NBER WORKING PAPER SERIES

THE BIG THREE AND BOARD GENDER DIVERSITY: THE EFFECTIVENESS OF SHAREHOLDER VOICE

Todd A. Gormley
Vishal K. Gupta
David A. Matsa
Sandra C. Mortal
Lukai Yang

Working Paper 30657
http://www.nber.org/papers/w30657

NATIONAL BUREAU OF ECONOMIC RESEARCH
1050 Massachusetts Avenue
Cambridge, MA 02138
November 2022

We thank Reena Aggarwal, Alex Edmans, Rüdiger Fahlenbrach, Daniel Ferreira, Eli Fich, Jillian Grennan, Joseph Grundfest, Jarrad Harford, Peter Iliev, Lisa Kammert, Doron Levit, Marc Lipson, Joshua Pierce, Ellen Quigley, Miriam Schwartz-Ziv, Parth Venkat, Tracy Wang, and seminar participants at Chinese University of Hong Kong, Florida State University, Georgetown University, London Business School, New Economic School, Nova School of Business & Economics, Ohio State University, Pennsylvania State University, Singapore Management University, Tel Aviv University, University of Bristol, University of Cambridge, University of Exeter, University of Lancaster, University of Manchester, University of Maryland, University of Oklahoma, University of South Carolina, University of Texas at Dallas, University of Utah, University of Virginia, UNSW Business School, Washington University in St. Louis, York University, Financial Intermediation Research Society Conference, RCFS Winter Conference, Smokey Mountain Finance Conference, and Weinberg Center Corporate Governance Symposium, for helpful comments. The views expressed herein are those of the authors and do not necessarily reflect the views of the National Bureau of Economic Research.

The Big Three and Board Gender Diversity: The Effectiveness of Shareholder Voice
Todd A. Gormley, Vishal K. Gupta, David A. Matsa, Sandra C. Mortal, and Lukai Yang
NBER Working Paper No. 30657
November 2022
JEL No. G34,J71,M12,M14

ABSTRACT

In 2017, "The Big Three" institutional investors launched campaigns to increase gender diversity on corporate boards. We estimate that their campaigns led American corporations to add at least 2.5 times as many female directors in 2019 as they had in 2016. Firms increased diversity by identifying candidates beyond managers' existing networks and by placing less emphasis on candidates' executive experience. Firms also promoted more female directors to key board positions, indicating firms' responses went beyond tokenism. Our results highlight index investors' ability to effectuate broad-based governance changes and the important impact of investor buy-in in increasing corporate-leadership diversity.

Todd A. Gormley
Olin Business School
Washington University in St. Louis
One Brookings Drive
Campus Box 1133
St. Louis, MO 63130
gormley@wustl.edu

Vishal K. Gupta
Culverhouse College of Business
The University of Alabama
361 Stadium Blvd.
Tuscaloosa, AL 35487
vkgupta@cba.ua.edu

David A. Matsa
Kellogg School of Management
Northwestern University
2211 Campus Drive
Evanston, IL 60208
and NBER
dmatsa@kellogg.northwestern.edu

Sandra C. Mortal
Culverhouse College of Business
The University of Alabama
361 Stadium Blvd.
Tuscaloosa, AL 35487
scmortal@cba.ua.edu

Lukai Yang
International Banking and Finance Studies
A.R. Sanchez, Jr. School of Business
Texas A&M International University
5201 University Boulevard
Laredo, TX 78041
lukai.yang@tamiu.edu

1. Introduction

There is a growing emphasis on diversity, equity, and inclusion (DEI) in American society. A majority of S&P 500 companies now employ a chief diversity officer (Green, 2021), and since 2017, nearly 2,000 CEOs have pledged to advance DEI within their firms (PwC, 2021). Yet, women continue to be underrepresented in the highest tiers of US leadership, including in business, where women account for only 5% of public company CEOs and 18% of top executives despite accounting for 48% of the labor force and 40% of managers (ILO, 2020). To increase gender diversity in corporate leadership, governments around the world have enacted quotas requiring companies to appoint women to their board of directors. In the US, where as recently as 2016 only 13% of public companies' directors were women, California adopted a board gender quota—which courts have since overturned—and similar regulations have been proposed in other states. That lawmakers are turning to controversial mandates begs the question: Why don't firms appoint more female leaders on their own, and how might they be encouraged to do so without government intervention?

The uptick in women serving on US boards in recent years may offer insight into these questions. Figure 1, Panel A, shows the average annual change in the number of female directors on US boards between 2014 and 2019, reflecting the number of women added minus the number that depart from the board. While US firms consistently added 0.08 net female directors in the first half of the period, this number increased in 2017 and tripled by 2019. As a result, women's average representation on corporate boards, shown in Panel B, grew by 50.2% over those three years, increasing from 13.1% of directors in 2016 to 19.7% by 2019.

The increase in female directorships coincided with an influence campaign, conducted in public and private by prominent investors, aimed at increasing women's representation on corporate boards. State Street launched its "Fearless Girl" campaign in March 2017, and Blackrock

and Vanguard followed suit not long after. Together, these three asset managers—often called "The Big Three" because they have more than $15 trillion under management and account for 75% of all indexed mutual fund and ETF assets—applied concerted pressure on public companies to add more women to their boards. Unlike earlier shareholder diversity campaigns that firms largely ignored, The Big Three adopted policies, which they enforced, of voting against directors' reelection at firms they viewed as making insufficient progress toward a gender-diverse board.[1] In this paper, we use cross-sectional variation in The Big Three's ownership stake to examine the impact of these campaigns and shed light on factors that limit board diversity.

Using a difference-in-differences estimator, we compare the growth in female directorships across firms with varying degrees of pre-existing Big Three holdings before and after The Big Three began their campaigns. Because The Big Three's voting power and influence increase with their ownership stake, firms with greater Big Three holdings are under greater pressure to respond to their campaigns. The analysis includes year fixed effects to account for secular trends in the number of female directors and firm fixed effects to isolate within-firm changes in directorships coinciding with the timing of The Big Three's campaign.

Our estimates imply that The Big Three's campaigns increased female directorships. During the campaign, one standard deviation greater 2016 Big Three ownership is associated with a 76% increase in the net flow of new female board members and an 11% increase in the overall proportion of female directors. This increase is driven by both fewer female director departures and more new additions. The Big Three's campaigns are also associated with firms adding their first female director: one standard deviation greater Big Three ownership is associated with a nearly one-fifth decline in the number of US companies with no female directors over this period.

[1] Indeed, as put by *The Wall Street Journal*, most firms "shrugged" at State Street's initial announcement, leading State Street to begin voting against directors in the early months of its campaign (Baer and Lublin, 2017). Negative votes from any of The Big Three are associated with the director holding fewer board seats in the future (see Section 4.6).

The growth in female directors appears to be tied to The Big Three's campaigns. For example, the timing of the increase corresponds to the timing of each asset manager's campaign: the share of a firm's equity held by State Street predicts increases in gender diversity starting in 2017 while the holdings of Vanguard and Blackrock, which started their campaigns later, begin predicting more female directors only in 2018. The increase in female directors is also greater among firms targeted by the individual asset managers' campaigns. State Street focused on firms with no female directors, while BlackRock focused on firms with less than two female directors. The growth in female directorships reflects these two asset managers' different targeting.

The growth in female directors does not appear to be driven by firm characteristics other than Big Three ownership. One concern is that the observed patterns might instead reflect specific types of firms (larger or consumer-goods companies, for example) coming under greater pressure to add female directors, perhaps in response to the "Me Too" movement. However, our findings are robust to controlling for differential time trends based on firm size, industry, index inclusion, or indexes' free-float adjustments. The findings are also robust to controlling for corporate culture, which drove an uptick in female directors earlier in the decade (Giannetti and Wang, 2020), and to controlling for California's board gender mandate, which was adopted toward the end of our sample period. Finally, differences in the characteristics of firms with greater Big Three ownership cannot explain our findings on the differential timing and targeting of firms by each of The Big Three institutions.

The magnitude of our estimates suggest the Big Three's impact was substantial. We find that their campaigns account for at least one-third to two-thirds of the overall increase in female director share between 2016 and 2019. This estimate reflects a lower bound because it does not account for the positive spillover effects of The Big Three's campaigns onto firms in which they hold smaller stakes: the campaigns spurred a push to develop a greater pipeline of female directors

and led proxy advisory firms and other investors to demand change as well. Such spillover effects are absorbed by our estimation's year fixed effects and are excluded from these estimates.

Big Three ownership is also associated with an increase in female directors' likelihood of holding key positions on the board. For firms with greater Big Three ownership in 2016, a given female director is more likely to chair a board committee after 2016, including the nominating and audit committees, and more likely to serve on the nominating committee. In this director-level analysis, we include firm-by-year fixed effects to control for board size and other time-varying, firm-specific factors that might affect the likelihood of a director serving in these roles. These findings suggest that the growth in female directors was not mere tokenism (i.e., symbolic appointments that do not meaningfully shift females' authority): firms made more than perfunctory changes to satisfy The Big Three's demands for increased gender diversity.

To analyze why firms did not add more female directors prior to the Big Three campaigns, we also look at how companies increased gender diversity in response to the campaigns. As Adams (2016, p.383) notes, "we know very little about the causes of female relative underrepresentation on boards." State Street (2017) justified its campaign by arguing that firms were being too narrow in how they identified board candidates, relying too much on personal connections and candidates' having executive experience. Because men are better networked with other men and have more executive experience, both criteria can steer director searches away from women.[2]

Tracing the effects of The Big Three's gender diversity campaigns, we find that relaxing these requirements enabled firms to add more women to their boards. Firms expanded diversity by casting a wider net in their director searches: the new female directors hired were less connected

[2] A limited supply of qualified candidates, possibly stemming from sex differences in preferences (Niederle and Vesterlund, 2011), childbearing-related career interruptions (Miller, 2011; Bertrand et al., 2010), or the costs of identifying first-time candidates (Boyallian et al., 2020), could also prevent firms from appointing more women. Chief executives and nominating committee members, who are primarily men, might also stereotype or discriminate against female candidates.

to the CEO and existing board members, and they had less executive experience than the candidates firms would otherwise have selected. For example, one standard deviation greater Big Three ownership is associated with a 70% reduction in the likelihood that a newly added female director is connected to the CEO and a 14% decline in her likelihood of having CEO experience. Firms sourcing female directors from outside their usual network helps explain why female directors are more independent of management (Adams and Ferreira, 2009; Schwartz-Ziv, 2017) and often bring different expertise to the board (Kim and Starks, 2016).

We find that shareholders voted overwhelmingly in support of these new women, awarding them even more votes than newly appointed male directors. This investor support suggests that qualified female director candidates were available before The Big Three's campaigns; they just were not being chosen. Consistent with this interpretation, we also find no increase in female directors' compensation or busyness after 2016 despite the large increase in their hiring.[3]

Our results illustrate shareholder advocacy's potential to expand women's participation in corporate leadership more robustly than do government mandates. Unlike California's short-lived quota law, which led to tokenism (Hwang et al., 2020), we find that this investor-led initiative upgraded women's role on boards, including chairing the nominating committee. And in contrast to the response to Norway's quota, firms facing Big Three pressure did not disproportionately hire the same women (so called "golden skirts"; Seierstad and Opsahl, 2011), which could reduce director attention and weaken governance (Fich and Shivdasani, 2006). By bringing more diverse professional networks into the firm's orbit and increasing women's representation on nominating committees, this investor push could lead to a self-reinforcing cycle of increasing female board participation over time (Field et al., 2020; Matsa and Miller, 2011).

[3] Findings from machine learning and board quotas in France and Norway also suggest that firms overlook qualified female candidates (Bertrand et al., 2019; Erel et al., 2020; Ferreira et al., 2020).

Our analysis also contributes to the literature on the barriers to enhancing workforce DEI. Prior research has found that the usual tools for increasing diversity—diversity training, hiring tests, performance ratings, grievance systems—can actually decrease the proportions of women and minorities in management (see Dobbin and Kalev, 2016, for an overview). To boost DEI at a given firm, this literature emphasizes the importance of top executives watching closely and holding managers accountable. Our analysis of The Big Three's campaigns reveals a similar dynamic between shareholders and top executives. These results lend credence to a view among policymakers and activists that business community buy-in is important to expand DEI. As put by German Minister Kristina Schröder, "We will only succeed in bringing about the necessary changes by gaining the business world's support, not by fighting against it" (CNBC, 2010).

Finally, our results contribute to the ongoing debate about the impact of indexed investment strategies on corporate governance. The Big Three now collectively hold about 20% of the outstanding equity in large US public companies, increasing the importance of their providing effective stewardship. Many argue that these institutions lack the incentives or resources required to monitor firms effectively (e.g., Schmidt and Fahlenbrach, 2017; Bebchuk and Hirst, 2019; Gilje et al., 2020; Heath et al., 2021), while others argue the opposite (Appel et al., 2016, 2019; Fisch et al., 2019; Kahan and Rock, 2019a; Lewellen and Lewellen, 2020; Azar et al., 2021). Our findings show that indexed investors can and do meaningfully influence firms' governance structures. By targeting an easy-to-monitor outcome and deploying a broad-based campaign that requires little firm-specific information, these large investors can bring about significant governance changes without large resource outlays. This influence and "check the box" governance approach, however, raises potential concerns. To the extent that the optimal governance structure varies across firms (e.g., Coles et al., 2008; Duchin et al., 2010), a focus on issues that are easy to monitor at scale could lead to one-size-fits-all policies that are not always beneficial for individual firms. Such

concerns are magnified if self-dealing, attracting fund flows, or staving off regulation motivate The Big Three's activism (Barzuza et al., 2020; Fisch, 2020; Kahan and Rock, 2019b).

The remainder of this paper is organized as follows. Section 2 details the growing importance of The Big Three in US companies' ownership structures and describes their recent campaign for greater gender diversity on corporate boards. Section 3 describes our data, and Section 4 presents our empirical specification and main findings. Section 5 analyzes how companies increased gender diversity in response to the campaigns, and Section 6 concludes.

2. The Big Three's Campaigns for Gender Diversity

Indexed investment strategies and The Big Three have grown increasingly important over the last two decades. The share of mutual fund and ETF assets that are indexed has increased more than fourfold from around 9% in 1999 to around 38% as of the end of 2019. With The Big Three collectively accounting for 75% of all indexed funds, the growing popularity of indexing has resulted in The Big Three becoming some of the largest investors in many US companies. Between 2017 and 2019, The Big Three collectively held about 12% of the average US firm's outstanding equity and even bigger stakes in large firms. The Big Three also have disproportionate voting power because not all investors vote their shares: among S&P 500 firms, The Big Three account for 20% of ownership and 25% of votes cast (Bebchuk and Hirst, 2019).

In recent years, companies have also come under increasing pressure from advocacy groups, regulators, and some investors to add more female directors on corporate boards. In 2011, CalPERS and CalSTRS, two large public pension funds, set up the Diverse Director Data Source, a database of prospective directors, to make it easier for firms to identify diverse individuals for open director seats. Politicians and regulators, including SEC Commissioner Luis Aguilar in 2010 and President Obama in 2015, encouraged companies to voluntarily adopt a policy of interviewing at least one woman or minority for every open directorship (Fisch and Winters, 2016).

Furthermore, in 2014, the US chapter of the 30% Club, a global organization that advocates for greater representation of women on corporate boards, was founded with the goal of achieving 30% female directors on S&P 100 boards by 2020 through collaborative and voluntary methods.

Despite this pressure, women's representation on corporate boards remained low as companies often did not heed these early calls for greater diversity. A 2016 survey of US directors found that gender diversity was typically not even on boards' agenda. Male directors, who each had served multiple boards, reported that "gender diversity has never been a stated or implicit goal at any of the boards I have served on," and "not a single time was there a mention of hiring a woman — it was never brought up. It simply was never a topic" (Wiersema and Mors, 2016).

Amid this general apathy toward gender diversity, State Street became the first of The Big Three to publicly pressure companies to increase board diversity when it announced its "Fearless Girl" campaign on the eve of International Women's Day, March 7, 2017. In this campaign, State Street announced that it would encourage firms to add female directors. The campaign included an extensive media blitz and was covered widely by social media and the press.[4]

Unlike prior efforts by investors and advocates to promote gender diversity, State Street threatened adverse consequences for boards that failed to make progress, saying it would vote against reelecting the nominating/governance committee chair at companies with inadequately diverse boards (State Street, 2017). While State Street's new voting policy did not establish an exact quota, it targeted firms that lacked any female directors and "failed to address gender diversity in any meaningful way." (Lublin and Krouse, 2017).

Within a year, both BlackRock and Vanguard, the two other members of The Big Three,

[4] As part of the campaign, State Street installed a bronze statue of a young girl facing down the iconic charging bull statue located on Wall Street in New York City and promoted its index fund that invests in US companies with gender diverse senior leadership. State Street reportedly estimated that the subsequent media exposure was worth $27–38 million (Vranica, 2017).

made similar announcements. In July 2017, BlackRock announced it began focusing on board gender diversity when voting for directors (Hunnicutt, 2017). This change was formalized in its revised proxy voting guidelines, issued in February 2018, that stated it "would normally expect to see at least two women directors on every board" and may vote against nominating/governance committee members at firms that have "not adequately accounted for diversity in its board composition" (BlackRock 2018; p.4-5). On August 31, 2017, Vanguard's CEO announced in an open letter that Vanguard was also focused on diversity. He was less specific about how Vanguard would adjust its voting, stating that "meaningful progress [in board diversity] over time will inform our engagement and voting going forward" (McNabb, 2017).[5]

In accordance with their announced policies, the Big Three began casting more negative votes against directors at companies with less diverse boards in 2017 and 2018. Figure 2 shows the share of directors that each of The Big Three voted against in each year from 2014 to 2019. We focus our analysis on votes for the specific directors that each institution targeted. For State Street, we separately report votes for nominating/governance committee chairpersons at firms that started the year with a female director. For BlackRock, we separately report votes for all nominating/governance committee members at firms with at least two female directors. Because Vanguard did not specify a threshold in their voting policy, we look at all directors and divide the sample based on whether the firm started the year with at least one female director.

Figure 2, Panel A, shows that State Street's votes against nominating chairs of companies without a female director increased markedly when they began their campaign. Before 2017, State Street cast votes against about 20% of such directors. In 2017, this figure jumped to nearly 70% of directors and remains elevated thereafter. In contrast, State Street's votes against the nominating

[5] In their announcements, The Big Three said that the diversity campaigns were aimed at improving the board's effectiveness, decision making, and hence, shareholder value (McNabb, 2017; State Street, 2017; BlackRock, 2018). Barzuza, Curtis, and Webber (2020) argue that the campaigns were also designed to attract fund flows from socially minded investors.

chairs of other companies remained flat at around 10% throughout the period. With some delay, Vanguard and BlackRock also voted against more directors after their late-2017 and early-2018 commitments to do so. Panels B and C show a similar pattern for their votes at companies that had few female directors, with their jumps occurring later than State Street's, consistent with the later timing of their campaigns. While in 2014–2017 Vanguard consistently voted against about 9% of directors at firms with no female directors, this share increased to 10% in 2018 and 18% in 2019, more than three times greater than the 5.6% of directors receiving negative votes from Vanguard at other companies in that year. BlackRock consistently voted against about 7% of nominating committee members in 2014–2017 at firms with less than two female directors, and this share increased to more than 9% in 2018 and to nearly 30% in 2019, almost an order of magnitude greater than the approximately 3% of nominating members receiving negative votes from BlackRock at other companies in that year.

It is unclear, however, whether The Big Three's pressure tactics were effective. Indeed, The Big Three's votes against reelecting directors indicate that some firms did not heed their calls for change, at least initially. In the next sections, we analyze the impact of these campaigns.

3. Data and Summary Statistics

Our data on corporate board composition are from Boardex for 2013 to 2019, which we use to calculate our outcomes of interest in the three years before (2014-16) and three years after (2017-19) The Big Three's gender diversity campaigns began. Boardex provides information on directors' gender, past employment, and connections using publicly available information, including the mandated disclosures of US publicly traded firms.

We use Boardex to measure boards' gender diversity. *Female director share* is the share of a firm's directors that are women. *Change in number of females* is the net increase in the number of women on the board relative to the previous year. *Share of directors that are newly hired females*

is the number of female directors who were not on the board in a previous year, scaled by the total number of directors. *Share of female directors that depart* is the share of female directors from the prior year who are no longer on the board. *At least one female director* is an indicator that equals one when the board has at least one woman.

We also use Boardex to examine newly hired directors' connections to existing directors and past work experience at the time of their appointment. We measure connections between individuals using overlaps in their work history and education.[6] We examine the number of such connections and indicators for a new director being connected to an existing board member or the CEO. For experience, we consider whether a director had prior experience as a CEO or director of a listed or unlisted company before their appointment to the given board.

Prior research suggests that many important board decisions are made in committees, which specialize in specific areas of the board's overall responsibilities (Bilimoria and Piderit, 1994). We use Boardex to identify whether the director is a member or chair of the audit, compensation, or nominating committees, three key committees that researchers consider vital to fulfilling boards' monitoring function (Brick and Chidambaran, 2010; Chhaochharia and Grinstein, 2009). We also examine whether a director sits on the executive committee, which has the authority to act on behalf of the full board when immediate actions are required (Xie et al., 2003), and whether the director chairs any committee or the board itself.

Our data on institutional ownership is from Thomson-Reuters' Institutional (13f) Holdings database. We follow Ben-David et al. (2020) to identify The Big Three asset managers: we use the MNGRNO identifiers 90457 and 81540 for Vanguard and State Street, respectively, and for

[6] Following Fracassi and Tate (2012), we define a connection as existing between two individuals if they ever worked simultaneously at the same employer or graduated from the same school within one year of each other. Our findings are similar if we use an alternative definition of connections, which also includes cases where the two individuals served at some point as an officer or director at the same club, organization, or nonprofits, even when this service did not overlap in time. Our findings are also robust to defining connections based on work history alone.

BlackRock, we aggregate the holdings of its six MGRNO identifiers: 9385, 11386, 39539, 56790, 91430, and 12588.[7] For each firm, we scale each of the three institutions' reported ownership by the firm's market value of equity, as reported in CRSP. We measure both holdings and market value of equity at the end of December 2016, before the early-2017 start of The Big Three's campaigns. We record institutions that do not report holdings in a given firm as having none. The variable $Big3\%^{2016}$ is the sum total of the three institutions' percent ownership.

Table 1 provides summary statistics for Big Three ownership and our outcome variables of interest. For the average observation in our sample, The Big Three owned 13.0% of shares in 2016, and women held 14.4% of board seats. The average change in the number of women on boards is 0.13: in any given year, about 1 in 8 firms adds a woman to the board. Of the average firm's directors, 2.5% are new female directors; and of the incumbent female directors, 6.2% exit the board each year. For directors' board assignments, 10.0% (38.8%) of directors chair (sit on) the nominating committee. For newly hired directors: 21.6% (9.0%) are connected to an existing board member (the CEO), 42.9% have CEO experience, and 72.7% have been a director before.

Big Three holdings varied considerably across companies in 2016, prior to their launching of their campaigns. Figure 3 plots the distribution of Big Three holdings across firms, and its standard deviation is 8.6 percentage points. Much of this cross-sectional variation is driven by which indexes each company's stock is included in. For example, because many of The Big Three's investments are benchmarked to the S&P 500 index (see, e.g., Russell Investments, 2012), stocks included in this index have higher Big Three ownership. The same is true for stocks included in the Russell 3000 index and its subindexes, which include the 3,000 stocks with the largest total market cap. Smaller companies not included in these two indexes have less index ownership (Cao et al., 2019). A second factor that is likely important for index ownership is a stock's float-adjusted

[7] In its 13F filings, BlackRock discloses its various subsidiaries' holdings using seven different reporting entities, which Thomson-Reuters aggregates under these six MNGRNO identifiers.

market cap. Because indexes typically weight stocks based on their free float (i.e., the stocks' market capitalization excluding large holdings by insiders, ESOPs, governments, and promoters), stocks with a larger proportion of such ownership will receive smaller index weights, and hence, less index ownership (Appel et al., 2022).

Table 2 illustrates these correlations by reporting company averages of these characteristics by tercile of Big Three ownership. Definitions of all variables are provided in Appendix Table A1. Intuitively, firms with a higher Big Three ownership share are more likely to be in major indexes like the S&P 500 and Russell 3000 and are more likely to have a smaller free-float adjustment (i.e., the proportion of market cap excluded by Russell when determining within-index weights). As expected, Big Three holdings is also lower among smaller companies (as measured using market cap, book assets, or sales) because popular indexes, including the Russell 3000 index and its subindexes, tend to track stocks with larger market capitalizations. We address these differences below when describing our identification strategy. We find no clear association between Big Three ownership and the likelihood of the company having a dual class share structure.

4. Empirical Analysis of Campaigns' Impact on Board Diversity

4.1 Specification

To measure the effect of The Big Three's campaigns, we estimate a difference-in-differences regression model that compares board gender diversity before and after 2016 by the fraction of the firm owned by The Big Three before their campaigns begin. Because The Big Three's voting power and influence increase with their ownership stake, firms with greater Big Three holdings are under greater pressure to respond to their campaigns. Thus if the campaigns were effective, we would expect to see a greater increase in board gender diversity after 2016 for firms with greater Big Three holdings. We estimate:

$$GenderDiv_{it} = \beta Big3_i^{2016} \times Post2016_t + \gamma_1 Zero_i^{2016} \times Post2016_t$$
$$+\gamma_2 One_i^{2016} \times Post2016_t + \alpha_i + \delta_t + \epsilon_{it}, \quad (1)$$

where *GenderDiv* measures board gender diversity of firm *i* in year *t*, and $Big3^{2016}$ is the share of firm *i*'s equity held by The Big Three in December 2016. We measure The Big Three's ownership position before their campaigns begin to mitigate endogeneity concerns, including the possibility that The Big Three tilted their portfolios toward gender-diverse firms during the campaigns. *Post2016* is an indicator for years after 2016. Firm fixed effects, α, control for time-invariant differences in firms' commitment to diversity and governance structures (e.g., whether board positions are staggered or classified), and year-fixed effects, δ, control for secular trends in board gender diversity.

Even without pressure from The Big Three, firms with all-male boards are most likely to add women (Farrell and Hersch, 2005). This trend could confound our estimates if Big Three holdings in 2016 correlate with a company's existing diversity. We thus allow firms with different baseline levels of board gender diversity to have different diversity trends by including the interaction of *Post2016* with $Zero^{2016}$ and One^{2016}, which are indicator variables for the firm having zero or one women on their corporate board in 2016, respectively.[8] The coefficient of interest, β, thus measures the differential change in board gender diversity experienced after 2016 by firms with greater Big Three ownership, after accounting for a firm's baseline level of diversity, post-2016 trends associated with that baseline, and overall diversity trends. Finally, we account for potential serial correlation by adjusting the standard errors for clustering at the firm level.

For the estimates of equation (1) to have a causal interpretation, one must assume that, conditional on these controls, firms with differing levels of Big Three holdings would have exhibited similar post-2016 trends in board diversity if not for the differing ownership. This

[8] Our findings are robust to using alternative ways to specify this control, including interacting *Post2016* with the female share of directors in 2016.

"parallel trends" assumption is plausible: much of the variation in Big Three holdings is driven by index assignments and free-float adjustments, and although these conditions correlate with firm size and inside ownership, it is unclear why those characteristics would predict differential trends starting in 2017. One possibility we consider is that the effect of potential customer or employee pressure related to the "Me Too" social movement could load on firm characteristics that are correlated with Big Three holdings. To rule this out, we confirm that our findings are robust to allowing for differential post-2016 trends associated with index inclusions, free-float adjustments, and several other firm characteristics, including industry and firm size.

4.2 Baseline Results

We find that firms with greater Big Three ownership increased the gender diversity of their boards during The Big Three's campaigns. Estimates of eq. (1) are reported in Table 3, where each column reports analysis for a different measure of board gender diversity. We find that greater Big Three ownership is associated with a net increase in the number of female directors during the period of The Big Three's campaigns (column 1; $p < 0.001$). The association is sizable: one standard deviation greater Big Three ownership (8.6%) is associated with an annual net increase of about 0.10 women, which is a 76% increase relative to the sample mean (0.13).

The net increase in female directors results from both more women being added to these boards and fewer women leaving them. One standard deviation greater Big Three ownership is associated with a 0.9 percentage point increase in the proportion of newly hired directors that are women (column 2), a 38% increase relative to the sample mean (0.023). The same difference in Big Three ownership is associated with a two percentage point decline in the share of existing female directors that depart (column 3), a 33% decrease relative to the sample mean (0.062).

We find similar results when we measure gender diversity using the female share of the board. One standard deviation greater Big Three ownership is associated with a 1.6 percentage

point increase in the female share of the board (column 4; $p < 0.001$), which amounts to an 11% increase relative to the sample mean (14.4%). As we would expect, the magnitude of the estimate for this stock measure of diversity is smaller than the estimates for the flow measures reported in columns 1-3. Because directors typically serve on boards for multiple years, the board composition at any point in time is shaped by conditions accumulating over several years, unlike our earlier measures of gender diversity that record women's flows into and out of directorships.

Finally, The Big Three's campaigns are associated with a reduction in all-male boards. Using a linear probability model, we find that one standard deviation greater Big Three ownership is associated with a 4.9 percentage point increase in the likelihood of having at least one female director after 2016 (column 5; $p < 0.001$). This association corresponds to a 17.4% decrease in the likelihood of an all-male board relative to the sample mean (28.1%).

The association between Big Three ownership and post-2016 increases in board diversity is largely linear, suggesting that the Big Three's influence stems from the extent of their ownership and voting power. Figure 4 plots estimates from a firm-panel semi-parametric version of our baseline regression. The specification is the same as in eq. (1) except that the effect of Big Three ownership is allowed to vary nonparametrically with the share of stock held by The Big Three. We estimate the relation using partial regression analysis: we first estimate the residuals from regressions of our outcome variables and $Big3^{2016} \times Post2016$ on the control variables, and then we use a kernel regression to compute the nonparametric relation between these residuals after adding back their sample means. For brevity, we report only estimates for the net change in female directors and the female share director in this and subsequent analyses. The near linearity of the relation suggests that The Big Three's influence is not only a result of them being among the largest owners in many firms: the magnitude of their ownership share also matters.

The importance of The Big Three's ownership stake is likely attributable to voting power. For most firms, ownership shares directly provide voting power. However, this relationship is

muted among companies with dual class shares, where outside investors' ownership share conveys less voting power. Indeed, when we restrict our analysis to firms that ISS identifies as having dual-class stock in 2016, the point estimates are not statistically significant and half of what we find for the full sample. While these estimates are suggestive, we interpret them with caution as only 6.7% of our sample firms have dual class shares, leaving the test with less statistical power.

The timing of the increase in women's board participation coincides with The Big Three's campaigns. Figure 1, Panel A, shows that the average year-to-year change in the number of female directors was flat at about 0.08 in 2014, 2015, and 2016. In these pre-campaign years, about 1 in 12 firms added a female director each year. These rates started to increase in 2017 when The Big Three's campaigns began. By 2019, 1 in 4 firms added a female director.

The timing of the increase within the year 2017 is also consistent with the timing of the campaigns, the first of which was launched publicly in March. Figure 5 plots the share of newly appointed directors that are women by month in 2016 and 2017. Twenty percent of newly appointed directors were women in each of the first three months of 2017, just like they were in 2016. Beginning in April of 2017, however, the female share is quite different than it was in 2016, averaging 25.2% for the last 6 months of 2017.

These findings suggest that firms responded quickly to the campaigns. Firms can respond so swiftly because most directors are initially appointed outside of annual shareholder meetings.[9] Boards often appoint new directors to fill board vacancies, resulting from another board member's departure or the board's size increasing, without a shareholder vote; these directors are then

[9] Firms were also likely able to respond quickly for other reasons. Because director searches typically involve firms vetting a list of finalist candidates over several months, some firms would have already been in the process of vetting and selecting among finalist candidates for a board vacancy in early March 2017 when State Street's announced its campaign. If State Street's pressure and voting threats nudged such companies toward selecting women from among the finalists, this would result in some additional women on boards soon after the campaign's announcement. Even firms without an active vacancy at the time of State Street's announcement likely maintained short lists of vetted director candidates, allowing them to respond quickly to fill vacancies or increase the overall size of the board. Finally, it is possible that some companies anticipated State Street's campaign. In its official March announcement, State Street acknowledged that they had already been engaging privately with companies on the subject.

subsequently renewed by a shareholder vote at their next meeting. Thus, despite shareholder meetings being concentrated in April through June, more than half of new directors are appointed in the last six months of the calendar year. In all, 83% of directors join boards prior to the annual meeting where their appointment is first voted on by shareholders, and in many cases, these appointments occur several months to a year in advance of their appearing on proxy statements.

To link these increases more directly to The Big Three's campaigns, we estimate a modified version of eq. (1) in which we interact $Big3^{2016}$ with a full set of year indicator variables instead of *Post2016*. The coefficients on these variables estimate the change in the association between Big Three ownership and female board diversity in each year, relative to 2014, whose interaction with $Big3^{2016}$ is omitted from the specification. Table 4 presents the results.

The timing of the association between Big Three ownership and increased gender diversity is consistent with The Big Three's campaigns having a causal effect. We find no evidence of an association before the campaigns: the estimated coefficients on the 2015 and 2016 interactions are economically small and statistically insignificant. In 2015, for example, one standard deviation greater Big Three ownership is associated with a 0.0067 increase in the number of female directors (p = 0.631) and a 0.02 percentage point increase in the share of directors that are women (p = 0.885). However, increases in gender diversity are significantly related to Big Three ownership during the campaign years (2017–2019). By 2019, one standard deviation greater Big Three ownership is associated with 0.11 additional women and a 2.4 percentage point increase in the female share of directors. Both estimates, which are an order of magnitude larger than those for 2015 and 2016, are statistically significant at the 1% level.

4.3 Heterogeneity Across Campaigns

As described in Section 2, The Big Three launched their diversity campaigns at different times. State Street moved first when it launched the "Fearless Girl" campaign in early March 2017.

Vanguard announced that it would focus on diversity at the end of August 2017, and BlackRock updated its proxy voting guidelines in February 2018. Given the timing of these announcements, we would expect to see the effect of State Street's campaign in 2017 but not see the effect of BlackRock's campaign until the following year. Due to the late-2017 start of Vanguard's campaign, we would expect to only detect the full impact of its campaign starting in 2018.

To investigate the timing of each of The Big Three institution's impact on board gender diversity, we estimate a modified version of eq. (1) in which separate measures of each of the three institution's ownership are interacted with each of two timing measures: an indicator for the year 2017 and an indicator for the years 2018 and 2019. Table 5 reports the results.

Consistent with the timing of each institution's campaign, we find that only State Street's ownership shares are strongly associated with a change in the number of female directors in 2017. As a flow variable, the *Change in number of females* outcome is more immediately sensitive to shifts in director hiring. Greater State Street ownership is associated with increases in female directors in both 2017 and 2018-2019, and the magnitudes are similar: one standard deviation greater State Street ownership (1.73%) is associated with a net addition of about 0.09 and 0.07 women in 2017 and 2018-2019, respectively. Vanguard's ownership stake is positively associated with increases in female directors in 2017, but the association is smaller and statistically insignificant, consistent with its campaign's late-year launch. BlackRock's ownership stake, in contrast, does not have a positive association with the change in female directors in 2017. The difference between the magnitude of BlackRock and Vanguard's 2017 coefficients and that of State Street are statistically significant (p = 0.001 and 0.017, respectively). Because *Female director share* is a stock as opposed to a flow variable, we expect it to show effects with a delay. Consistent with that logic, all three institutions show a significant association with female director share only in 2018-2019. And as expected, the magnitudes of the 2018-19 coefficients are slightly larger than those found in our earlier tests, which estimate an average effect that includes 2017.

Each of The Big Three asset managers pressured firms to expand board gender diversity, but only State Street and BlackRock singled out specific types of companies in their campaigns. State Street targeted firms without any female directors, and BlackRock emphasized its expectation that each board should have at least two women.[10] We next investigate whether each of these institution's ownership is associated with the outcome it targeted. We now modify eq. (1) and estimate two separate models that include each institution's ownership stakes and an interaction of their ownership stake with an indicator for whether that particular institution targeted the company. We estimate the following linear regressions:

$$\begin{aligned} GenderDiv_{it} = {} & \zeta_1 StateStreet_i^{2016} \times Post2016_t \\ & + \zeta_2 StateStreet_i^{2016} \times Post2016_t \times Zero_i^{2016} \\ & + \gamma_1 Zero_i^{2016} \times Post2016_t \\ & + \gamma_2 One_i^{2016} \times Post2016_t + \alpha_i + \delta_t + \epsilon_{it}, \end{aligned} \tag{2}$$

and

$$\begin{aligned} GenderDiv_{it} = {} & \eta_1 BlackRock_i^{2016} \times Post2017_t \\ & + \eta_2 BlackRock_i^{2016} \times Post2017_t \times LessTwo_i^{2016} \\ & + \gamma_1 Zero_i^{2016} \times Post2017_t \\ & + \gamma_2 One_i^{2016} \times Post2017_t + \alpha_i + \delta_t + \epsilon_{it}, \end{aligned} \tag{3}$$

where $LessTwo^{2016}$ is an indicator for the firm having less than two women on their board in 2016, and *Post2017* is an indicator for years after 2017, when BlackRock's voting policy was in effect.

[10] For example, State Street's initial announcement of its "Fearless Girl" campaign in March 2017 highlighted that about a quarter of Russell 3000 companies had no women on their board (State Street, 2017). By July 2017, State Street voted against directors at 400 companies that lacked any female directors (Baer and Lublin, 2017). In September 2018, State Street announced that it would update its voting guidelines starting in 2020 to vote against the entire slate of directors on the nominating committee (not just the chair) of companies with no female directors that failed to engage in "successful dialogue" about improving diversity (Whyte, 2018). BlackRock stated its expectation for two female directors explicitly in its Proxy Voting Guidelines (BlackRock, 2018).

In the latter specification, we do not include a separate interaction for $LessTwo^{2016} \times Post2017$ because it is collinear with $Zero^{2016} \times Post2017$ and $One^{2016} \times Post2017$. Table 6 reports the results.

Consistent with The Big Three's campaigns being effective, we find greater increases in gender diversity at companies targeted by an institution when that institution's ownership stake is larger. State Street ownership is associated with the largest increases in diversity at companies that did not have any female directors when their campaign began (columns 1 and 4). After 2016, one standard deviation greater State Street ownership (1.73%) is associated with 0.10 additional female directors per year for companies starting with one or more female directors and 0.10+0.05=0.15 additional women for companies with no female directors. Likewise, BlackRock ownership is associated with larger post-2017 increases in gender diversity for companies starting with fewer than two female directors (columns 2 and 5). We find similar results when we include both State Street and BlackRock's ownership stakes in the same estimation (columns 3 and 6).

4.4 Alternative Explanations

4.4.1 "Me Too" Movement

Following the exposure of the sexual-abuse allegations against Hollywood producer Harvey Weinstein in early October 2017, the "Me Too" movement directed intense public attention to the issues of sexual harassment against women and gender discrimination in the workforce (Lins et al., 2020). Although the movement itself focused on sexual harassment and abuse, the spotlight on men's role as gatekeepers to positions of power could have led firms to feel pressure to add women to their boards of directors. Such pressure could confound our findings if greater visibility makes larger companies, which have greater Big Three ownership, more sensitive to public scrutiny (2020 Women on Boards, 2019).[11]

[11] It is also possible that the movement adversely affected women's representation on boards. According to a 2018 survey, 82% of men worried about women falsely alleging harassment at work (Morning Consult, 2018). When men are wary of forging professional relationships with female colleagues, they may provide women with less mentoring and inadvertently slow their advancement to leadership positions (Elsesser, 2019).

To address this issue, we examine whether our findings are affected by the inclusion of controls that allow for different-sized firms to have different trends during the campaigns. We modify eq. (1) to include a control for the interaction of the firm's size in 2016 and the *Post2016* indicator. The firm and year fixed effects absorb the main effects of these variables. Because it is unclear what firm size dimension best proxies for public visibility, we measure size in three alternative ways: market value of equity, book value of assets, and sales. Table 7 reports the results.

The larger increase in female directors for firms with higher Big Three ownership is robust to controlling for differential trends with respect to firm size. We continue to observe a larger post-2016 increase in the number of women added and in the female director share for firms with greater Big Three ownership, regardless of whether a firm's size is measured using its market value of equity (Table 7, columns 1 and 7), book value of assets (columns 2 and 8), or sales (columns 3 and 9). In all cases, the point estimate is statistically significant ($p < 0.001$). Controlling for differential trends in other variables that correlate with Big Three ownership, such as free-float adjustment and index inclusion, has little impact on our findings (columns 4–6 and 10–12).[12]

The estimated magnitudes remain large. Using the smallest point estimates in Table 7, which are obtained when measuring size using the market value of equity, one standard deviation greater Big Three ownership (8.6%) is associated with an annual net increase of about 0.045 women, which is a 35% increase relative to the sample mean (0.13). Likewise, one standard deviation greater Big Three ownership is associated with a 0.9 percentage point increase in females' share of the board, which amounts to a 6% increase relative to the sample mean (14.4%).

Our findings are also robust to controlling for differential trends across industries. Firms that sell products directly to consumers are likely to be more sensitive to public scrutiny and the

[12] Our findings are also largely unchanged when we restrict attention to companies of similar size and ownership structure by excluding firms with dual class stock and those with a free-float adjustment or market cap in the bottom or top decile.

Me Too movement. In specifications reported in columns 1 and 5 of Table 8, we allow firms in business-to-consumer (B2C) industries to have different post-2016 trends. We define B2C industries using Delgado and Mills' (2020) classification. Our findings are robust to including these controls. In fact, we obtain similar results even when we go further and allow every 4-digit Standard Industrial Classification (SIC) code to have its own post-2016 trend (Table 8, columns 2 and 6).

If the Me Too movement, or a general increase in public attention to gender equality issues, motivated firms to diversify their boards, we might expect firms' responses to vary depending on whether they are more "female friendly." For example, Giannetti and Wang (2020) find that female friendly firms were more likely to increase board diversity between 2005 and 2016. If firms with greater Big Three ownership in 2016 happen to differ in this dimension, then some of the observed post-2016 increase in their gender diversity could be driven by how firms with different cultures responded after the Me Too movement went viral in October 2017.

To analyze whether Big Three ownership might be standing in for firms' pre-existing receptiveness to gender equality, we allow for differential post-2016 trends based on this characteristic. We modify eq. (1) by adding interactions between the *Post2016* indicator and 2016 values for Giannetti and Wang's proxies for the extent to which a company's culture is female-friendly, *Diversity Strengths* and *Diversity Concerns*, which are the average diversity strength and concern ratings reported in the MSCI ESG KLD STATS database. Table 8 reports the results.

The change in female directors for firms with higher Big Three ownership is robust to including these controls. Because *Diversity Strengths* and *Diversity Concerns* are available only for larger companies, we first repeat our baseline analysis without these controls on the subsample of firms with non-missing data for these proxies. In this subsample, which is about 60% of our original sample, we continue to find an association between Big Three ownership and changes in gender diversity after 2016 (Table 8, columns 3 and 7). Adding the controls for a firm's culture

has minimal impact on the estimates, which remain of similar magnitude and statistically significant at the 0.1% and 1.0% levels, respectively (columns 4 and 8).

4.4.2 California's Gender Mandate

In September 2018, California enacted a board gender quota for all publicly traded companies headquartered in the state. Although the quota later became mired in legal challenges, its requirements were initially structured in two phases. All boards were required to have at least one woman by the end of 2019. By the end of 2021, five-member boards were to have at least two female directors, and boards with six or more directors would need at least three women (California Corporations Code, Section 301.3). Although the mandate surprised many observers and occurred near the end of our sample period, we confirm that it does not confound our findings. Our findings are robust to allowing firms headquartered in California to exhibit a differential time trend. Board diversity of California firms increases in 2019, the year the mandate became effective, but our estimates of The Big Three's impact are unaffected (see Appendix Table A2).[13]

4.5 Quantifying The Big Three's Impact and Broader Effects

4.5.1 Magnitude of the Effect

Our estimates imply that The Big Three's campaigns are responsible for a large proportion of the recent increase in female directors. Between 2016 and 2019, the average proportion of female directors increases by 6.6 percentage points (see Fig. 1, panel B). The year-by-$Big3^{2016}$ coefficients in column 2 of Table 4 indicate that this change is 3.9 percentage points larger with $Big3^{2016}$ at its mean value of 13.0% than if $Big3^{2016}$ is zero, accounting for about 59% of the

[13] The 2019 California increase in female directors reflects firms complying with the quota (see also Greene et al., 2020; Hwang et al., 2020; von Meyerinck, et al., 2020; Gertsberg et al., 2021). We find that The Big Three's campaigns led California firms to increase female directors beyond the mandated requirement. When we perform a similar calculation to the one described in the next section but limit the sample to California firms, we find that the Big Three campaigns accounted for 38.1% of the year-over-year increase in female directors in 2019 relative to 2016.

increase in female directors in 2019 relative to 2016.[14] The magnitude is a bit lower if we take a more conservative approach and allow for the possibility that some of the association is attributable to other shocks affecting large firms. If we repeat the analysis of Table 4 but include interactions between *ln(MarketCap^{2016})* and the year fixed effects to allow for differential trends by firm size, we find that 35% of the overall increase is attributable to The Big Three. Similar calculations find that The Big Three account for a similar proportion of the decline in all-male boards from 2016 to 2019 and for three-quarters to all of the increase in the *rate* at which female directors were added to boards in this period (shown in Fig. 1, panel A).

These estimates likely understate The Big Three's impact on gender diversity. If The Big Three's campaigns cause part of the differential post-2016 trend for larger firms, then including the controls for this differential trend would cause us to underestimate the impact of The Big Three. The estimation also does not account for spillovers of The Big Three's push onto firms with lower Big Three holdings. Positive spillover effects from The Big Three's campaigns that affect all firms, not just those with greater Big Three ownership, contribute to the year fixed effects rather than our difference-in-differences estimate.

The Big Three's campaigns spilled over to other firms in various ways. The Big Three's advocacy led the proxy advisory firm Institutional Shareholder Services (ISS) to announce in 2018 that they would soon begin recommending that investors vote against the nominating committee's chair at companies with no women directors. ISS's recommendations shape how many institutions vote, particularly those with smaller ownership stakes (Malenko and Shen, 2016). ISS directly attributed its change in policy to the campaigns of BlackRock, State Street, and the 30% Coalition, which Vanguard joined in August 2017 (Mishra, 2018; Papadopoulos et al., 2018). The Big

[14] Using the difference in coefficients for 2016 and 2019 from Table 4, column 2, 13.0 percentage point greater Big Three ownership is associated with a $[0.278 - (-0.023)] \times 0.130 = 0.039$ larger increase in the proportion of female directors in 2019 relative to 2016, corresponding to $0.039/0.066 = 59\%$ of the observed increase over those years.

Three's advocacy also fostered the expansion of programs designed to recruit and train women for board positions and led companies to send more women to enroll in executive education (Murray, 2019). For example, Yale University launched its Women on Boards program, which prepares women to search for corporate board seats, in 2017 and hosted its first cohort in 2018. Such training increases the supply of female directors available to firms irrespective of their Big Three ownership.

4.5.2 Tokenism and Female Representation on Board Committees

Although we find that The Big Three's campaigns prompted firms to add female directors, it is not immediately clear if these additions amount to more than mere tokenism. To assess tokenism in firms' responses, we examine the effect of The Big Three's campaigns on female director's committee appointments. Female directors have historically been underrepresented on key committees (Nili, 2019; Field et al., 2020), where scholars argue boards' real work is done (Bilimoria and Piderit, 1994; Jiraporn et al., 2009). Because these committees make the most important decisions, firms are unlikely to appoint a woman to chair or serve on them merely for the sake of tokenism (Kesner, 1988). Thus, if the additional women are appointed to merely "check the box" and existing female directors' standing on the board is unaffected by The Big Three's campaigns, then we would expect to find that The Big Three's campaigns make the average female director less likely to chair or serve on such committees after 2016.

To examine how The Big Three's campaigns affected women participation in board committees, we estimate the following director-level linear probability regression model:

$$\begin{aligned} Committee_{ijt} = {} & \theta_1 Big3_i^{2016} \times Post2016_t \times Female_j \\ & + \theta_2 Post2016_t \times Female_j + \theta_3 Big3_i^{2016} \times Female_j \\ & + \theta_4 Female_j + \alpha_{it} + \epsilon_{ijt}, \end{aligned} \quad (4)$$

where *Committee* is an indicator for whether director *j* at firm *i* in year *t* is a chairperson or member

of a particular committee and *Female* is an indicator for whether that director is a woman. *Female* controls for the average gender difference in committee assignments; its interaction with *Post2016* controls for secular post-2016 changes in female representation that are unrelated to Big Three ownership; and its interaction with $Big3^{2016}$ controls for any differences in assignments at firms with greater Big Three ownership that predated their gender diversity campaigns. To ease the estimates' interpretation, we demean $Big3^{2016}$ by its sample mean so that the coefficient on each control reflects its importance for a firm with the average level of Big Three ownership. The term α represents a full set of firm-by-year fixed effects. We adjust the standard errors for clustering at the firm level to account for both serial correlation and correlation across observations within a given firm.

The coefficient of interest is θ_1. This coefficient measures the differential increase in the probability of a female director taking a given board role after 2016 at firms with greater Big Three ownership. The firm-by-year fixed effects, which control for board size and other time-varying, firm-specific factors that might affect the likelihood of a director serving in the given role, ensure that θ_1 is estimated using only within-firm-year variation. They also absorb the $Post2016 \times Zero^{2016}$ and $Post2016 \times One^{2016}$ controls included in eq. (1). Table 9 reports the estimates of eq. (4).

Across all the outcomes we examine, the estimates show no indication of tokenism. None of the nine estimates of θ_1 reported in Table 9 are negative. To the contrary, four of the estimates are positive and statistically significant, suggesting that The Big Three's campaigns led firms to elevate women's role on the board. For example, one standard deviation greater Big Three ownership is associated with female directors being 2.3 percentage points more likely to chair any committee after 2016 (Table 9, column 1; $p = 0.006$), 1.0 percentage points more likely to chair the nominating committee (column 2; $p = 0.061$), and 1.1 percentage points more likely to chair the audit committee (column 3; $p = 0.035$). These increases correspond to 5.9%, 9.7%, and 9.4% of the respective sample averages (39.3%, 10.0%, and 11.8%). Female directors are as likely to

chair the compensation committee (column 4) or serve as the boards' chairperson (column 5) after 2016 for firms with greater Big Three ownership as they were before the campaigns.

Female directors at firms with greater Big Three ownership are also more likely to sit on the nominating committee after 2016. We find that one standard deviation greater Big Three ownership is associated with a female director being 1.5 percentage points more likely to serve on the nominating committee after 2016 (column 6; $p = 0.048$), corresponding to a roughly 3.8% increase relative to the sample average (38.8%). Greater Big Three ownership is also associated with increases in female directors' likelihood of sitting on the audit, compensation, and executive committees, but the magnitudes are smaller and not statistically significant (columns 7–9).

These results suggest that The Big Three's push for board gender diversity increased women's influence over future director nominations and board decisions. Contrary to concerns that recent improvements in board diversity reflect tokenism rather than real influence, we find no evidence of this and some indications of the reverse.[15] Moreover, women's appointment to and chairing of the nominating committee could promote even further gender diversity if these women help recruit additional female directors going forward (Guldiken et al., 2019).

4.6 Big Three Votes and Directors' Careers

Why were The Big Three's campaigns so influential? Much of The Big Three's influence campaigns were centered around their policy of voting against the reelection of directors at companies with less diverse boards (see Fig. 2). To shed light on the importance of such votes, we examine whether they are associated with negative consequences for the directors up for election. Although director elections are almost always uncontested (Fischer et al., 2009), the voting results

[15] Our findings on board assignments contrast from those found following the 2019 California diversity mandate. Hwang et al. (2020) find that the female directors added in response to the mandate were given fewer committee responsibilities than other directors. Together, the results suggest that less tokenism results from investor-driven as opposed to regulation-driven increases in diversity.

are disclosed publicly, and candidates receiving less shareholder support might receive fewer invitations to sit on other boards. That potential negative career consequence could motivate directors to heed The Big Three's demands and work to increase their board's gender diversity.

To examine the association of The Big Three's voting and directors' careers, we estimate the following regression:

$$\Delta Seats_i^{2016-19} = \eta NegativeBig3Vote_i^{2017-18} + \epsilon_{it} \quad (5)$$

where Δ*Seats* is the total change in number of public board seats held by director *i* from 2016 to 2019 and *NegativeBig3Vote* is an indicator for one of The Big Three casting a negative vote against the director's reelection in 2017 or 2018. Table 10 presents the results.

Consistent with less investor support having an adverse career impact, directors receiving negative Big Three votes exhibit a relative drop in board seats held from 2016 to 2019. Specifically, directors receiving a negative Big Three vote in 2017 or 2018 experience a 0.12 drop in board seats held in 2019 relative to directors that did not receive a negative vote (Table 10, column 1). This relative decline is driven by a drop in total seats held. On average, directors experiencing a negative vote held 1.51 seats in 2016 but only 1.32 seats in 2019, a 12.6% decline. The findings are robust to controlling for the director's age and gender (columns 2-3) and to including seats held on boards of private companies in the dependent variable.

5. Factors Limiting Female Board Representation

The evidence presented thus far shows that the Big Three campaigns were impactful. In this section, we analyze *how* companies went about increasing diversity in response to the campaigns. Understanding this mechanism could shed light on the causes of women's underrepresentation on corporate boards.

Before The Big Three launched their campaigns, most boards claimed that a limited pool of suitable female director candidates prevented them from achieving greater diversity in the

boardroom (State Street, 2017). Based on two years of study and board engagement on the topic, State Street reached a different conclusion that motivated them to launch their campaign: there were enough qualified women, but boards' nominating practices and behavioral biases undervalue women's contributions. Of the six obstacles State Street (2017, p.1) identified, the top three were:

1. "Excessive reliance on existing director networks and connections that continue to be the primary source for identifying director candidates
2. Requiring that all director nominees have CEO experience to be considered to serve on boards
3. Lack of female representation in leadership positions on boards and in senior management to help guide the companies on their journey to diversify."[16]

In this section, we analyze whether these three factors or a shortage of female candidates limit board gender diversity. Specifically, we assess whether firms expanded gender diversity by pulling the two levers that State Street highlighted (identifying candidates outside their traditional networks and broadening their concept of required experience) and whether the campaigns had a greater effect on firms that lacked female leadership. Because we are interested in understanding how companies adjusted diversity in response to all of the campaigns (not just State Street's), we continue to examine the effect of total Big Three ownership (rather than just State Street's ownership) in these tests. We also gauge the supply of female director candidates by examining shareholder votes and post-2016 changes in female directors' compensation and busyness.

5.1 Connections

We first examine whether The Big Three's campaigns led firms to add female directors

[16] The other three obstacles identified were: "Limited appreciation for and understanding of the value and need for greater gender diversity within organizations"; "Lack of efforts to address behavioral gender biases inherent in workplace culture and HR-related practices within organizations"; and "Limited organizational support in helping individuals achieve work-life balance, which can stymie the career progression of women, thereby adversely affecting the pipeline of women leaders" (State Street, 2017, p.1).

who were unconnected to the CEO or existing directors. CEOs and directors use their professional networks to identify and select qualified director candidates for information, efficiency, and agency reasons. First, CEOs and directors can leverage networks to assess potential directors' soft skills that are harder to determine from resumes and interviews. Second, directors in the same network might be more likely to form a team that "gels" and works well together. Third, risk aversion might motivate these leaders to "play it safe" by overly relying on their personal relationships to identify candidates, passing over more qualified candidates with whom they are less familiar and who might "rock the boat" (Gormley and Matsa, 2016). Regardless of the underlying reason, giving preference to in-network candidates can disadvantage women because of the influence of homophily in developing professional networks.

To assess whether The Big Three's pressure campaigns led firms to search for directors outside of their usual network, we use a triple-differences estimation similar to that reported in Table 9. We restrict the sample to new board appointees and estimate a modified version of eq. (4) in which the dependent variable is the number of connections between the new director and the firm's existing directors before his or her hiring. We use the same framework to analyze indicators for the new director being connected to any other director on the firm's board and to the CEO. The specification includes firm-by-year fixed effects to isolate within-firm-year variation and to control for board size and other time-varying, firm-specific factors. Table 11 reports the results.

We find that The Big Three's campaign led firms to hire female directors who were less connected to the firms' existing networks. One standard deviation greater Big Three ownership is associated with a newly hired female director having 0.13 fewer connections to the existing board members after 2016 (Table 11, column 1; $p = 0.046$), a 28.7% decrease relative to the sample average (0.45). We also find fewer connections on the extensive margin: One standard deviation greater Big Three ownership is associated with a newly hired female director being 5.1 percentage points less likely to be connected to any board member after 2016 (column 2; $p = 0.049$) and 6.2

percentage points less likely to be connected to the CEO (column 3; $p = 0.002$). These decreases correspond to 23.5% and 70.4% of the respective sample averages (21.6% and 8.8%).

Consistent with directors moving beyond their existing networks, the women added during The Big Three's campaign were no more likely to come from the firms' executive ranks than other female directors. The Big Three's guidance emphasized that although "there are many ways to achieve board diversity and we support all forms of diversity, … we believe boards should have at least some *independent* female directors" (State Street, 2017, p.2, emphasis added). Consistent with this guidance, we find no indication that firms targeted by the campaigns appointed female executives to the board to achieve diversity gains. The point estimate for being an executive director is negative and not statistically significant (column 4; $p = 0.381$).

5.2 Experience

We next examine if pressure from The Big Three's campaigns expanded the professional backgrounds and types of experience that firms considered in selecting new directors. Traditionally, boards prioritized candidates with CEO experience, which limited the pool of female candidates. State Street encouraged firms to hire more candidates without CEO experience. To assess whether The Big Three campaigns had this effect, we estimate a modified version of eq. (4) that examines whether newly hired directors have CEO experience. Similarly, we examine whether the new directors have prior experience serving on a board, which is another potential prerequisite for board service. Table 12 reports the estimates.

We find that firms with higher Big Three ownership hired women with less executive experience after 2016 than they had previously. A one standard deviation greater Big Three ownership is associated with a 5.8 percentage point decline in the likelihood of a newly added female director being a former or current CEO, which corresponds to a 13.6% decrease relative to the sample average of 42.9% (column 1, $p = 0.069$). The point estimate for past board experience is also negative but not statistically significant (column 2).

We next analyze whether The Big Three's campaigns also reduced the proportion of a firm's directors with past executive or director experience. Firms with greater Big Three ownership add female directors after 2016, and the sum of the coefficient estimates on *Female* and *Female×Post2016* in Table 12 indicate that newly appointed female directors in this period are 16.3 and 8.3 percentage points less likely than newly appointed male directors to have prior CEO or director experience, respectively ($p < 0.001$). But whether this reduces a board's overall level of experience depends on whom these directors replace. To assess the impact on boards' overall experience, we estimate firm-panel regressions, similar to eq. (1). Table 13 reports the results.

We find that the proportion of directors with executive experience declines only modestly after 2016 at firms with greater Big Three ownership. One standard deviation greater Big Three ownership is associated with a 0.7 percentage point decrease in the share of directors with CEO experience (Table 13, column 1, $p < 0.001$), corresponding to just 1.5% of the sample mean (46.3%). Furthermore, the share of directors with board experience remained flat (column 2), suggesting that first-time female directors without board experience were appointed to boards in place of male candidates whom also lacked board experience.

Together, these results suggest that, under pressure from The Big Three, firms increased board diversity by widening their searches to more candidates outside of their directors' professional networks and without executive experience. Firms' relying on their directors' professional networks and prioritizing CEO experience for director positions appear to have limited women's appointment to boards before The Big Three's campaigns.

5.3 Lack of Female Representation in Leadership Positions

We also examine whether pressure from The Big Three's campaigns had a larger impact on gender diversity among firms that lacked female representation in leadership positions. If the lack of such leadership hampered firms' ability to diversify their organizations, then we would expect to find the campaigns to have a greater effect on these firms.

To assess this possibility, we use a firm-level triple-differences estimation:

$$\begin{aligned} GenderDiv_{it} = {} & \beta_1 Big3_i^{2016} \times Post2016_t \\ & + \beta_2 Big3_i^{2016} \times Post2016_t \times NoFemaleLeader_i^{2016} \\ & + \beta_3 Post2016_t \times NoFemaleLeader_i^{2016} \\ & + \gamma_1 Zero_i^{2016} \times Post2016_t + \gamma_2 One_i^{2016} \times Post2016_t \\ & + \alpha_i + \delta_t + \epsilon_{it}, \end{aligned} \quad (6)$$

where *NoFemaleLeader* is an indicator for firm *i* not having a female CEO or a female director on the nominating, audit, or compensation committees in 2016. Eq. (6) modifies the difference-in-differences estimation of eq. (1) by testing whether the importance of *Big3* differs for firms lacking female leaders. The interaction of *NoFemaleLeader* with *Post2016* controls for secular post-2016 changes in female representation that are unrelated to Big Three ownership at such firms. We continue to adjust the standard errors for clustering at the firm level. Table 14 reports the estimates.

We find that the Big Three campaigns had greater effects on companies lacking female leaders. After 2016, one standard deviation greater Big Three ownership is associated with 0.09 additional female directors per year for companies that had a female leader in 2016 and 0.09+0.03=0.12 additional women for companies that did not have one, a 33% increase (Table 14, column 1). Likewise, Big Three ownership is associated with a more than 69% larger increase in female directors' share among companies that lacked a female leader in 2016 (column 2).

This finding suggests that firms with female leadership are more likely to diversify their boards without pressure from shareholder advocacy. The larger impact of The Big Three campaigns at companies lacking female leaders, combined with the impact of their campaigns in elevating female directors to leadership positions (Table 9), suggests that their campaigns could also facilitate a reinforcing cycle of future diversity increases (Matsa and Miller, 2011).

5.4 Supply of Female Candidates

Finally, we examine director compensation, director busyness, and mutual fund voting to assess whether a lack of female candidates was a primary reason why firms added relatively few female directors before 2017. If a shortage of candidates was the main friction, then we would expect The Big Three's campaigns to lead female directors to receive higher compensation (as firms compete to hire them),[17] be hired for multiple positions (for lack of other candidates), or attract fewer votes from investors (because those nominated are busier or less qualified).

We do not find evidence of female directors being in short supply. Despite the sharp increase in women's representation on corporate boards, the gender gaps in directors' compensation and numbers of other board seats do not decrease significantly after 2016: the overall effects, measured by the *Female×Post2016* coefficient, are small and have the opposite sign (Appendix Table A3). The differential effects on firms with greater Big Three ownership are also not statistically significant. These estimates suggest that the supply of female directors is relatively elastic (column 1) and that firms were not disproportionately hiring the same specific women (column 2). Furthermore, the newly appointed female directors were also popular with other investors: using the ISS Voting Analytics dataset and excluding votes cast by The Big Three, we find that 95% of (non-Big Three) mutual funds cast votes in favor of newly appointed female directors after 2016, which is greater than the 91% received by newly appointed male directors (*p*-value of difference < 0.01%; see also Gow et al., 2020).

[17] Firms' proxy statements often present within-firm differences in director compensation as supplemental pay for specific committee assignments and board roles. If the supplements associated with each position are exogenous, then gender differences in compensation reflect the gender gap in board responsibilities. However, the amounts of these supplements are neither standardized nor fixed. Directors sometimes receive different supplements for chairing or serving on different committees of the same board. To the extent that the amount of these supplements are endogenous, board responsibilities might serve as a pretext for justifying additional compensation, with the amounts of those supplements reflecting the supply and demand for the various types of directors.

6. Conclusion

Starting in 2017, The Big Three launched public influence campaigns to encourage companies to increase the gender diversity of their boards. As part of the campaign, The Big Three voted against the reelection of directors at hundreds of companies they deemed to be making insufficient progress. We find that these campaigns had a large effect: they led firms to add at least 2.5 times as many female directors in 2019 as they did in 2016. The percentage of all public-company board seats held by women increased by almost 50% between 2016 and 2019, and our estimates imply that The Big Three's campaigns explain at least a third to two-thirds of this increase.

Furthermore, our estimates suggest that shareholder advocacy can expand women's participation in corporate leadership more fully than government mandates. Whereas mandates can lead to tokenism or multiple firms hiring the same women ("golden skirts"), the Big Three's campaign led firms to elevate women's role on the board and broaden their pool of candidates.

Our results also shed light on why firms were not adding more women before The Big Three's campaigns. We find that firms' male-dominated leadership and their emphasis on past executive experience, rather than a shortage of female candidates, limit the number of women directors on corporate boards. The Big Three's campaigns were effective because they got boards to consider female candidates with non-executive experience and from outside of the professional networks that current board members typically rely on. Their impact was also larger at companies lacking female leaders, which were less likely to add women before The Big Three's campaigns.

Whether female representation on corporate boards will continue to increase is less clear. Even after the large gains from the three years of The Big Three's campaigns that we study, women still held fewer than 1 in 5 board seats. Because women are more represented in women's networks than in men's, the recent growth in female board members could pave the way for further growth

in female board membership, even without concerted investor pressure. However, even if hiring practices prevented women from reaching 20% without pressure campaigns, a different factor could slow their further growth. For example, there being a sufficient supply of female director candidates to reach 20% does not guarantee that there is sufficient supply to reach 40%.

Nevertheless, the impact of The Big Three's campaigns suggests that their shareholdings give them considerable influence. Our findings show that The Big Three can successfully pressure companies to adopt changes that are easy to monitor at scale. These findings suggest The Big Three have the potential to steer other broad-based changes that have become newer targets of their voting campaigns, such as sustainability disclosures, director overboarding restrictions, and board racial diversity (BlackRock, 2021; State Street, 2021). The motives underlying their activism and its ultimate impact on firm value are interesting topics for future research.

References

2020 Women on Boards, 2019, 2019 Progress of Women Corporate Directors of Russell 3000 Index Companies by Company Size, State and Industry Sector.

Adams, Renée B., and Daniel Ferreira, 2009, Women in the boardroom and their impact on governance and performance, *Journal of Financial Economics* 94, 291–309.

Adams, Renée B., 2016, Women on boards: The superheroes of tomorrow? *Leadership Quarterly* 27, 371–386.

Appel, Ian R., Todd A. Gormley, and Donald B. Keim, 2016, Passive investors, not passive owners, *Journal of Financial Economics* 121, 111–141.

Appel, Ian R., Todd A. Gormley, and Donald B. Keim, 2019, Standing on the shoulders of giants: The effect of passive investors on activism, *Review of Financial Studies* 32, 2720–2774.

Appel, Ian R., Todd A. Gormley, and Donald B. Keim, 2022, Identification using Russell 1000/2000 Index Assignments: A Discussion of Methodologies, *Critical Finance Review,* Forthcoming.

Azar, José, Miguel Duro, Igo Kadach, and Gaizka Ormazabal, 2021, The Big Three and corporate carbon emissions around the world, *Journal of Financial Economics* 142, 674–696.

Baer, Justin, and Joann S. Lublin, 2017, State Street pushed 400 companies to put women on boards. Most shrugged, *The Wall Street Journal*, July 26. https://www.wsj.com/articles/state-street-pushed-400-companies-to-put-women-on-boards-most-shrugged-1501100453.

Barzuza, Michal, Quinn Curtis, and David H. Webber, 2020, Shareholder value(s): Index fund ESG activism and the new millennial corporate governance, *Southern California Law Review*, forthcoming.

Bebchuk, Lucian A., and Scott Hirst, 2019, Index funds and the future of corporate governance: Theory, evidence, and policy, NBER Working Paper No. 26543.

Ben-David, Itzhak, Francesco Franzoni, Rabih Moussawi, and John Sedunov, 2020, The Granular Nature of Large Institutional Investors, *Management Science*, Forthcoming.

Bertrand, Marianne, Sandra E. Black, Sissel Jensen, and Adriana Lleras-Muney, 2019, Breaking the glass ceiling? The effect of board quotas on female labour market outcomes in Norway, *Review of Economic Studies* 86, 191–239.

Bertrand, Marianne, Claudia Goldin, and Lawrence F. Katz, 2010, Dynamics of the gender gap for young professionals in the financial and corporate sectors, *American Economic Journal: Applied Economics* 2, 228–255.

Bertrand, Marianne, and Kevin F. Hallock, 2001, The gender gap in top corporate jobs, *ILR Review* 55, 3–21.

Bilimoria, Diana, and Sandy Kristin Piderit, 1994, Board committee membership: Effects of sex-based bias, *Academy of Management Journal* 37, 1453–1477.

BlackRock, 2018, Proxy voting guidelines for U.S. securities, February.

BlackRock, 2021, Proxy voting guidelines for U.S. securities, January.

Boyallian, Patricia, Sudipto Dasgupta, and Swarnodeep HomRoy, 2020, Gender diversity goals, supply constraints, and the market for seasoned female directors: The U.S. evidence, CEPR Discussion Paper No. DP15257.

Brick, Ivan E., and N. K. Chidambaran, 2010, Board meetings, committee structure, and firm value, *Journal of Corporate Finance* 16, 533–553.

Cao, Charles, Matthew Gustafson, and Raisa Velthuis, 2019, Index membership and small firm financing, *Management Science* 65, 4156–78.

Chhaochharia, Vidhi, and Yaniv Grinstein, 2009, CEO compensation and board structure, *Journal of Finance* 64, 231–261.

CNBC, 2010, Deutsche Telekom Introduces Women Quota, *CNBC.com*, March 15, https://www.cnbc.com/2010/03/15/deutsche-telekom-introduces-women-quota.html

Coles, Jeffrey L., Naveen D. Daniel, and Lalitha Naveen, 2008, Boards: Does one size fit all? *Journal of Financial Economics* 87, 329–356.

Delgado, Mercedes, and Karen G. Mills, 2020, The supply chain economy: A new industry categorization for understanding innovation in services, *Research Policy* 49, Article 104039.

Dobbin, Frank and Alexandra Kalev, 2016, Why Diversity Programs Fail: And What Works Better, *Harvard Business Review* July-August, 52–60.

Duchin, Ran, John G. Matsusaka, and Oguzhan Ozbas, 2010, When are outside directors effective? *Journal of Financial Economics* 96, 195–214.

Elsesser, Kim. 2015. *Sex and the office: Women, men, and the sex partition that's dividing the workplace*. Rowman & Littlefield: Lanham (MD).

Erel, Isil, Lea Stern, Chenhao Tan, Michael Weisbach, 2020, Selecting directors using machine learning, Working paper.

Farrell, Kathleen A., and Philip L. Hersch, 2005, Additions to corporate boards: the effect of gender, *Journal of Corporate Finance* 11, 85–106.

Ferreira, Daniel, Edith Ginglinger, Marie-Aude Laguna, and Yasmine Skalli, 2020, Closing the Gap: Board Gender Quotas and Hiring Practices, European Corporate Governance Institute – Finance Working Paper No. 520.

Fich, Eliezer M., and Anil Shivdasani, 2006, Are busy boards effective monitors? *Journal of Finance* 61, 689–724.

Field, Laura Casares, Matthew E. Souther, and Adam S. Yore, 2020, At the table but can not break through the glass ceiling: Board leadership positions elude diverse directors. *Journal of Financial Economics* 137, 787–814.

Fisch, Jill, 2020, The uncertain stewardship potential of index funds, ECGI Working Paper Series in Law No. 490.

Fisch, Jill, Assaf Hamdani, and Steven Davidoff Solomon, 2019, Passive investors, ECGI Working Paper Series in Law.

Fisch, Jill, and Tyler Winters, 2016, Gender diversity on corporate boards: The competing perspectives in the U.S. and the EU, Part I, Global Research Seminar – Comparative Corporate Governance.

Fischer, Paul E., Jeffrey D. Gramlich, Brian P. Miller, and Hal D. White, 2009, Investor perceptions of board performance: evidence from uncontested elections. *Journal of Accounting and Economics* 48, 172–189.

Fracassi, Cesare, and Geoffrey Tate, 2012, External networking and internal firm governance, *Journal of Finance* 67, 153–194.

Gertsberg, Marina, Johanna Mollerstrom, and Michaela Pagel, 2021, Gender quotas and support for women in board elections, Working paper.

Giannetti, Mariassunta, and Tracy Wang, 2020, Public attention to gender equality and board gender diversity, European Corporate Governance Institute – Finance Working Paper No. 667.

Gilje, Erik P., Todd A. Gormley, and Doron Levit, 2020, Who's paying attention? Measuring common ownership and its impact on managerial incentives, *Journal of Financial Economics* 137, 152–178.

Gormley, Todd A., and David A. Matsa, 2016, Playing it safe? Managerial preferences, risk, and agency conflicts, *Journal of Financial Economics* 122, 431–455.

Gow, Ian D., David F. Larcker, and Edward M. Watts, 2020, Board diversity and shareholder voting, European Corporate Governance Institute – Finance Working Paper No. 716.

Green, Jeff, 2021, Corporate America goes on a diversity officer hiring spree, *Bloomberg.com*, March 10. https://www.bloomberg.com/news/articles/2021-03-10/corporate-america-hires-chief-diversity-officers-after-george-floyd-killing.

Greene, Daniel, Vincent J. Intintoli, and Kathleen M. Kahle, 2020, Do board gender quotas affect firm value? Evidence from California Senate Bill No. 826, *Journal of Corporate Finance* 60, 101526.

Guldiken, Orhun, Mark R. Mallon, Stav Fainshmidt, William Q. Judge, and Cynthia E. Clark, 2019, Beyond tokenism: How strategic leaders influence more meaningful gender diversity on boards of directors, *Strategic Management Journal* 40, 2024–2046.

Heath, Davidson, Daniel Macciocchi, Roni Michaely, and Matthew C. Ringgenberg, 2021, Do index funds monitor? *Review of Financial Studies*, forthcoming.

Hunnicutt, Trevor, 2017, BlackRock supports effort to boost number of women board members, *Reuters Business News*, July 13. https://www.reuters.com/article/us-blackrock-women/blackrock -supports-effort-to-boost-number-of-women-board-members-idUSKBN19Z09C.

Hwang, Sunwoo, Anil Shivdasani, and Elena Simintzi, 2020, Mandating women on boards: Evidence from the United States, Working paper.

International Labour Organization (ILO), 2020, ILOSTAT explorer, https://www.ilo.org/shinyapps/bulkexplorer8/?lang=en&segment=indicator&id=SDG_0552_OCU_RT_A

Jiraporn, Pornsit, Manohar Singh, and Chun I. Lee, 2009, Ineffective corporate governance: Director busyness and board committee memberships, *Journal of Banking and Finance* 33, 819–828.

Kahan, Marcel, and Edward Rock, 2019a, Anti-activist poison pills, *Boston University Law Review* 99, 915.

Kahan, Marcel, and Edward Rock, 2019b, Index Funds and Corporate Governance: Let shareholders be shareholders, ECGI Working Paper Series in Law No. 467.

Kesner, Idalene F., 1988, Directors' characteristics and committee membership: An investigation of type, occupation, tenure, and gender, *Academy of Management Journal* 31, 66–84.

Kim, Daehyun, and Laura T. Starks, 2016, Gender diversity on corporate boards: Do women contribute unique skills? *American Economic Review* 106, 267–271.

Kogut, Bruce, Jordi Colomer, and Mariano Belinky, 2014, Structural equality at the top of the corporation: Mandated quotas for women directors, *Strategic Management Journal* 35, 891–902.

Krouse, Sarah, 2018, BlackRock: Companies should have at least two female directors, *The Wall Street Journal*, Feb. 2. https://www.wsj.com/articles/blackrock-companies-should-have-at-least-two-female-directors-1517598407.

Lewellen, Jonathan, and Katharina Lewellen, 2020, Institutional investors and corporate governance: The incentive to be engaged, Working paper.

Lins, Karl V., Lukas Roth, Henri Servaes, and Ane Tamayo, 2020, Gender, culture, and firm value: Evidence from the Harvey Weinstein scandal and the #MeToo movement, European Corporate Governance Institute – Finance Working Paper No. 679.

Lublin, Joann S., and Sarah Krouse, 2017, State Street to start voting against companies that don't have women directors, *The Wall Street Journal*, March 7. https://www.wsj.com/articles/state-street-says-it-will-start-voting-against-companies-that-dont-have-women-directors-1488862863.

Malenko, Nadya, and Yao Shen, 2016, The role of proxy advisory firms: Evidence from a regression-discontinuity design, *Review of Financial Studies* 29, 3394–3427.

Matsa, David A., and Amalia R. Miller, 2011, Chipping away at the glass ceiling: Gender spillovers in corporate leadership, *American Economic Review* 101, 635–639.

McNabb III, F. William, 2017, An open letter to directors of public companies worldwide, *Vanguard*, August 31. https://global.vanguard.com/documents/investment-stewardship-mcnabb-letter.pdf.

Miller, Amalia R., 2011, The effects of motherhood timing on career path, *Journal of Population Economics* 24, 1071–1100.

Mishra, Subodh, 2018, 2019 Americas Proxy Voting Guidelines Update, *Harvard Law School Forum on Corporate Governance*, November 28. https://corpgov.law.harvard.edu/2018/11/28/ 2019-americas-proxy-voting-guidelines-update/.

Morning Consult, 2018, National Tracking Poll #181246, December 20-23. https://morningconsult. com/wp-content/uploads/2019/01/181246_crosstabs_HOLLYWOOD_REPORTER_Adults.pdf

Murray, Seb, 2019, What next for executive education? *Business Because*, Jun 3. https://www.businessbecause.com/news/emba/6094/what-next-executive-education.

Niederle, Muriel, and Lise Vesterlund, 2011, Gender and competition, *Annual Review of Economics* 3, 601–630.

Nili, Yaron, 2019, Beyond the numbers: Substantive gender diversity in boardrooms, *Indiana Law Journal* 94, 145–202.

Nkomo, Stella M., Myrtle P. Bell, Laura M. Roberts, Aparna Joshi, and Sherry M. B. Thatcher, 2019, Diversity at a critical juncture: New theories for a complex phenomenon. *Academy of Management Review* 44, 498–517.

Pajo, Karl, Judy McGregor, and Jacqui Cleland, 1997, Profiling the pioneers: women directors on New Zealand's corporate boards, *Women in Management Review* 12, 174–181.

Papadopoulos, Kosmas, Robert Kalb, Angelica Valderrama, and Thomas Balog, 2018, U.S. board study: Board diversity review, *Institutional Shareholder Services*, April 11. https://www.issgovernance.com/file/publications/us-board-diversity-study.pdf.

PwC, 2021, CEO Action for Diversity & Inclusion, https://www.ceoaction.com/pledge.

Russell Investments, 2012, U.S. Equity Indexes: Institutional Benchmark Survey.

Schmidt, Cornelius, and Rüdiger Fahlenbrach, 2017, Do exogenous changes in passive institutional ownership affect corporate governance and firm value? *Journal of Financial Economics* 124, 285–304.

Schwartz-Ziv, Miriam, 2017, Gender and board activeness: the role of a critical mass, *Journal of Financial Quantitative Analysis* 52, 751–780.

Seierstad, Cathrine, and Tore Opsahl, 2011, For the few not the many? The effects of affirmative action on presence, prominence, and social capital women directors in Norway, *Scandinavian Journal of Management* 27, 44–54.

State Street Global Advisors, 2017, SSGA's Guidance on enhancing gender diversity on boards, March 7.

State Street Global Advisors, 2021, Guidance on enhancing racial & ethnic diversity disclosures.

von Meyerinck, Felix, Alexandra Niessen-Ruenzi, Markus Schmid, and Steven Davidoff Solomon, 2020. As California goes, so goes the nation? Board gender quotas and the legislation of non-economic values. Working paper.

Vranica, Suzanne, 2017, 'Fearless Girl' steals the conversation, The Wall Street Journal, June 19. https://www.wsj.com/articles/fearless-girl-steals-the-conversation-1497864600.

Wiersema, Margarethe, and Marie Louise Mors, 2016, What board directors really think of gender quotas? *Harvard Business Review*, November 14. https://hbr.org/2016/11/what-board-directors-really-think-of-gender-quotas.

Whyte, Amy, 2018, State Street to turn up the heat on all-male boards, *Institutional Investor*, September 27. https://www.institutionalinvestor.com/article/b1b4fh28ys3mr9/State-Street-to-Turn-Up-the-Heat-on-All-Male-Boards.

Xie, Biao, Wallace N. Davidson, and Peter J. DaDalt, 2003, Earnings management and corporate governance: The roles of the board and the audit committee*, Journal of Corporate Finance* 9, 295–316.

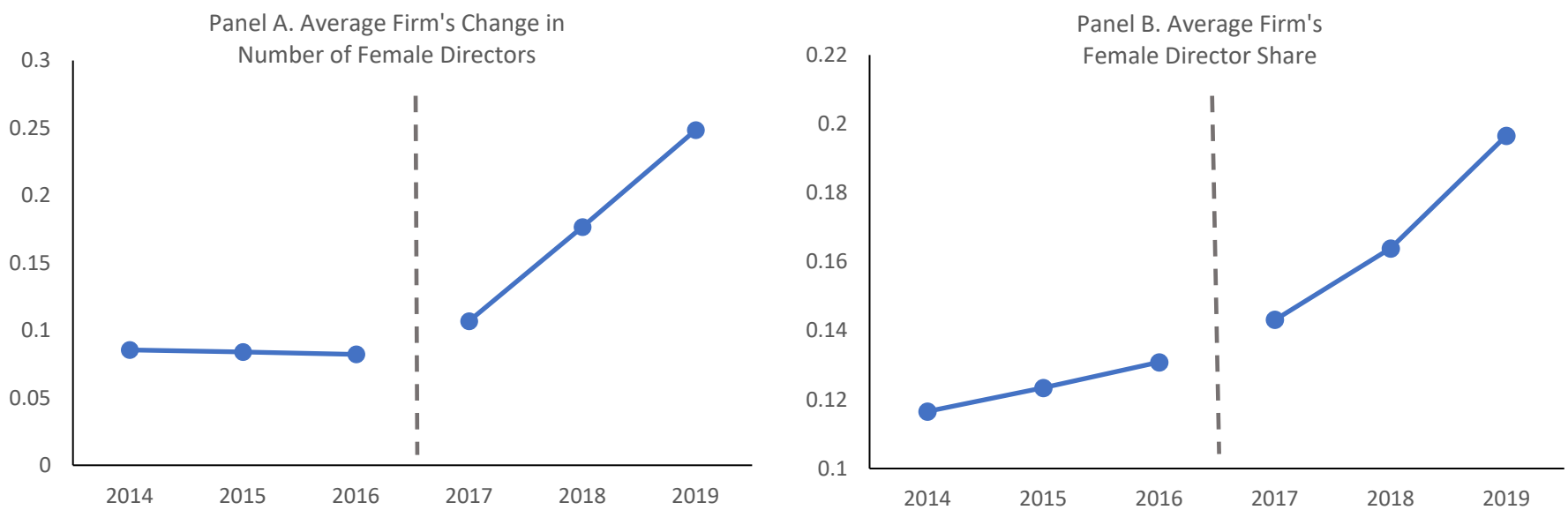

Fig. 1. US Female Board Representation by Year, 2014-2019

This figure plots the average annual change in the number of female directors on a firm's board (Panel A) and the average share of a firm's directors that are female (Panel B) by year in the three years before (2014-16) and three years after (2017-19) the Big Three began their gender diversity campaigns. Sample includes US firms with non-missing ownership.

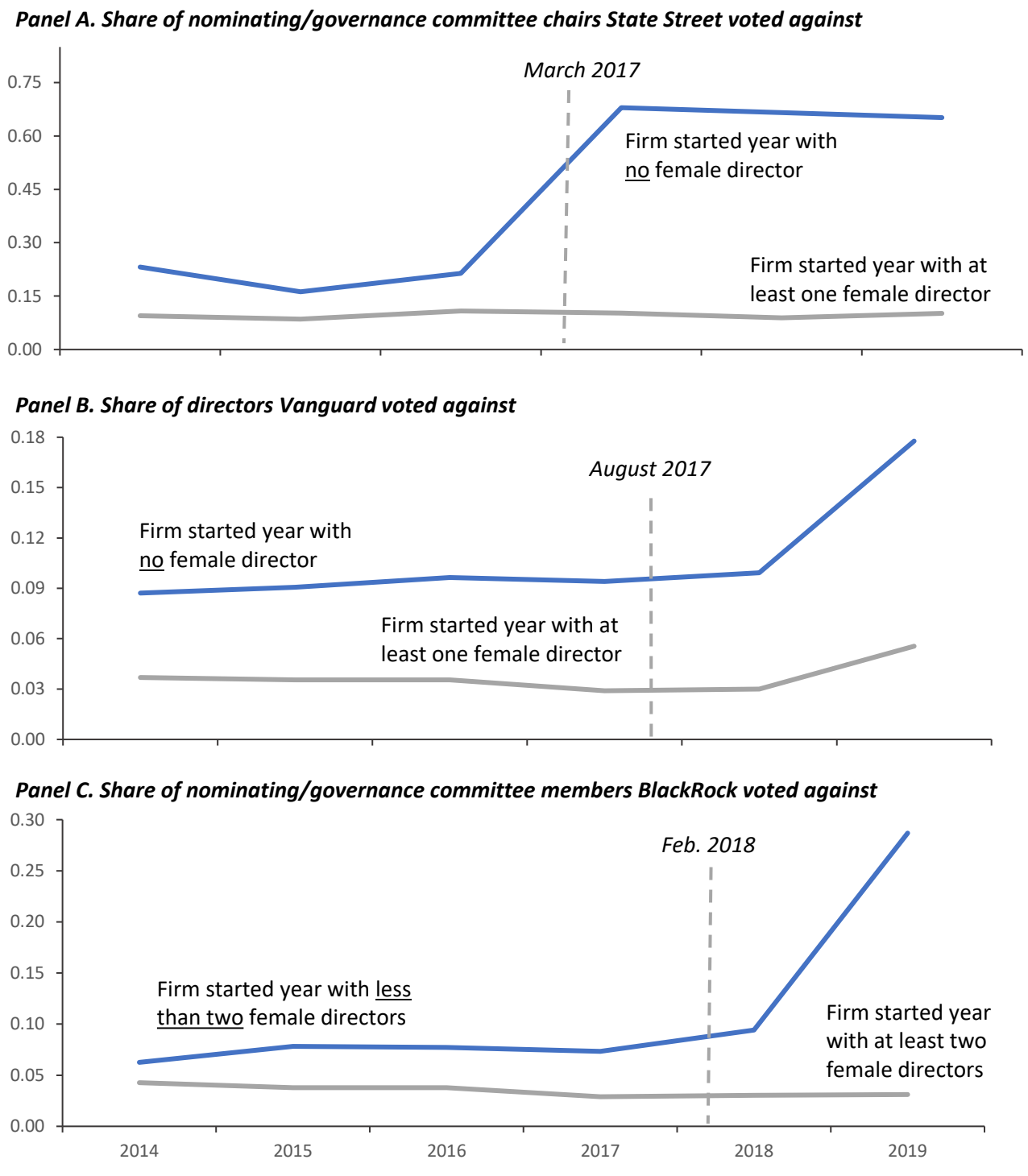

Fig. 2. Big Three Voting Against Directors

This figure plots the share of directors up for election whom each Big Three institution cast a vote against by year and type of firm. For Vanguard, we include all director votes; for State Street and BlackRock, we limit the sample to nominating/governance committee chairs and members, respectively. For State Street and Vanguard, the share is plotted separately for firms that began the year with no female director and firms that began the year with at least one female director; for BlackRock, the share is plotted separately for firms that began the year with less than two female directors and all other firms. The vertical dashed lines flag when each institution announced that it would begin incorporating a firm's board gender diversity into its voting decision on directors. All variables are defined in Appendix Table A1.

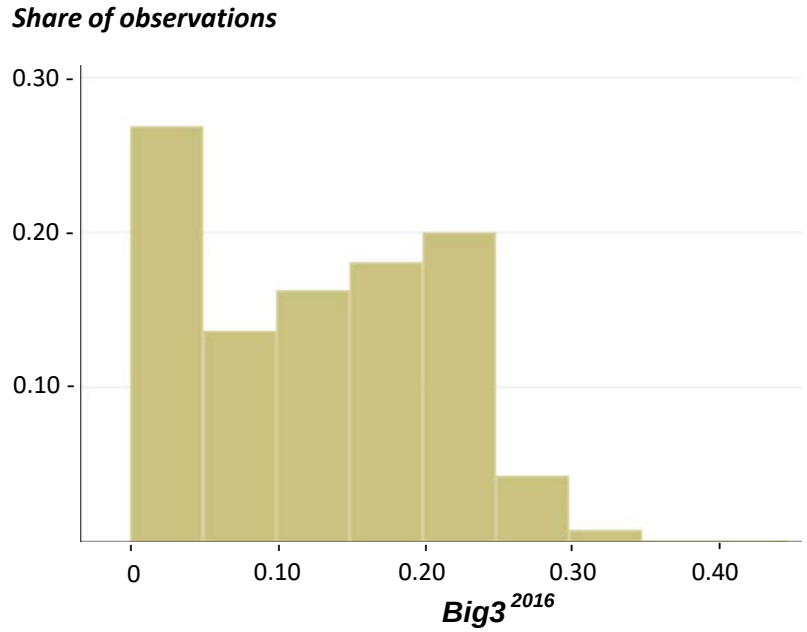

Fig. 3. Distribution of Big Three Ownership, 2016

This figure plots a histogram for $Big3^{2016}$, The Big Three's ownership share in US firms in December 2016. The vertical axis represents the share of observations found in each bin of $Big3^{2016}$, which is defined in Appendix Table A1.

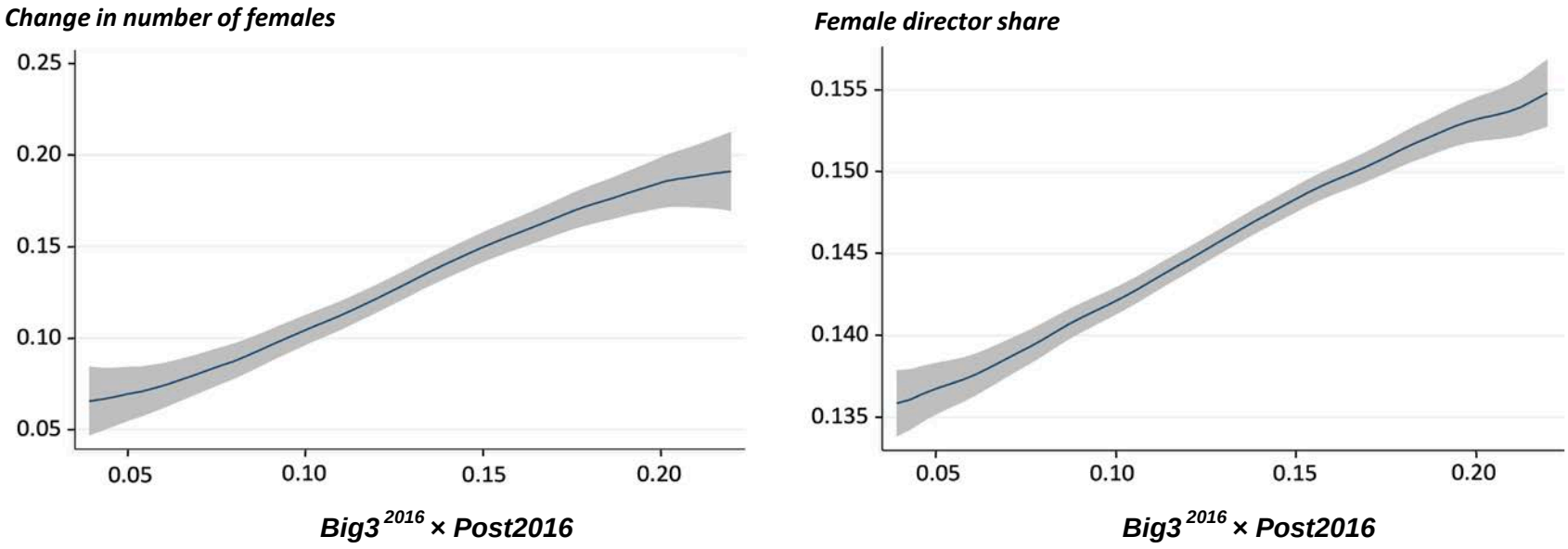

Fig. 4. Kernel Estimation

This figure plots estimates from a firm-panel semi-parametric regression of board gender diversity on $Big3^{2016} \times Post2016$, the interaction between a firm's Big Three ownership in 2016 and an indicator for years after 2016, firm and year fixed effects, and interactions between *Post2016* and indicators for having zero and one female director in 2016. The specification is the same as that reported in Table 3 except that the effect of Big Three ownership is allowed to vary nonparametrically with the share of stock held by The Big Three. To implement this estimation, we first regress our explanatory variable of interest, $Big3^{2016} \times Post2016$, onto the other controls and fixed effects. We then calculate the residuals, add back the sample mean of $Big3^{2016} \times Post2016$, and trim this variable at its 0.5% and 99.5% tails. After doing the same exercise for each of our two main diversity outcomes, *Change in number of females* and *Female director share*, we estimate a kernel-weighted local polynomial regression of the diversity outcome residuals onto the $Big3^{2016} \times Post2016$ residuals. The left panel reports the results of this estimation on the board's change in number of females, and the right panel reports estimates on the female director share. The nonparametric estimation uses the Epanechnikov kernel function with a bandwidth of 0.02. Ninety-five percent confidence intervals, estimated using a pilot bandwidth of 0.03, are plotted in gray. All variables are defined in Appendix Table A1.

Female share of newly appointed directors

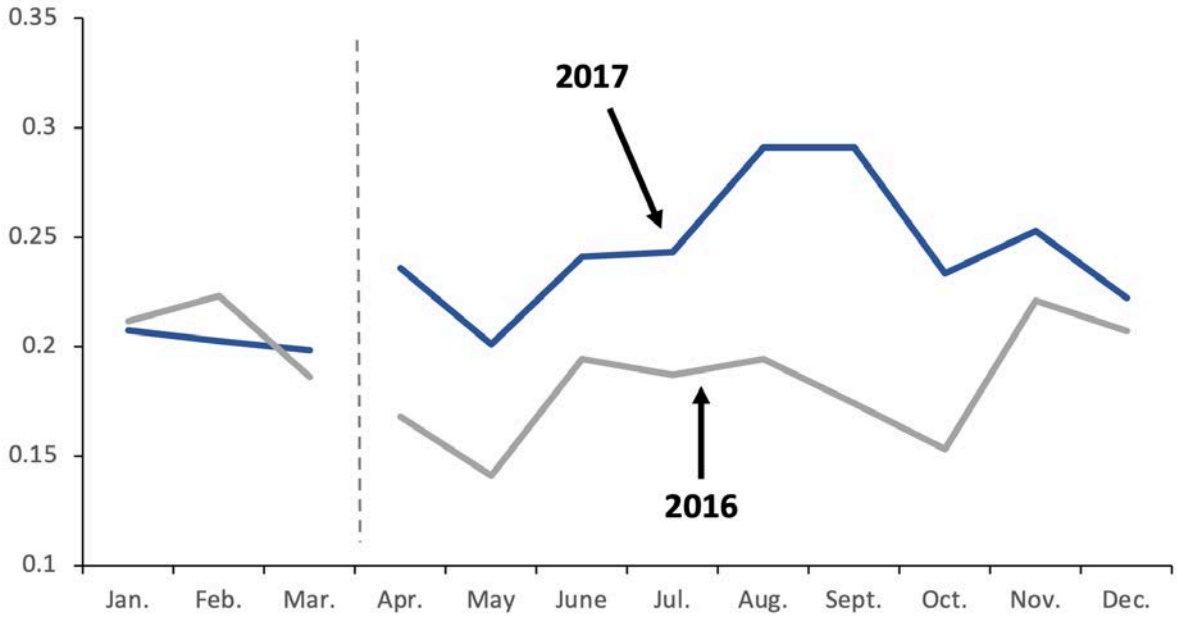

Fig. 5. Female Share of Newly Appointed Directors by Month and Year, 2016–2017

This figure plots the share of newly appointed directors that were women in each month for the years 2016 and 2017. The vertical line indicates the divide between March and April, when State Street launcehed is campaign in 2017.

Table 1

Summary Statistics

This table presents summary statistics for key variables in our analytic samples, which consist of firm-year or director-year observations for 2014-2019. The variables describe firm ownership, firm-level female board representation, director committee assignments, newly-hired director connections, newly-hired director experience, and firm-level board experience. Each firm-year ownership observation contains the measure from 2016, the year before The Big Three's campaigns began. Variable definitions and data sources are described in Appendix Table A1.

	Mean	Median	SD	*N*
Firm ownership				
Big3 ^{2016}	0.130	0.132	0.086	17,972
StateStreet ^{2016}	0.019	0.017	0.017	17,972
Vanguard ^{2016}	0.049	0.047	0.031	17,972
BlackRock ^{2016}	0.062	0.064	0.045	17,972
Firm-level female board representation				
Change in number of females	0.128	0	0.511	17,314
Share of directors that are newly hired females	0.023	0	0.052	17,426
Share of female directors that depart	0.062	0	0.201	11,667
Female director share	0.144	0.143	0.120	17,972
At least one female director	0.719	1	0.450	17,972
Director committee assignments				
Chairperson of any committee	0.393	0	0.488	157,651
Chairperson of nominating committee	0.100	0	0.300	157,651
Chairperson of audit committee	0.118	0	0.323	157,651
Chairperson of compensation committee	0.115	0	0.319	157,651
Chairperson of board	0.114	0	0.318	157,651
Member of nominating committee	0.388	0	0.487	157,651
Member of audit committee	0.457	0	0.498	157,651
Member of compensation committee	0.434	0	0.496	157,651
Member of executive committee	0.112	0	0.315	157,651
Newly-hired director connections				
Number of connections to existing directors	0.454	0	1.308	8,792
Connection to existing director	0.216	0	0.411	8,792
Connection to CEO	0.088	0	0.283	6,090
Executive director	0.118	0	0.323	8,792
Newly-hired director experience				
CEO experience	0.429	0	0.495	8,978
Board experience	0.727	1	0.446	8,978
Firm-level board experience				
Share of directors with CEO experience	0.463	0.455	0.193	17,972
Share of directors with other board experience	0.848	0.875	0.169	17,972

Table 2

Firm Characteristics by Big Three Ownership, 2016

This table presents sample averages for the following firm characteristics in 2016 by Big Three ownership tercile: Big Three ownership share, market capitalization, assets, sales, FTSE Russell's free-float adjustment, S&P 500 Index inclusion, Russell 3000 Index inclusion, and the presence of a dual class share structure. Column (1)-(3) present sample averages for firms in the bottom, middle, and top tercile of Big Three ownership, respectively. The number of observation, reported for each tercile, is lower for some of the firm characteristics. Column (4) provides the *p*-value from a *t*-test of the difference in means between the top and bottom terciles. All variables are defined in Appendix Table A1.

	Sample average by $Big3^{2016}$			*p* -value of difference between bottom and top terciles
	Bottom Tercile (1)	Middle Tercile (2)	Top Tercile (3)	(4)
$Big3^{2016}$	0.026	0.129	0.224	< 0.01
$Ln(MarketCap^{2016})$	18.5	20.8	22.0	< 0.01
$Ln(Assets^{2016})$	18.8	20.9	22.0	< 0.01
$Ln(Sales^{2016})$	17.9	20.0	21.4	< 0.01
$FloatAdjustment^{2016}$	0.377	0.183	0.044	< 0.01
$S\&P500^{2016}$	0.006	0.093	0.297	< 0.01
$Russell3000^{2016}$	0.277	0.974	0.999	< 0.01
$DualClass^{2016}$	0.053	0.101	0.048	0.89
N	1,102	1,102	1,102	

Table 3

Female Board Representation and Big Three Ownership During Their Campaigns

This table reports coefficients from firm-panel regressions of female board representation on the interaction between a firm's Big Three ownership in 2016 (*Big3*^{2016}) and an indicator for years after 2016 (*Post2016*), firm and year fixed effects (FE), and interactions between *Post2016* and indicators for having zero (*Zero*^{2016}) and one (*One*^{2016}) female director in 2016. The dependent variables are the change in the board's number of females (column 1), the share of directors that are newly hired females (column 2), the share of existing female directors that depart (column 3), the share of directors that are female (column 4), and an indicator for the board having at least one female director (column 5). The sample includes firm-year observations from 2014 through 2019. Standard errors, which are adjusted for clustering at the firm level, are reported in parentheses. All variables are defined in Appendix Table A1. *** denotes significance at the 1% level.

	Dependent variable				
	Change in number of females	*Share of directors that are newly hired females*	*Share of female directors that depart*	*Female director share*	*At least one female director*
	(1)	(2)	(3)	(4)	(5)
Big3 ^{2016} *× Post2016*	1.135***	0.101***	-0.236***	0.181***	0.571***
	(0.093)	(0.010)	(0.056)	(0.018)	(0.068)
Year FE	X	X	X	X	X
Firm FE	X	X	X	X	X
Zero ^{2016} *× Post2016*	X	X	X	X	X
One ^{2016} *× Post2016*	X	X	X	X	X
N	17,314	17,426	11,667	17,972	17,972
R^2	0.169	0.206	0.263	0.833	0.782

Table 4

Analysis of Pre-Trends

This table reports coefficients from firm-panel regressions of female board representation on interactions between a firm's Big Three ownership in 2016 ($Big3^{2016}$) and indicators for each year from 2015 through 2019, firm and year fixed effects (FE), and interactions between the same 2015-2019 yearly indicators and the indicators for having zero ($Zero^{2016}$) and one (One^{2016}) female director in 2016. The dependent variables are the change in the board's number of females (column 1) and the share of directors that are female (column 2). The sample includes firm-year observations from 2014 through 2019. Standard errors, which are adjusted for clustering at the firm level, are reported in parentheses. All variables are defined in Appendix Table A1. *** denotes significance at the 1% level.

	Dependent variable	
	Change in number of females	*Female director share*
	(1)	(2)
$Big3^{2016}$ × *Year=2015*	0.078	0.002
	(0.161)	(0.012)
$Big3^{2016}$ × *Year=2016*	-0.135	-0.023
	(0.166)	(0.017)
$Big3^{2016}$ × *Year=2017*	0.910***	0.072***
	(0.171)	(0.022)
$Big3^{2016}$ × *Year=2018*	1.191***	0.193***
	(0.170)	(0.025)
$Big3^{2016}$ × *Year=2019*	1.282***	0.278***
	(0.190)	(0.028)
Year FE	X	X
Firm FE	X	X
$Zero^{2016}$ × *Year FE*	X	X
One^{2016} × *Year FE*	X	X
N	17,314	17,972
R^2	0.170	0.839

Table 5

Heterogeneity in Campaign Timing

This table reports coefficients from firm-panel regressions of female board representation on interactions between the fractions of a firm's ownership by State Street, Vanguard, and BlackRock in 2016 and indicators for the year 2017 and the years 2018-2019, firm and year fixed effects (FE), and interactions between the post-campaign year dummies and indicators for having zero (*Zero*^{2016}) and one (*One*^{2016}) female director in 2016. The dependent variables are the change in the board's number of females (column 1) and the share of directors that are female (column 2). The sample includes firm-year observations from 2014 through 2019. Standard errors, which are adjusted for clustering at the firm level, are reported in parentheses. All variables are defined in Appendix Table A1. *** denotes significance at the 1% level; ** denotes significance at the 5% level.

	Dependent variable	
	Change in number of females (1)	*Female director share* (2)
StateStreet ^{2016} *× Year=2017*	5.463***	0.133
	(1.537)	(0.122)
StateStreet ^{2016} *× Year=2018-2019*	4.100***	0.379***
	(0.816)	(0.131)
Vanguard ^{2016} *× Year=2017*	0.655	0.086
	(0.678)	(0.068)
Vanguard ^{2016} *× Year=2018-2019*	1.283**	0.256***
	(0.513)	(0.085)
BlackRock ^{2016} *× Year=2017*	-0.263	0.059
	(0.381)	(0.041)
BlackRock ^{2016} *× Year=2018-2019*	0.364	0.187***
	(0.326)	(0.054)
Year FE	X	X
Firm FE	X	X
Zero ^{2016} *× Year=2017*	X	X
Zero ^{2016} *× Year=2018-19*	X	X
One ^{2016} *× Year=2017*	X	X
One ^{2016} *× Year=2018-19*	X	X
N	17,314	17,972
R^2	0.171	0.835

Table 6

Heterogeneity in Firms Targeted

This table estimates the differential post-campaign change in female board representation for firms targeted by State Street and BlackRock. Columns (1) and (4) report coefficients from firm-panel regressions of female board representation on interactions between a firm's State Street ownership in 2016 (*StateStreet*^{2016}), an indicator for years after 2016 (*Post2016*), and an indicator for having no female directors in 2016 (*Zero*^{2016}). Columns (2) and (5) report coefficients from firm-panel regressions of female board representation on interactions between a firm's BlackRock ownership in 2016 (*BlackRock*^{2016}), an indicator for years after 2017 (*Post2017*), and an indicator for having less than two female directors in 2016 (*LessTwo*^{2016}). Each estimation also includes firm and year fixed effects (FE), and interactions between the post-campaign year indicator and indicators for having zero and one (*One*^{2016}) female director in 2016. Columns (3) and (6) include all of these variables. The dependent variables are the change in a board's number of females (columns 1-3) and the share of directors that are female (columns 4-6). The sample includes firm-year observations from 2014 through 2019. Standard errors, which are adjusted for clustering at the firm level, are reported in parentheses. All variables are defined in Appendix able A1. *** denotes significance at the 1% level; ** denotes significance at the 5% level; * denotes significance at the 10% level.

	Dependent variable					
	Change in number of females			*Female director share*		
	(1)	(2)	(3)	(4)	(5)	(6)
State Street ^{2016} *× Post2016*	5.700***		5.242***	0.615***		0.407***
	(0.583)		(0.629)	(0.101)		(0.097)
State Street ^{2016} *× Post2016 × Zero* ^{2016}	2.710**		1.312	0.961***		0.475*
	(1.097)		(1.169)	(0.241)		(0.244)
BlackRock ^{2016} *× Post2017*		0.811**	0.107		0.234***	0.165***
		(0.388)	(0.409)		(0.063)	(0.061)
BlackRock ^{2016} *× Post2017 × LessTwo* ^{2016}		1.060**	0.798*		0.188**	0.160**
		(0.455)	(0.472)		(0.075)	(0.075)
Year FE	X	X	X	X	X	X
Firm FE	X	X	X	X	X	X
Zero ^{2016} *× Post2016*	X		X	X		X
One ^{2016} *× Post2016*	X		X	X		X
Zero ^{2016} *× Post2017*		X	X		X	X
One ^{2016} *× Post2017*		X	X		X	X
N	17,314	17,314	17,314	17,972	17,972	17,972
R^2	0.170	0.151	0.171	0.832	0.834	0.835

Table 7

Robustness to Controlling for Differential Trends by Firm Size, Free-Float Adjustment, and Index Membership

This table reports coefficients from firm-panel regressions of female board representation on the interaction between a firm's Big Three ownership in 2016 (*Big3*^{2016}) and an indicator for years after 2016 (*Post2016*), firm and year fixed effects (FE), and interactions between *Post2016* and indicators for having zero (*Zero*^{2016}) and one (*One*^{2016}) female director in 2016. The dependent variables are the change in the board's number of females (columns 1-6) and the share of directors that are female (columns 7-12). Columns (1) and (7) include a control for log market cap in 2016 interacted with *Post2016*. Columns (2) and (8) include a control for log assets in 2016 interacted with *Post2016*. Columns (3) and (9) include a control for log sales in 2016 interacted with *Post2016*. Columns (4) and (10) include a control for the proportion of shares dropped in FTSE Russell's free-float adjustment in 2016 interacted with *Post2016*. Columns (5) and (11) include a control for S&P 500 Index inclusion in 2016 interacted with *Post2016*. Columns (6) and (12) include a control for Russell 3000 Index inclusion in 2016 interacted with *Post2016*. The sample includes firm-year observations from 2014 through 2019. Standard errors, which are adjusted for clustering at the firm level, are reported in parentheses. All variables are defined in Appendix Table A1. *** denotes significance at the 1% level.

	Dependent variable											
	Change in number of females						*Female director share*					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Big3^{2016} × *Post2016*	0.524***	0.704***	0.810***	0.868***	1.007***	0.933***	0.101***	0.137***	0.126***	0.134***	0.176***	0.112***
	(0.121)	(0.107)	(0.110)	(0.128)	(0.094)	(0.130)	(0.021)	(0.019)	(0.020)	(0.023)	(0.018)	(0.021)
Year FE	X	X	X	X	X	X	X	X	X	X	X	X
Firm FE	X	X	X	X	X	X	X	X	X	X	X	X
Zero^{2016} × *Post2016*	X	X	X	X	X	X	X	X	X	X	X	X
One^{2016} × *Post2016*	X	X	X	X	X	X	X	X	X	X	X	X
Ln(MarketCap^{2016}*)* × *Post2016*	X						X					
Ln(Assets^{2016}*)* × *Post2016*		X						X				
Ln(Sales^{2016}*)* × *Post2016*			X						X			
FloatAdjustment^{2016} × *Post2016*				X						X		
S&P500^{2016} × *Post2016*					X						X	
Russell3000^{2016} × *Post2016*						X						X
N	17,314	17,194	16,727	15,608	17,314	17,314	17,972	17,851	17,324	16,179	17,972	17,972
R^2	0.172	0.171	0.168	0.163	0.170	0.169	0.834	0.833	0.833	0.836	0.833	0.833

Table 8

Robustness to Controlling for Differential Trends by Industry and Firm Culture

This table reports coefficients from firm-panel regressions of female board representation on the interaction between a firm's Big Three ownership in 2016 (*Big3*^{2016}) and an indicator for years after 2016 (*Post2016*), firm and year fixed effects (FE), and interactions between *Post2016* and indicators for having zero (*Zero*^{2016}) and one (*One*^{2016}) female director in 2016. The dependent variables are the change in the board's number of females (columns 1-4) and the share of directors that are female (columns 5-8). Columns (1) and (5) include controls for the interaction between *Post2016* and an indicator for whether the firm operates in an industry flagged as a business-to-consumer industry by Delgado and Mills (2020). Columns (2) and (6) include controls for the interaction between *Post2016* and 4-digit SIC industry fixed effects. Columns (3)-(4) and (7)-(8) restrict the sample to observations with non-missing data on how female friendly a firm's culture was in 2016 (*Diversity Strengths* and *Diversity Concerns*), and columns (4) and (8) include controls for the interaction between *Post2016* and those measures. The sample is restricted to firm-year observations from 2014 through 2019. Standard errors, which are adjusted for clustering at the firm level, are reported in parentheses. All variables are defined in Appendix Table A1. *** denotes significance at the 1% level; ** denotes significance at the 5% level.

	Dependent variable							
	Change in number of females				*Female director share*			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Big3 ^{2016} *× Post2016*	1.106***	1.088***	0.675***	0.581***	0.173***	0.184***	0.063**	0.070***
	(0.097)	(0.100)	(0.165)	(0.163)	(0.019)	(0.019)	(0.027)	(0.026)
Year FE	X	X	X	X	X	X	X	X
Firm FE	X	X	X	X	X	X	X	X
Zero ^{2016} *× Post2016*	X	X	X	X	X	X	X	X
One ^{2016} *× Post2016*	X	X	X	X	X	X	X	X
B2C Industry × Post2016	X				X			
4-digit SIC industry FE *× Post2016*		X				X		
Diversity Strengths ^{2016} *× Post2016*				X				X
Diversity Concerns ^{2016} *× Post2016*				X				X
Sample Restricted to Obs. w/ Non-missing Diversity Data			X	X			X	X
N	16,100	17,176	9,972	9,972	16,725	17,824	10,247	10,247
R^2	0.175	0.196	0.146	0.151	0.834	0.848	0.823	0.825

Table 9

Representation on Board Committees

This table reports coefficients from director-panel regressions of board committee assignments on interactions between a firm's Big Three ownership ($Big3^{2016}$), an indicator for years after 2016 (*Post2016*), and an indicator for the director being a woman (*Female*). Each estimation also includes firm-by-year fixed effects (FE). The dependent variables are indicators for being chairperson of any committee (column 1), the nominating committee (column 2), the audit committee (column 3), the compensation committee (column 4), or the board (column 5), and indicators for being a member of the nominating, audit, compensation, or executive committees (columns 6-9). The sample includes director-firm-year observations from 2014 through 2019. Standard errors, which are adjusted for clustering at the firm level, are reported in parentheses. All variables are defined in Appendix Table A1. *** denotes significance at the 1% level; ** denotes significance at the 5% level; * denotes significance at the 10% level.

	Dependent variable								
	Chairperson of…					*Member of…*			
	Any cmte.	*Nom. cmte.*	*Audit cmte.*	*Comp. cmte.*	*Board*	*Nom. cmte.*	*Audit cmte.*	*Comp. cmte.*	*Executive cmte.*
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
$Big3^{2016}$ × *Female* × *Post2016*	0.270***	0.114*	0.130**	0.038	0.037	0.173**	0.013	0.112	0.043
	(0.099)	(0.061)	(0.062)	(0.061)	(0.039)	(0.087)	(0.092)	(0.093)	(0.048)
Female × *Post2016*	-0.025***	-0.001	-0.021***	0.004	-0.006**	0.001	-0.005	-0.005	0.009***
	(0.008)	(0.005)	(0.005)	(0.005)	(0.003)	(0.007)	(0.008)	(0.007)	(0.003)
Female × $Big3^{2016}$	-0.279***	-0.076	-0.069	-0.094	-0.098**	-0.105	-0.006	0.052	-0.156***
	(0.103)	(0.066)	(0.075)	(0.068)	(0.047)	(0.096)	(0.111)	(0.104)	(0.058)
Female	-0.010	0.008	0.000	-0.009	-0.095***	0.065***	0.060***	0.038***	-0.055***
	(0.008)	(0.006)	(0.006)	(0.006)	(0.004)	(0.008)	(0.009)	(0.009)	(0.005)
Firm-Year FE	X	X	X	X	X	X	X	X	X
N	157,651	157,651	157,651	157,651	157,651	157,651	157,651	157,651	157,651
R^2	0.065	0.041	0.016	0.023	0.028	0.193	0.064	0.092	0.439

Table 10

Big Three Voting and Directors' Careers

This table reports estimates from director-level regresions of the change in public company board seats held by a director between 2016 and 2019 on an indicator for whether that director received a negative vote from any of The Big Three institutions in 2017 or 2018. Where indicated, the regressions control for the director's age and gender. All variables are defined in Appendix Table A1. *** denotes that the averages are statistically different at the 1% level.

	Change in board seats held$^{2016\text{-}2019}$		
	(1)	(2)	(3)
Big3 negative vote$^{2017\text{-}2018}$	-0.12***	-0.09***	-0.08***
	(0.015)	(0.015)	(0.015)
Director's age		X	X
Director's gender			X
N	19,395	19,204	19,204
R^2	0.003	0.050	0.059

Table 11

Newly Appointed Directors' Connections

This table reports coefficients from director-panel regressions of connections between newly appointed directors and the incumbent board on the interactions between a firm's Big Three ownership in 2016 (*Big3*^{2016}), an indicator for years after 2016 (*Post2016*), and an indicator for the director being a woman (*Female*). Each estimation also includes firm-by-year fixed effects (FE). The dependent variables are the number of connections to existing directors before the appointment (column 1), indicators for being connected to at least one existing director (column 2) or CEO (column 3) before the appointment, and an indicator for being an executive at the firm (column 4). The sample includes director-firm-year observations for all newly appointed directors from 2014 through 2019. Standard errors, which are adjusted for clustering at the firm level, are reported in parentheses. All variables are defined in Appendix Table A1. *** denotes significance at the 1% level; ** denotes significance at the 5% level; * denotes significance at the 10% level.

	Dependent variable			
	Number of connections to existing directors	*Connection to existing director*	*Connection to CEO*	*Executive director*
	(1)	(2)	(3)	(4)
Female × Big3 ^{2016} *× Post2016*	-1.520**	-0.593**	-0.722***	-0.212
	(0.762)	(0.301)	(0.236)	(0.242)
Female × Post2016	0.056	0.062**	0.032	-0.017
	(0.071)	(0.026)	(0.021)	(0.020)
Female × Big3 ^{2016}	1.690***	0.503*	0.525***	-0.052
	(0.547)	(0.230)	(0.189)	(0.199)
Female	-0.217***	-0.110***	-0.076***	-0.110***
	(0.052)	(0.020)	(0.016)	(0.016)
Firm-Year FE	X	X	X	X
N	8,792	8,792	6,090	8,792
R^2	0.632	0.511	0.554	0.360

Table 12

Newly Appointed Directors' Experience

This table reports coefficients from director-panel regressions of newly appointed directors' work experience on the interactions between a firm's Big Three ownership in 2016 ($Big3^{2016}$), an indicator for years after 2016 (*Post2016*), and an indicator for the director being a woman (*Female*). Each estimation also includes firm-by-year fixed effects (FE). The dependent variables are indicators for having CEO (column 1) or board (column 2) experience before the appointment. The sample includes director-firm-year observations for all newly appointed directors from 2014 through 2019. Standard errors, which are adjusted for clustering at the firm level, are reported in parentheses. All variables are defined in Appendix Table A1. *** denotes significance at the 1% level; ** denotes significance at the 5% level; * denotes significance at the 10% level.

	Dependent variable	
	CEO experience	*Board experience*
	(1)	(2)
Female × $Big3^{2016}$ × *Post2016*	-0.680*	-0.113
	(0.374)	(0.381)
Female × *Post2016*	-0.005	-0.011
	(0.031)	(0.030)
Female × $Big3^{2016}$	0.326	0.141
	(0.289)	(0.320)
Female	-0.158***	-0.072***
	(0.023)	(0.024)
Firm-Year FE	X	X
N	8,978	8,978
R^2	0.417	0.460

Table 13

Boards' Average Experience

This table reports coefficients from firm-panel regressions of average board member experience on an interaction between a firm's Big Three ownership in 2016 ($Big3^{2016}$) and an indicator for years after 2016 (*Post2016*), firm and year fixed effects (FE), and interactions between *Post2016* and indicators for having zero ($Zero^{2016}$) and one (One^{2016}) female director in 2016. The dependent variables are the share of directors with CEO experience (column 1) and the share of directors with experience on another board (column 2). The sample includes firm-year observations from 2014 through 2019. Standard errors, which are adjusted for clustering at the firm level, are reported in parentheses. All variables are defined in Appendix Table A1. *** denotes significance at the 1% level.

	Dependent variable	
	Share of directors with CEO experience	*Share of directors with other board experience*
	(1)	(2)
$Big3^{2016} \times Post2016$	-0.082***	0.009
	(0.025)	(0.022)
Year FE	X	X
Firm FE	X	X
$Zero^{2016} \times Post2016$	X	X
$One^{2016} \times Post2016$	X	X
N	17,972	17,972
R^2	0.859	0.837

Table 14

Heterogeneity with Respect to Female Leadership

The table reports coefficients from firm-panel regressions of female board representation on interactions between a firm's Big Three ownership in 2016 (*Big3*^{2016}), an indicator for years after 2016 (*Post2016*), and an indicator for not having a woman CEO or woman member on the nominating, audit, or compensation committees in 2016 (*NoFemaleLeader*^{2016}). Each estimation also includes firm and year fixed effects (FE), and interactions between *Post2016* and indicators for having zero (*Zero*^{2016}) and one (*One*^{2016}) female director in 2016. The dependent variables are the change in the number of female directors since the previous year (column 1) and the share of directors that are female (column 2). The sample includes firm-year observations from 2014 through 2019. Standard errors, which are adjusted for clustering at the firm level, are reported in parentheses. All variables are defined in Appendix Table A1. *** denotes significance at the 1% level; ** denotes significance at the 5% level; * denotes significance at the 10% level.

	Dependent variable	
	Change in number of females (1)	*Female director share* (2)
Big3 ^{2016} × *Post2016*	1.002***	0.146***
	(0.126)	(0.023)
Big3 ^{2016} × *Post2016* × *NoFemaleLeader* ^{2016}	0.339*	0.101***
	(0.183)	(0.037)
Year FE	X	X
Firm FE	X	X
Zero ^{2016} × *Post2016*	X	X
One ^{2016} × *Post2016*	X	X
NoFemaleLeader ^{2016} × *Post2016*	X	X
N	17,315	17,973
R^2	0.168	0.835

Table A1 – Variable Definitions

Variable Names	Definitions
At least one female director	Indicator for the firm having at least one female director. Source: Boardex
B2C industry	Indicator for the 6-digit NAICS code industry having at least 35% of output sold as personal consumption expenditure, classified based on the 2002 benchmark input-output accounts of the U.S. Bureau of Economic Analysis. Source: Delgado and Mills (2020)
Big3^{2016}	Share of the firm's equity held by The Big Three asset managers at the end of 2016: sum of StateStreet^{2016}, BlackRock^{2016}, and Vanguard^{2016}.
Big3 negative vote$^{2017\text{-}2018}$	Indicator for at least one of the Big Three asset managers voting against the director in 2017 or 2018, where voting against is defined as voting against, abstain, or withhold. Source: ISS Voting Analytics
BlackRock^{2016}	Share of the firm's equity held by Blackrock at the end of 2016: Equity value held by Blackrock divided by the firm's market capitalization. For firms with multiple share classes, security-level (permno) values are summed to the firm level (permco). Sources: Thomson Reuters 13F; CRSP
Board experience	Indicator for the director having experience as a director of a public or private company in a prior fiscal year. Source: Boardex
CaliforniaHQ	Indicator for the firm being headquartered in California. Source: Compustat
CEO experience	Indicator for the director having experience as a CEO of a public or private company in a prior fiscal year. Source: Boardex
Chairperson of any committee	Indicator for the director being the chair of a board committee. Source: Boardex
Chairperson of audit committee	Indicator for the director being the chair of the audit committee. Source: Boardex
Chairperson of board	Indicator for the director being the board chair. Source: Boardex
Chairperson of compensation committee	Indicator for the director being the chair of the compensation committee. Source: Boardex
Chairperson of nominating committee	Indicator for the director being the chair of the nominating committee. Source: Boardex
Change in board seats held$^{2016\text{-}2019}$	Number of public company board seats the director held at the end of 2019 minus the number held at the end of 2016. Source: Boardex
Change in number of females	Net increase in the number of females on the board relative to the previous fiscal year. Source: Boardex

Connection to CEO	Indicator for the newly hired director being connected to the CEO, where a connection is defined as the individuals having ever worked at the same employer simultaneously or having graduated from the same post-secondary institution within a year of each other. Source: Boardex
Connection to existing director	Indicator for the newly hired director being connected to an existing director, where a connection is defined as the individuals having ever worked at the same employer simultaneously or having graduated from the same post-secondary institution within a year of each other. Source: Boardex
Diversity concerns^{2016}	Average concerns rating of firm's diversity in 2016. Source: MSCI
Diversity strengths^{2016}	Average strengths rating of firm's diversity in 2016. Source: MSCI
DualClass^{2016}	Indicator for firms that having a dual class share structure in 2016. Source: ISS
Executive director	Indicator for the director being an executive of the company. Source: Boardex
Female	Indicator for the board member being female. Source: Boardex
Female director share	Number of female directors on the board divided by board size. Source: Boardex
FloatAdjustment^{2016}	Difference between *MarketCap^{2016}* and Russell Investment's float-adjusted market capitalization at the end of 2016, divided by *MarketCap^{2016}*. Source: FTSE Russell
LessTwo^{2016}	Indicator for the firm having less than two female board members at the end of fiscal year 2016. Source: Boardex
Ln(Assets^{2016})	Natural log of total assets at the end of fiscal year 2016. Source: Compustat
Ln(Compensation)	Natural log of the director's total compensation. Source: Execucomp
Ln(MarketCap^{2016})	Natural log of the market value of equity measured at the end of 2016. Source: CRSP
Ln(Sales^{2016})	Natural log of sales measured at the end of fiscal year 2016. Source: Compustat
Member of audit committee	Indicator for the director sitting on the audit committee. Source: Boardex
Member of compensation committee	Indicator for the director sitting on the compensation committee. Source: Boardex
Member of executive committee	Indicator for the director sitting on the executive committee. Source: Boardex
Member of nominating committee	Indicator for the director sitting on the nominating committee. Source: Boardex

NoFemaleLeader^{2016}	Indicator for the firm at the end of fiscal year 2016 having neither a female CEO nor a female director on the nominating, audit, or compensation committees. Source: Boardex
Number of connections to existing directors	Number of existing directors connected to the newly hired director where a connection is defined as the individuals having ever worked at the same employer simultaneously or having graduated from the same post-secondary institution within a year of each other. Source: Boardex
Number of other board seats	Total number of public and private companies' board seats the director holds at the end of the fiscal year, minus 1. Source: Boardex
One^{2016}	Indicator for the firm having one female board member at the end of fiscal year 2016. Source: Boardex
Post2016	Indicator for the year being after 2016.
Post2017	Indicator for the year being after 2017.
Russell3000^{2016}	Indicator for the firm being in the Russell 3000 Index at the end of 2016. Source: FTSE Russell
S&P500^{2016}	Indicator for the firm being in the S&P 500 Index at the end of 2016. Source: CRSP
Share of directors that are newly hired females	Number of female directors on the board at the end of the fiscal year who were not on the board at the end of the previous fiscal year, divided by the total number of directors on the board at the end of the fiscal year. Source: Boardex
Share of directors Vanguard voted against	Share of directors up for election whom Vanguard voted against, where voting against is defined as voting against, abstain, or withhold. Source: ISS Voting Analytics
Share of directors with director experience	Number of directors on the board at the end of the fiscal year who have been a director of another public or private company in a prior fiscal year divided by the total number of directors on the board at the end of the fiscal year. Source: Boardex
Share of female directors that depart	Number of female directors who were on the board at the end of the previous fiscal year but not at the end of the focal fiscal year divided by the total number of female directors who were on the board at the end of the previous fiscal year. Source: Boardex
Share of nominating/governance committee members BlackRock voted against	Share of nominating committee members up for election to the board whom BlackRock voted against, where voting against is defined as voting against, abstain, or withhold. If the board does not have a nominating committee, then governance committee members are considered instead. Source: ISS Voting Analytics
Share of nominating/governance committee chairs State Street voted against	Share of nominating committee chairs up for election to the board whom State Street voted against, where voting against is defined as voting against, abstain, or withhold. If the board does not have a

	nominating chair, then the governance committee chair is considered instead. Source: ISS Voting Analytics
StateStreet^{2016}	Share of the firm's equity held by State Street at the end of 2016: Equity value held by State Street divided by the firm's market capitalization. For firms with multiple share classes, security-level (permno) values are summed to the firm level (permco). Sources: Thomson Reuters 13F; CRSP
Vanguard^{2016}	Share of the firm's equity held by Vanguard at the end of 2016: Equity value held by Vanguard divided by the firm's market capitalization. For firms with multiple share classes, security-level (permno) values are summed to the firm level (permco). Sources: Thomson Reuters 13F; CRSP
Zero^{2016}	Indicator for the firm having no female board members at the end of fiscal year 2016. Source: Boardex

Table A2

Robustness to Controlling for the California Quota

This table reports coefficients from firm-panel regressions of female board representation on an interaction between a firm's Big Three ownership in 2016 (*Big3*^{2016}) and an indicator for years after 2016 (*Post2016*), firm and year fixed effects (FE), and interactions between *Post2016* and indicators for having zero (*Zero*^{2016}) and one (*One*^{2016}) female director in 2016. The dependent variables are the change in a board's number of females (columns 1-2) and the share of directors that are female (columns 3-4). Columns (2) and (4) include interactions between an indicator for being headquartered in California (*CaliforniaHQ*) and indicators for each year from 2015 through 2019. The sample includes firm-year observations from 2014 through 2019. Standard errors, which are adjusted for clustering at the firm level, are reported in parentheses. All variables are defined in Appendix Table A1. *** denotes significance at the 1% level.

	Dependent variable			
	Change in number of females		*Female director share*	
	(1)	(2)	(3)	(4)
Big3 ^{2016} *× Post2016*	1.136***	1.143***	0.181***	0.181***
	(0.093)	(0.093)	(0.018)	(0.018)
CaliforniaHQ × Year=2015		-0.013		0.001
		(0.034)		(0.003)
CaliforniaHQ × Year=2016		-0.036		0.000
		(0.036)		(0.004)
CaliforniaHQ × Year=2017		0.010		0.007
		(0.036)		(0.004)
CaliforniaHQ × Year=2018		-0.096***		0.006
		(0.032)		(0.005)
CaliforniaHQ × Year=2019		0.168***		0.031***
		(0.044)		(0.005)
Year FE	X	X	X	X
Firm FE	X	X	X	X
Zero ^{2016} *× Post2016*	X	X	X	X
One ^{2016} *× Post2016*	X	X	X	X
N	17,315	17,281	17,973	17,935
R^2	0.169	0.172	0.833	0.834

Table A3

Director Compensation and Busyness

This table reports coefficients from director-panel regressions of directors' compensation and number of other board seats on interactions between a firm's Big Three ownership in 2016 (*Big3*^{2016}), an indicator for years after 2016 (*Post2016*), and an indicator for the director being a woman (*Female*). The estimations also include firm-by-year fixed effects (FE). The dependent variables are log compensation (column 1) and the number of other board seats held at time of appointment (column 2). The sample in column 1 includes all director-firm-year observations from 2014 through 2019. Following Field, Yore, and Souther (2020), we restrict the sample to directors that were appointed more than a year ago to avoid any pro-rated compensation packages. The sample in column 2 is restricted to director-firm-year observations for newly appointed directors. Standard errors, which are adjusted for clustering at the firm level, are reported in parentheses. All variables are defined in Appendix Table A1. *** denotes significance at the 1% level; ** denotes significance at the 5% level; * denotes significance at the 10% level.

	Dependent variable	
	Ln(Compensation)	*Number of other board seats*
	(1)	(2)
Female × Big3 ^{2016} *× Post2016*	0.089	0.252
	(0.093)	(1.409)
Female × Post2016	-0.009	-0.128
	(0.008)	(0.117)
Female × Big3 ^{2016}	-0.221*	1.381
	(0.101)	(1.125)
Female	-0.019**	-0.110
	(0.009)	(0.091)
Firm-Year FE	X	X
N	61,724	8,783
R^2	0.769	0.454