tau} = \beta_{-2} \times T_{j,\tau-2} + \beta_0 \times T_{j,\tau+0} + \beta_1 \times T_{j,\tau+1} + \beta_2 \times T_{j,\tau+2} + \beta_3 \times T_{j,\tau+3} + \eta_j + \lambda_\tau + \Phi_{j,\tau} + \varepsilon_{j,\tau},$$

where $T_{j,\tau+k}$ is an indicator equal to 1 if year τ represents event time k for company j. The β_k estimates are what we plot in the figure. $Size_{j,\tau}$ is the size of company's board in year τ, η_j are company fixed effects, λ_τ are year fixed effects, $\Phi_{j,\tau}$ are firm size category fixed effects for company j in year τ (defined using the same categories as in Figure 1), and $\varepsilon_{j,\tau}$ is the error term. Error bars represent 95% confidence intervals around the point estimate, calculated using standard errors clustered at the company level and a Bonferroni adjustment to account for the fact that we are displaying 5 different estimates. Confidence intervals are truncated from below at −0.2.



are even larger, and more statistically significant in the second half of the sample period. The results for the addition of two men (Graphs C and D) are similar, although the differences are less pronounced.

These results are consistent with the idea that a company that identifies a suitable woman candidate might add her to the board quickly and then decline to replace a male director when he departs within a few years. These departing men could be stepping down as part of the ordinary board refreshment process, or their tenure could be cut short to make way for the newly appointed women. The results in Figure 8 are more consistent with the former. Figure 8 presents the results of an event study analysis of the relationship between the addition of a woman director and the tenure of departing male directors. As in Figure 7, the unit of observation is a company × year, and we include company, year, and size group fixed effects. Graphs A and B present results where the "event" is an increase of one woman director (while the number of men directors did not decrease); Graphs C and D

https://doi.org/10.1017/S0022109026103241X

FIGURE 8

Change in Tenure of Departing Male Directors After the Addition of Women Directors

Figure 8 plots the results of an event study analysis of the relationship between an increase in women directors and tenure of departing male directors. The unit of observation is company × year. $t=0$ represents the year that the number of women increased by one (two) while the number of men did not increase in the Graphs A and B (C and D). Graphs A and C use data from 1990 through 2009; Graphs B and D restrict the sample to 2010 through 2022. The regression model is

$$TenureMen_{j,\tau} = \beta_{-2} \times T_{j,\tau-2} + \beta_0 \times T_{j,\tau+0} + \beta_1 \times T_{j,\tau+1} + \beta_2 \times T_{j,\tau+2} + \beta_3 \times T_{j,\tau+3} + \eta_j + \lambda_\tau + \Phi_{j,\tau} + \varepsilon_{j,\tau},$$

where $T_{j,\tau+k}$ is an indicator variable equal to 1 if year τ represents event time k for company j. The β_k estimates are what we plot in the figure. $TenureMen_{j,\tau}$ is the average tenure of departing male directors of company j's board in year τ, η_j are company fixed effects, λ_τ are year fixed effects, $\Phi_{j,\tau}$ are firm size category fixed effects for company j in year τ (defined using the same categories as in Figure 1), and $\varepsilon_{j,\tau}$ is the error term. Error bars represent 95% confidence intervals around the point estimate, calculated using standard errors clustered at the company level and a Bonferroni adjustment to account for the fact that we are displaying 5 different estimates.



study an increase of two women directors (while the number of men directors did not decrease). Graphs A and C use data from 1990 to 2009, while Graphs B and D use data from 2010 to 2022. Across all four graphs, we find no statistically significant relationship between the addition of women directors and the tenure of departing male directors.[17] On balance, these event study tests looking at both board size and the tenure of departing male directors suggest that boards accommodate the addition of women directors by temporarily expanding, but quickly reverting to their original size once a male director ends their tenure.[18]

[17]Figure IA.7 in the Supplementary Material repeats the analysis using tenure of all departing directors and shows similar results.

[18]The inclination to wait for a director to retire may be stronger for firms with classified boards. Figure IA.8 in the Supplementary Material repeats the analysis from Figure 7 separately for firms with and without classified boards. Board size dynamics are similar for classified boards (representing 49% of observations for which board classification data is available) and non-classified boards in both the early (1990–2009) and the later (2010–2022) part of our sample. There are two minor differences, neither of which is statistically or economically significant. First, classified boards are slightly more likely to

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V. Gender Diversity Initiatives

The analysis so far focuses on which women are added to boards and how boards change as women are added, without regard for the reason that female representation increases. When firms have time to add new (female) directors, the timing may be related to the retirement of existing (male) directors. Their behavior may change in the presence of external pressures, which may result in different effects on the search process and on board size. In this section, we use two settings to examine whether our results differ between firms that were pressured (or even required) to add women to their boards and those that were not: ownership by certain large institutional investors (BlackRock, State Street, and Vanguard), commonly known as the "Big Three" (Lund and Robertson (2024)), and California SB 826 (SB 826).[19]

A. California Senate Bill 826, Newcomer Directors, and Board Size

In 2018, California mandated that firms headquartered in the state include women on their boards (Hwang et al. (2018), Gertsberg et al. (2021), and Klick (2025)). While there was always some uncertainty about the legality of this law—uncertainty that was resolved when it was ultimately struck down—the probability that it would survive was nonzero when it was enacted. Conditional on the law being in effect, the treated group consists of California firms that are not compliant with SB 826 as of 2018. The law required firms to have at least one woman on their board by 2019 and to have three (two) women on their board by 2021 if their board consisted of six directors or more (five) directors. We define compliance based on the 2021 targets set out in SB 2018 because firms did not yet know that the bill would later be struck down and, consequently, would have been right to expect that they would need to comply with the 2021 targets with positive probability. The other three groups are i) California firms that are in compliance with SB 826 in 2018, ii) firms outside of California that would also have been in compliance with SB 826 in 2018, and iii) firms outside of California that, had they been California firms, would not have been in compliance with SB 826 in 2018. The triple difference specification allows us to separate the effect of the California rule from general time trends and differences across compliant and noncompliant firms. We estimate the model for the period 2018–2022 to minimize the potential for confounding events:

$$Y_{i,t} = \sum_{k=2019}^{2022} [\nu_k(California_i \times {}_{t=k}) + \xi_k(Noncompliant_i \times {}_{t=k}) + \zeta_k(California_i \times Noncompliant_i \times {}_{t=k})] + \eta_j + \lambda_t + \Phi_{j,t} + \varepsilon_{j,t}, \tag{3}$$

where η_j are company fixed effects, λ_t are year fixed effects, $\Phi_{j,t}$ are time-varying controls for firm size, ROA, and return volatility for company j in year τ, and $\varepsilon_{j,t}$ is

increase in size when a woman director is added: 41–45% of classified boards expand to accommodate the addition of a woman director, compared to 31–32% of non-classified boards. Second, for firms with classified boards, the increase in board size when adding a woman director reverts less during 1990–2009 as compared to 2010–2022.

[19]We thank the referee for suggesting these comparisons.

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TABLE 4

Average Percentage of Newcomer Women and Board Size Around California SB 826

Table 4 presents the results of triple difference regression models examining the percentage of women directors with no previous board experience (women newcomers) and board size around the implementation of California SB 826. The table contains coefficient estimates and *t*-statistics from estimating equation (3) of the paper for the period 2018–2022. Columns 1 and 2 show the results for the percentage of women directors with no previous board experience multiplied by 100, while columns 3 and 4 show the results for board size. All regressions contain indicator variables for California noncompliant firms interacted with year indicators, an indicator for California firms interacted with year indicators, and an indicator for noncompliant firms interacted with year indicators in each of the 4 years following the SB 826 mandate, 2019–2022. Regressions in columns 2 and 4 additionally control for *Ln(sales)*, *Return on assets*, and *Volatility*, which are defined in Table 2. Standard errors are clustered by firm. The symbols *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	% Women Newcomers		Board Size	
	1	2	3	4
California × noncompliant × 2019	12.13***	12.13***	0.19	0.18
	(3.60)	(3.60)	(0.64)	(0.61)
California × noncompliant × 2020	3.57	3.56	0.03	0.03
	(1.22)	(1.22)	(0.10)	(0.08)
California × noncompliant × 2021	10.57***	10.54***	0.48**	0.46**
	(3.54)	(3.53)	(2.03)	(1.96)
California × noncompliant × 2022	−0.21	−0.24	0.28	0.26
	(−0.07)	(−0.09)	(1.14)	(1.09)
Additional controls		Yes		Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
California × year FE	Yes	Yes	Yes	Yes
Noncompliant × year FE	Yes	Yes	Yes	Yes
$\overline{Y}$	8.87	8.87	9.55	9.55
Adjusted R^2	−0.002	−0.002	0.817	0.818
N	17,209	17,209	17,209	17,209

the error term. We are interested in the coefficient estimates of the triple difference terms, ζ_k.[20]

Table 4 contains the results, showing two findings. First, the percentage of women who are newcomers (i.e., first-time directors) on boards increases at treated firms starting in 2019. The increase is 12.1% in 2019, 3.6% in 2020, and 10.5% in 2021. The 2019 and 2021 coefficients are highly statistically significant both with (column 2) and without (column 1) additional controls. The estimates are economically large: the average percentage of newcomer women is 8.9 for this regression sample. The triple interaction for 2020 is not statistically significant at conventional levels, potentially reflecting that early compliers added newcomer women by 2019 (the deadline to have at least one woman director), and a second group of late compliers did so by 2021.[21]

Second, columns 3–4 show a modest increase in board size, followed by a reversal. The point estimates for 2021 indicate an increase of 0.46–0.49, which are statistically significant at conventional levels. This reverses in 2022, complementing the descriptive evidence in Figure 7. The two patterns are not directly

[20]Balogh and Yonker (2025) use a similar approach to study the effect of California AB 979 on board racial diversity.

[21]Because the dependent variable is the percentage of women in year *k* with no previous board experience, a newcomer woman who was added to a board in 2019 is no longer a newcomer in 2020. Accordingly, the non-monotonicity of the coefficients does not imply that women added in 2019 are no longer there in 2020; they simply are not newcomers anymore.

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comparable, however, as Figure 7 considers changes in board size in event time (as opposed to calendar time) around the addition of directors (as opposed to unconditionally for all firms, regardless of whether they added a woman director or not).

Overall, the evidence using California SB 826 is consistent with the patterns in the previous sections. The results indicate that California SB 826 helped women without board experience gain the first board seat of their careers. Looking at board size, we find a small and temporary increase at California firms that needed to bring themselves into compliance with the rule.

B. Big Three Institutional Ownership, Newcomer Directors, and Board Size

In 2017, the "Big Three" institutional investors started campaigns to increase the representation of women on corporate boards. Gormley, Gupta, Matsa, Mortal, and Yang (2023) present evidence suggesting that they were successful. We follow their method and measure Big Three institutional ownership at year-end 2016 as a proxy for the pressure firms face to add women directors to their boards. We estimate the difference-in-differences regression

$$Y_{i,t} = \zeta BigThreeOwnership_i \times Post2016_t + vZeroWomen_i \times Post2016_t + \xi OneWoman_i \times Post2016_t + \eta_j + \lambda_t + \varepsilon_{j,t}, \quad (4)$$

where η_j are company fixed effects, λ_t are year fixed effects, and $\varepsilon_{j,t}$ is the error term. The difference-in-differences coefficient of interest is ζ. To check pretrends and dynamic effects after 2016, we also estimate a version replacing the $Post2016_t$ indicator with a set of individual year fixed effects. We estimate the model from 2015 to the last year of our sample, 2022.

Column 1 of Table 5 shows that after 2016, the percentage of newcomer women increases significantly on the boards of firms that had higher levels of Big Three institutional ownership in 2016. A 1-standard-deviation higher Big Three institutional ownership (7.7%) is associated with an increase of 2.85 ($= 36.89 \times 0.077$) percentage points in the share of newcomer women on the board, a relative increase of 40% from the average of 7.2 percentage points. In column 2, we use yearly indicators to show that the increase in the share of newcomer women on the board is largest in 2017–2019. The coefficient estimate for 2015 is positive and statistically significant at the 5% level, while for 2016, it is small and not statistically significant. These patterns support the view that the number of women on boards was important to Big Three institutional investors even before they started their formal campaigns in 2017, and portfolio firms were aware of this preference. We conclude that gender diversity campaigns by the Big Three institutional investors also contributed to the increased share of newcomer women directors on corporate boards.

Column 3 of Table 5 shows that Big Three institutional ownership is associated with a small but statistically significant increase in board size after 2016. A 1-standard-deviation increase in Big Three institutional ownership is associated with an increase in board size of 0.15, or 1.6% relative to the sample average. Column 4 shows that this increase is gradual and starts in 2018, with some evidence of an increase in 2015. Thus, campaigns by the Big Three to increase the number of

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TABLE 5

Average Percentage of Newcomer Women and Board Size Around the Big Three Institutional Investors' Campaigns

Table 5 presents the results of regression models of the percentage of women directors with no previous board experience (women newcomers) and board size by Big Three institutional ownership before and after 2016. The table contains coefficient estimates and *t*-statistics underneath, in parentheses. Columns 1 and 2 show the results for the percentage of women directors with no previous board experience multiplied by 100, while columns 3 and 4 show the results for board size. *Big Three Ownership* $_{2016}$ is the combined percentage ownership stake of the Big Three institutional investors (BlackRock, State Street, and Vanguard), measured at the end of 2016. Columns 1 and 3 include interactions with an indicator for years after 2026, and columns 2 and 4 include interactions with individual year fixed effects from 2015 to 2022. All regressions include firm and year fixed effects. Columns 1 and 3 also include interactions between an indicator variable for no women directors on the firm's board at the end of 2016 and the *Post 2016* indicator, and an indicator variable for one woman director at the end of 2016 and the *Post 2016* indicator. Columns 2 and 4 include interactions between an indicator variable for no women directors on the firm's board at the end of 2016 and year fixed effects, and an indicator variable for one woman director at the end of 2016 and year fixed effects. Standard errors are clustered by firm. The symbols *, **, and *** denote significance at the 10%, 5%, and 1% levels, respectively.

	% Women Newcomers		Board Size	
	1	2	3	4
Big Three Ownership $_{2016}$ × post 2016	36.98***		1.92***	
	(8.39)		(4.94)	
Big Three Ownership $_{2016}$ × 2015		18.98**		0.79**
		(2.17)		(2.08)
Big Three Ownership $_{2016}$ × 2016		5.50		−0.30
		(0.64)		(−0.66)
Big Three Ownership $_{2016}$ × 2017		52.76***		0.58
		(6.13)		(1.16)
Big Three Ownership $_{2016}$ × 2018		68.40***		1.35**
		(7.58)		(2.41)
Big Three Ownership $_{2016}$ × 2019		47.80***		2.48***
		(4.89)		(4.19)
Big Three Ownership $_{2016}$ × 2020		37.22***		2.81***
		(4.18)		(4.48)
Big Three Ownership $_{2016}$ × 2021		28.01***		3.09***
		(3.21)		(4.67)
Big Three Ownership $_{2016}$ × 2022		24.83**		3.09***
		(2.85)		(4.51)
Zero women $_{2016}$ × post 2016	Yes		Yes	
Zero women $_{2016}$ × year FE		Yes		Yes
One woman $_{2016}$ × post 2016	Yes		Yes	
One woman $_{2016}$ × year FE		Yes		Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
$\sigma_{BigThreeOwnership}$	0.077	0.077	0.077	0.077
$\overline{Y}$	7.21	7.21	9.56	9.56
Adjusted R^2	0.010	0.011	0.804	0.805
N	22,121	22,121	22,121	22,121

women directors led to a modest increase in board size. This increase is smaller than the one we see in our event study analysis—repeating the caveat that the two numbers are not directly comparable—and one-third of the magnitude we find for firms affected by California SB 826.

Overall, both of the tests in this section suggest that initiatives in the late 2010s to increase gender diversity help women without board experience gain the first board seat of their careers. Our findings on board size are mixed. On the one hand, we find similar patterns to those in the main analysis when examining California SB 826: a small increase in board size—just under 0.5—that quickly reverts. On the other hand, we find a much smaller—but more persistent—increase at firms affected by the campaigns of the Big Three institutional investors.

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VI. Conclusion

Our analyses provide suggestive evidence about the construction and evolution of corporate boards. First, we shed light on the search for candidates, particularly when companies are under pressure to increase board diversity. We show that, until recently, companies tended to treat men and women with board experience equally, at least given the observable characteristics that we can measure. Our results suggest that, in recent years, companies have been recruiting women who would previously not have been selected: women with director experience at smaller firms, or no prior director experience. Both firms affected by California SB 826 and those affected by the campaigns by the Big Three institutional investors added more women without previous director experience to their boards compared to firms that were not.

Second, we show the gradual evolution of women's membership on and leadership of influential board committees. The percentage of women serving on these committees increased commensurately with the percentage of women directors—with the exception of the executive committee. After 2018, women are also somewhat more likely to chair influential committees, and are more likely to be selected for such positions when they have relevant experience.

Third, we provide evidence consistent with a tradeoff in board construction. When firms add a woman director, we see only a temporary increase in board size approximately one third of the time. We find a similar pattern of a small increase followed by a reversal for firms that were affected by California SB 826. While a larger board can allow for more diversity of both biography and expertise, it may also come with costs. In addition to the relatively modest pecuniary costs of paying more directors, larger boards may be more difficult to coordinate, and boardroom discussions might become unwieldy. This also suggests that, contrary to the suggestion of some commentators, boards are unlikely to continue to expand.[22]

Our findings suggest that companies value their relationships with current directors, and are unlikely to remove them prematurely to make room for new candidates. The results also point to a second reason why efforts to change board composition are likely to be gradual: not only must companies identify new candidates, but they may also need to wait for a seat to open up (or be about to open up) through a retirement.

Supplementary Material

To view supplementary material for this article, please visit http://doi.org/10.1017/S002210902610324X.

[22]For example, in a research note, Spierings (2022) argues that we should "[e]xpect boards to continue to increase in size as companies seek to increase diversity, add new skills and expertise, and populate new board committees providing ESG oversight. As companies are seeking to increase diversity on their boards, they cannot wait until a retirement creates an opening to add a new director because the attractive candidates may have other offers before then. Instead, they need to strike while the iron is hot, which means at least temporarily increasing the size of the board to allow for some overlap. That temporary increase, however, is likely to become permanent."

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