Do Diverse Directors Influence DEI Outcomes?*

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ABSTRACT

We examine whether greater board diversity is associated with more diverse workforce hiring, more equitable pay practices, and more inclusive corporate cultures. Using a variety of quasi-experimental designs, we document increases in managerial and staff diversity in the years following a diverse director's appointment, consistent with diversity initiatives "trickling down" within a firm. We also find that employees perceive improvements in the culture, stronger community-building norms, and approve more of senior management. We, however, see limited real effects in terms of gender and racial pay gaps. Additional findings show board diversity works through allyship, homophily, and cognitive diversity channels. Finally, we examine the extent to which environmental, social, governance (ESG) ratings capture these within-firm social gains and document discrepancies.

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Over the past decade, U.S. corporations have faced mounting pressure from various stakeholders to increase board diversity. For example, as of 2022, at least eleven states have enacted or considered board diversity legislation related to diversity quotas and disclosures. Most recently, the NASDAQ was the first major stock exchange to provide listing requirements based on board diversity. An important impetus driving such initiatives is the idea that diverse boards have real implications for the workforce as they can promote more equitable business practices and steer the corporate culture to be more inclusive and respectful. However, the effects of board diversity on the inner workings of the firm are not well established, as existing academic studies focus primarily on how diverse boards influence firm-level outcomes such as profitability.[1]

The objective of this study is to assess whether, how, and to what extent diverse boards impact diversity, equity, and inclusion (DEI) practices within an organization. In particular, we examine whether greater board diversity is associated with more diverse workforce hiring, more equitable pay practices, and more inclusive corporate cultures, as evidenced through employees' perceptions of cultural norms. To establish a causal linkage between diverse boards and firms' DEI practices, we introduce a novel regression discontinuity (RD) identification strategy that allows us to observe firms that quasi-randomly lie on either side of a fixed threshold. We further supplement the RD analyses with existent identification strategies stemming from shifts in the supply of directors, state legislation mandating gender diversity, and social movements promoting racial and gender equality.

We propose and test three distinct channels through which diverse boards can promote workplace DEI practices within a firm. First, we adopt a broad view of diversity and predict that cognitively and demographically diverse boards can bring in a wider range of knowledge, skills, perspectives, and approaches to problem solving that improves decision-making (Hong and Page, 2004; Chang et al., 2019). Such boards are also more likely to challenge conventional wisdom and question the status quo, including existing diversity practices in an organization. Accordingly, we

[1]Several studies examine the relation between firm value and board diversity (Erhardt et al., 2003; Adams and Ferreira, 2009; Ahern and Dittmar, 2012; Matsa and Miller, 2013; Bøhren and Staubo, 2015; Greene et al., 2020; Hwang et al., 2020; Gertsberg et al., 2021; Eckbo et al., 2022; Rau et al., 2022). Other studies examine specific channels for increasing cash flows such as investment and financing policies (Kim and Starks, 2016; Evgeniou and Vermaelen, 2017; Bernile et al., 2018; Griffin et al., 2020) and personnel decisions (Tate and Yang, 2015; Bertrand et al., 2018; Jäger et al., 2020).

posit that a more diverse board is more likely to encourage diverse hiring practices and also favor investing in inclusive practices within the firm, particularly if they believe these actions will improve business outcomes.

Next, we hypothesize and test whether specific dimensions of board diversity, related to under-represented groups (such as female and non-white directors), directly impact diversity initiatives within the firm. The second channel, which we label as the "homophily" channel, is predicated on the tendency of individuals to associate, interact, and bond with others who possess similar characteristics and backgrounds. Prior studies establish that homophily can shape group formation and social connections in a variety of settings, such as school, work, and marriage, and is viewed as one of the organizing bases of networks and inter-personal relationships (DiMaggio and Powell, 1983; McPherson et al., 2001; Rivera, 2012).[2] In the context of board diversity, directors from diverse or under-represented groups are more likely to be vocal proponents of candidates with similar demographics at the firm. Unlike homophily which stems from identity formation through intra-group social connections, the third channel, which we label as the "allyship" channel, occurs when a person in a position of privilege and power seeks to operate in solidarity with another marginalized group. In the context of board diversity, allyship predicts inter-group support such as female directors using their position of power to help racial minorities.

In practice, we expect that diverse boards can have an impact on high-level policies within an organization by encouraging new initiatives or hiring diverse senior leadership. However, it is ex ante unclear whether such policies can "trickle-down" within an organization and impact diversity efforts, especially among rank-and-file personnel. Specifically, a "trickle-down effect" of diversity requires upper management to advocate for more diversity among middle-management, who in turn do so for lower levels of the organizations (Mayer et al., 2009; Gould et al., 2018). A key feature of our study is our focus on both the depth and breadth of diversity-related initiatives within a firm, thus allowing us to assess the trickle-down effects of diverse boards. With respect to "depth," we

[2]For example, Becker (1973) explains that in marriages, positive assortative mating along observable inheritable traits (e.g., intelligence, race, and height) can be viewed as the micro foundation of homophily. In this case, choosing a partner with similar characteristics increases the certainty about the quality of one's offspring.

assess whether diversity initiatives extend to middle management and staff hiring. With respect to "breadth," we examine a broad range of diversity-related outcomes, ranging from formal policies that can be easily set by a firm (e.g., diversity quotas) to more informal elements (including the inclusiveness of a firm's culture).

We use several complementary empirical strategies to address the endogeneity of board diversity.[3] First, we exploit the discontinuous probability of placing a diverse director on the board as a function of close-call, local political elections. This approach follows the popular econometric approach in nonexperimental settings of examining discontinuous changes at known cutoffs (Lee, 2008; Lee and Lemieux, 2010). As long as there is some arbitrariness in the cutoff (e.g., American democratic elections in which a political candidate wins with 50.1% or fails with 49.9% of the vote), companies operating within the jurisdiction of the local political candidate just below the cutoff are good comparisons to those just above the cutoff, or "as close as random." For this reason, we focus on the election of women and non-white individuals to the United States (U.S.) Senate and Congress.

We find that diverse government representation is associated with the subsequent appointment of diverse directors to local companies, and that there is a discontinuous jump in board diversity as a function of the diverse politicians vote share. This quasi-experimental variation is the basis for our RD design. The quasi-randomness from the election threshold implies that there is balance between the treated and control firms and factors such as firm characteristics and time trends no longer confound estimates. The appeal of this approach is that the underlying identifying assumptions are more mild than other nonexperimental approaches (Hahn et al., 2001). The identifying assumption is a local continuity assumption. Thus, other variables like social movements could be trending in different jurisdictions, but they would need to be trending in a discontinuous manner at the same threshold across states to invalidate the assumption. While this assumption is generally considered

[3]In the board context, the ideal experiment is impossible, because we cannot observe the same company simultaneously with and without a diverse board. The most reliable econometric approach to deal with this problem is random assignment of treatment, but randomizing board leadership is costly and raises ethical concerns. Thus, to make reliable statistical inferences about the effect of diverse boards, we must rely on comparisons of outcomes at different companies with different boards. The challenge, of course, is that differences in outcomes may arise from factors other than just diverse boards.

untestable, we do evaluate placebo covariates that should not be changing and find indirect support for our approach. While the RD design is regarded as having the greatest internal validity, its external validity may be limited, because the estimated treatment effects while consistent may suffer from low firm coverage in the optimal bandwidth.

To mitigate concerns about external validity and test each of our hypothesized channels in a causal manner, we analyze two additional settings with quasi-experimental variation. Our second quasi-experimental setting analyzes shifts in the supply of potential directors attributable to cross-sectional and time-series variations in the existence of one-stop flight connections between the locations of potential director home addresses and firm headquarters. This approach builds off of the work of Giroud (2013); Bernstein et al. (2016); Bernile et al. (2018). As we document, the relevance condition holds, boards are more diverse when the pool of potential directors within a direct flight is more diverse. The exclusion restriction requires that conditional on other controls, the internal workings of the firm must not be correlated with the existence of non-stop flights between firm headquarters and other U.S. cities as well as the diversity of the directors that reside in these locations.

One advantage of the first two empirical strategies is that board diversity does not stem from mandates that require individual companies to appoint diverse boards. Economic theory suggests that mandates can lead to selection issues. For example, if boards are already optimized with regard to directors (e.g., based on skills or expertise), then diversity mandates may require firms to deviate from an unconstrained optimization problem to a constrained one, and these selection constraints generate suboptimal boards and negative corporate outcomes. Nevertheless, because many laws focus on gender diversity on boards, we follow the popular strategy of examining the relation between board diversity mandates and corporate outcomes arising from the staggered adoption of legislation with gender quotas or gender related disclosure requirements, also commonly referred to as "comply or explain" laws. In doing so, we are careful to assess the extent to which parallel trend assumptions are satisfied. Once we verify that, on average, the firms headquartered or incorporated in the treated states depending on the exact law are more likely to increase the percent of female directors on the board, we examine the potential consequences of greater gender diversity on the

inner workings of the firms. This focus on gender diversity allows us to test the homophily and allyship channel in a causal setting, and as such, complements the previous identification strategies that focus on our broad-based measure of board diversity.

Overall, our analyses focus on a sample of S&P 1500 firms over the period between 2008 through 2020. For our primary analyses, we collect data on directors and their skills, employee pay and salary gaps, and corporate culture. In addition, we collect data on environmental, social, and governance (ESG) ratings from three different rating agencies to determine how accurately these agencies are capturing internal changes in diversity practices as opposed to advertised ones that are particularly important for gender and racial lens investment strategies. Our first set of tests focuses on the "depth" of diverse talent. We repeatedly find statistically significant increases in the representation of under-represented groups (URGs) at the manager and staff level when board diversity improves. This is consistent with trickle-down effect that diversity practices at the top cascade through to the rest of the organization.

When we evaluate the three channels through which board diversity influences the representation of diverse talent – cognitive diversity, homophily, and allyship – we find some support for all three channels. To evaluate the different channels, we use different measures of board diversity. We start with a broad-based measure of board diversity, which includes gender, ethnicity, age, education, expertise, and board experience. Then, we focus on the specific components of gender and ethnicity when evaluating homophily and allyship channels. We find that the broad-based board diversity measure is statistically significantly associated with increased diversity at all depths and occurs in the cross-section and within-firm over time. The statistical significance for female homophily occurs at the manager rather than the staff level. For non-white homophily, we find support at both the manager and staff level. The evidence on allyship suggests women are stronger allies for non-white employees than non-white employees are for women. The percent of female directors is statistically significantly linked to non-white representation at the manager and staff depth, but the percent of non-white directors is not significantly associated with female gains once confounding factors are accounted for.

Focusing on the point estimates from the RD strategy, we observe that a one standard deviation

increase in our broad-based measure of board diversity is associated with a 9.3% increase in the representation of URG employees in the two-year window after the event. The point estimates from the RD strategy suggest a 7.0% increase at the managerial depth and a 6.8% increase at the staff depth. In each case, the economic magnitude is less than the OLS estimate, suggesting the OLS is positively biased. In the other experimental settings, we continue to find statistically significant evidence of increased representation of URGs, but again we observe smaller economic magnitudes than the OLS.

When we extend our analyses to salary gaps, the evidence is consistent with no improvements. While the sign of the point estimates is often negative, suggesting that pay gaps are shrinking, the results are only statistically significant in the OLS setting and rarely in the experimental settings. While our employment data suggests that diverse talent is increasing at all depths, this null result for pay gaps could be potentially explained by fewer high-paying diverse hires than low-paying diverse hires.

Our second set of findings focus on the breadth of diversity, by extending our analysis from formal practices like hiring and compensation to the informal ones like corporate culture.[4] Given that corporate culture involves shared meaning, we focus on the broad-based measure of board diversity. We measure culture using crowd-sourced employee reviews from Glassdoor, a career intelligence website that attempts to provide transparency about jobs, salaries, and companies.

We find that greater broad-based board diversity is significantly associated with a higher number of stars for Glassdoor's five-star rating system for company culture. This is also consistent with other metrics evaluating employees' perceptions of work such as their rating of management and designation as a "Best Place to Work." To understand the elements of culture that may be changing, we use natural language processing (NLP) to analyze the text of the Glassdoor reviews. We focus on cultural elements associated with community-building, including embracing diversity, supporting personal growth, supporting career advancement and longevity, balancing work-and-life, making

[4]Grennan and Li (2022) define "corporate culture as an informal institution typified by patterns of behavior and reinforced by people, systems, and events. Corporate culture is manifest in many elements, but brings unity to employees' perspectives through the expectations they have for how they need to behave to fit in and succeed in their firm."

the office fun, and being purpose-driven. Again, we observe statistically significant evidence that the culture as perceived by employees is more community-oriented when the board is more diverse.

Our final set of tests explores a controversial aspect of the ongoing debate about whether ESG best practices have real effects. Specifically, some companies may advertise that they have an inclusive culture and champion diversity when the reality may be different. We evaluate the extent to which ESG ratings and the "S" component of the ESG rating change in our quasi-experimental settings. Consistent with the evidence on aggregate confusion (Berg et al., 2022), we never find that all ratings agencies agree. For example, in the RD setting, we only find that Refinitiv "S" rating improves, yet in the OLS setting, we find that only the KLD "S" rating improves. In other experimental settings, we find little evidence of improvement. This suggests that asset managers looking to incorporate gender and racial equity into their investment decision-making process need to look beyond check-the-box approaches to ESG ratings.

Overall, our study contributes to the literature on boards in the following ways. Our primary contribution is to the literature on board diversity and its implications for labor markets and the internal workings of the firm. We document that a more diverse board can lead to an improvement in the diversity of talent within a firm, wherein there is a subsequent increase in women and non-white employees at the manager and staff positions. This evidence complements previous findings focused on gender only (Biswas et al., 2021; Tate and Yang, 2015). Interestingly, Bertrand et al. (2018) examine the Norwegian gender quotas and conclude that it had little trickle-down effect. There are several potential explanations for the difference in findings, as we study U.S. firms not Norwegian firms, use data covering a longer time period, and incorporate a different identification strategy. Finally, our evidence that shareholder activism aimed at achieving greater board gender diversity is consistent with a rich literature documenting the real effects of shareholder activism (Hartzell and Starks, 2003; Cuñat et al., 2012; nat et al., 2020; Gormley et al., 2021).

Second, in addition to triggering greater diversity in the lower depths in the organization, we also find evidence that a more diverse board is associated with improvements in employees' perceptions of the corporate culture and re-orientation of the culture toward one that is community-oriented. This contributes to the literature showing that culture is an important channel through which

corporate governance operates (Shleifer and Vishny, 1997; Guiso et al., 2015; Grennan, 2022b). It also contributes to research documenting how corporate culture meaningfully influences decision-making within the firm, especially in relation to ethical choices (Fahlenbrach et al., 2012; Popadak, 2016; Graham et al., 2022a,b), whistle-blowing (Bowen et al., 2010; Dyck et al., 2010), and work quality (Gao et al., 2014; Liu, 2016; Kedia et al., 2018; Pacelli, 2019). In addition, our findings are relevant to research examining social movements and diversity (Giannetti and Wang, 2021).

Finally, our results on how the ESG ratings agencies do not consistently report changes in the aggregate ESG score or social score consistent with changes we observe internally complements a growing literature on the merits of enhanced transparency and disclosure (Ilhan et al., 2020; Billings et al., 2022). Our finding that greater board diversity plays an important role in reducing inequities at lower levels of the organization may provide useful to continuous policy debates about the kinds of benefits that best support talent throughout the organization (Bennedsen et al., 2022; Bennett et al., 2020; Liu et al., 2022).

The rest of the paper proceeds as follows. Section 1 provides the theoretical motivation for the hypotheses we test. Section 2 describes how we gather the data and measure the internal workings of the firm. Section 3 presents the conditional correlations and Section 4 presents our RD identification approaches. Section 5 examines are other approaches aimed at making causal inferences. Some concluding remarks are offered in the final section.

1 Theoretical Motivation

Research on gender diversity in the board room suggests that it can spill over to senior leadership (e.g., see review chapter by Knyazeva et al. (2021)). Matsa and Miller (2011, 2013) find that female directors are more likely to appoint female executives. Similarly, Biswas et al. (2021) find that increased female board representation is associated with more women in senior management. Gould et al. (2018) find similar positive effects of board gender diversity on gender diversity of senior leadership outside the U.S. and point out that "appointing women at a senior level may be the lever needed to increase female appointments at the level of management immediately below, which

in turn will improve gender diversity throughout the organization." This argument is consistent with Tate and Yang (2015) which shows that female manufacturing plant managers boost female employee earnings. While these studies focus on gender, we believe it is reasonable to expect to observe a similar cascade effect of board diversity on employee diversity when extrapolating from gender diversity to broader types of diversity. This hypothesis is consistent with theoretical arguments about role models and affirmative action (Cornell and Welch, 1996; Chung, 2000).

We hypothesize that there are three channels through which broader measures of board diversity may work: (i) cognitive diversity and questioning of the status quo, (ii) homophily and in-group preferences, and (iii) allyship and diverse leader's agentic role in advocating for other URGs. These channels are consistent with a rich literature in sociology and phycology. Cognitive diversity has been put forth as an explanation for the seemingly mixed results from the academic literature on whether diversity improves value (e.g., see the review by Alex Edmans of this literature). Members of the board are tasked with a variety of roles ranging from monitoring, to executive hiring and compensation decisions, to helping set the strategic vision for the firm. Yet boards can be co-opted (Coles et al., 2014) through nominations of directors that are friendly to the CEO's ideas (Adams and Ferreira, 2007).

In such settings, increases in female representation on boards may not matter. For example, Adams and Ferreira (2009) find that the average effect of gender diversity on firm performance is negative, although female directors have better attendance records than male directors. But even this better attendance is potentially controversial as Masulis et al. (2012) show that directors located in foreign countries have worse attendance and firms with foreign independent directors exhibit significantly poorer performance. Peteghem et al. (2018) find that board diversity creates subgroups within the board and hamper board effectiveness and is consistent with theories of deadlock on boards Donaldson et al. (2020). On the other hand, Kim and Starks (2016) find that board gender diversity could increase firm value through specific functional expertise.

Research suggests that people with similar backgrounds are easier to form relationships with each other than dissimilar people. The homophily theory suggests that people tend to form relationships with others who share socio-demographical, behavioral, or intrapersonal similarity with

them (McPherson et al., 2001). These relationships include marriage, friendship, work, advice, support, information transfer, exchange, and comembership. The similarity attraction theory in psychology (Berscheid and Hatfield-Walster, 1969) also suggests that actual attitudinal similarity will produce interpersonal attraction. These theoretical paradigms imply that in-group preference plays a crucial role in how people form relationships. Board of directors may have influence on the employee selection process, especially for managers. In the context of board of directors, it is natural to conject that the ethnic composition of employees will be similar to that of the board of directors. Specifically, if the board of directors is dominated by majority ethnicities, so will the employees. On the contrast, if more ethnic minorities enter the board, employee diversity will rise accordingly.

Allyship and/or the opposite effects from performative allyship is another potential channel through which board diversity can change the inner workings of firms. Allyship is defined as a consistent, repeated pattern of building supportive associations and relationships based on trust and accountability with marginalized individuals and under-represented groups. An ally actively promotes and aspires to advance a culture of inclusion through intentional, positive and conscious efforts. The allies who stand up for the equal and fair treatment of different people are powerful voices for those who are underrepresented. Yet it may also be the case that some people signal support on social media or in large groups for optics, but act differently when placed in a position of authority. We consider this unique angle as well. Ultimately, it is empirical question whether placing white women or other non-white males on the board helps other marginalized groups within the firm.

Governance and leadership changes also have the potential to influence corporate culture. While culture is a pattern of behavior, it is reinforced through people, systems, and events like social movements (Gorton and Zentefis, 2021a,b; Gorton et al., 2022). For example, formal institutions like corporate governance may influence a firm's culture. Guiso et al. (2015) find that transitions to public ownership are associated with lower levels of trust and diminished emphasis on the cultural value of integrity. (Popadak, 2016) finds that shareholder activism, especially from hedge funds, is not conducive to fostering a strong culture. (Grennan, 2022b) shows that greater shareholder

governance is associated with changes in culture, especially the focus on the cultural value of results-orientation at the expense of collaboration and integrity. Graham et al. (2022a,b) show evidence from a survey of 1,348 corporate executives that governance can both work for or against the culture depending on the context and provide several anecdotes consistent with that. At the same time, events (e.g., #MeToo movement) and people (e.g., more diverse managers) may influence culture. It is not just leaders who set the culture, but other people who interact with the many employees in a company that may influence the culture (e.g., those from the finance team responsible for forecasting and planning or lawyers from the compliance team working to mitigate risks). These people may influence the culture directly by promoting certain cultural values (e.g., integrity) or indirectly by reinforcing certain elements (e.g., sharing stories of harsh punishments for unethical behavior and thereby, facilitating a new lesson for employees about the culture). Thus, it seems plausible that changes in board diversity may influence corporate culture.

2 Data

2.1 Directors

We obtain data from the ISS (formerly RiskMetric) Directors database. The initial sample consists of the S&P 1500 companies from 2008 to 2020. There are 2,211 companies and 17,404 firm-year observations in this sample period. We then merge it with Compustat and CRSP using the most recent 6-digit CUSIP identifier to obtain each company's financial characteristics and stock performance. We drop the companies with invalid data, which reduces the sample to 2,204 companies and 17,373 firm-year observations. For each director, we obtain her gender and ethnicity from the ISS Directors database and predict her ethnicity based on first and last names using the "ethnicolr" algorithm. When the algorithm is less than 80% confident in the assignment, we manually search to identify the ethnicity. We also use Boardex to determine the education of the board member.

We compute four different board diversity measures to better approximate hypothesized chan-

nels of influence. At the broadest level, we measure broad-based board diversity using the index methodology outlined in Bernile et al. (2018), which reflects six components: gender, ethnicity, age, education, expertise, and other board experiences. Figure 1 displays a heatmap of the correlations between the index and all of its components. Red reflects a negative correlation and blue a positive correlation. We see that gender and ethnicity are actually negatively correlated. In fact, gender is negatively correlated with age, education, and expertise, but positively correlated with number of board experiences. Our three other measures of board diversity, isolate a smaller number of components. Board diversity (gender, ethnicity) simple combines the gender and ethnicity component and normalizes across them. When we focus on gender or ethnicity alone, we use the percent female and percent non-white directors.

We also acquire ISS Director qualifications database. This data has information on a set of sixteen unique skills or experiences that ISS deems as useful for assessing director qualifications. The categories are: audit/accounting, CEO/Managing Director/Chairman, CFO, corporate social responsibility/socially responsible investing, financial, government/military, human resources, industry, international, leadership, mergers and acquisitions, operations, risk, sales/marketing/public relations, strategic planning, technology/engineering. To better understand how diverse directors contribute to skill diversity, we calculate three measures of skill diversity. One for the overall board, one for the diverse members of the board, and one for the white male members of the board.

2.2 Employees

We then obtain from Revelio Lab aggregated employee data grouped by the employee's seniority level (manager or staff), ethnicity (Non-Hispanic Whites, Non-Hispanic Blacks, Asians, or Hispanics) and gender (male or female). Revelio Lab is a third-party platform aiming to create a clear way to understand workforce and talent across companies based on employee data from LinkedIn. One advantage of this position level data is that we can observe characteristics of employees on different levels within the same company. The prediction of each employee's ethnicity uses the same algorithm as used in predicting each director's ethnicity. We drop the companies for which we are

unable to predict the ethnicities of the employees or directors, which reduces the sample to 1,897 companies and 15,359 firm-year observations. We define a person as being an ethnic minority if she belongs to the Non-Hispanic Blacks group, the Asians group or the Hispanics group, and as being a non-ethnic-minority if she belongs to the Non-Hispanic Whites group.

2.3 Corporate Culture

We measure corporate culture using crowd-sourced employee reviews from Glassdoor, a career intelligence website that attempts to provide transparency about jobs, salaries, and companies. Glassdoor has a five-star rating system for company culture, which we use as a culture rating. In addition, we have data on the overall rating for the firm, employees rating of management, and employees rating of benefits and compensation.

We also use the text of the Glassdoor reviews to measure culture by applying advanced computational linguistic models to the data. This approach builds on a large literature using textual analysis to measure cultural values and norms. For example, Audi et al. (2016) measure trust using word counts from firm's 10-ks, Au et al. (2021) measure cultural flexibility using reviews from a career intelligence website, (Grennan, 2022a,b) measures eight cultural values identified by management scholars (Chatman et al., 2014; Chatman and O'Reilly, 2016) as the principal elements of culture using career intelligence websites, and (Adams et al., 2021) construct a measure of gender culture using latent dirichlet analysis (LDA) to extract a gender topic, and (Li et al., 2021) use word-embedding methods to capture five elements of culture from earnings conference calls.

Our measurement approach is based on Grennan (2022c) which examines 40 different cultural elements that aggregate to eight cultural values. The approach makes use of unsupervised and semi-supervised methods of machine learning (ML). Specifically, over 5000 reviews were labeled by research assistants (RAs) to train a model for each of the cultural element. In addition to the labeling other attributes input into the ML models included sentiment scores, Glassdoor culture ratings, word counts from word embedding methods for the elements, and in some cases individual words. Then, for cultural element the most accurate ML model was selected and applied to the

remaining millions of reviews. The main variable of focus in this study is the cultural value of community-orientation and cultural norms associated with community-oriented culture. These norms include: embracing diversity, supporting personal growth, supporting career advancement and longevity, balancing work-and-life, making the office fun, and being purpose-driven.

2.4 ESG measures

We gather data from Sustainalytics, Refinitiv, and KLD. We focus on the aggregate ESG rating and the S components. For KLD ratings, the S component is taken as the net S score which reflects the difference between the S pros and S cons.

3 Multivariate Analysis

We begin by examining the relationship between our broadest index that of board diversity and then we narrow to focus on the other channels through which board diversity may work. In Table 1, we present point estimates of diverse employee representation and their salary gaps in relation to broad-based board diversity. Panel A displays estimates of employee representation for URGs (females and non-whites combined) and Panel B displays estimates of salary gaps for the same set of employees. Controls variables include profitability, Tobin's Q, firm size, firm age, asset growth sales growth investment-to-capital, lifecycle stage, equity volatility, board size, board independent and institutional ownership. Focusing on columns (1) through (4) of Panel C, we see that broad-based board diversity is associated with increase representation of URGs at all depths of the organization. When we break apart URGs into females (Panel A) and non-whites (Panel B), again we see robust conditional correlations both in the cross-section and within-firm over time that greater broad-based board diversity is associated with greater employee diversity. This finding is consistent with the idea that cognitive diversity on the board allows for questioning of the status quo such as continuing to place white males in a privileged position relative to non-white and female employees.

Cognitive diversity and questioning the status quo is one channel through which diversity may matter, but there are two other important channels, including homophily and allyship. Table 2 examine the homophily hypothesis. Panel A focuses on gender, Panel B on non-whites, and Panel C on URGs. Again, we consistently see significant, positive correlations between the percent of female directors and female employees, although the within-firm evidence for female staff is insignificant. In this sense, it may take time for board diversity to trickle-down to lower depths of employees. For non-whites, we see strong, positive correlations for both managers and staff and both in the cross-section and within-firm over time. Table 3 repeats the exercise for employee diversity and homophily but examines salary gaps. In this case, we see some evidence in the cross-section that having more non-white directors is associated with lower salary gaps for non-white employees, but we mostly see little evidence that board diversity alters salary gaps. In some sense, this is a nice placebo test to rule out the argument that some confounding variable is leading to inconsistent estimates across the board.

Next, Table 4 examines an allyship channel. There appears to be no relation between non-white directors and female employees within firm once control variables have been included. Without control variables, there is a small, positive relation between non-white directors and female employees but only in the logarithmic case. In contrast to gender, when looking at the relation between non-white directors and non-white employees, there is a meaningful relationship both in the cross-section and within-firm both in the logarithmic and percent case. Thus, the evidence on allyship suggests women are stronger allies for non-white employees than non-white employees are for women. The percent of female directors is statistically significantly correlation to non-white representation at the manager and staff depth, but the percent of non-white directors is not significantly associated with female gains once confounding factors are accounted for.

This strong, positive correlation between gender diversity and non-white employees also contradicts the anti-allyship channel or the "Karen" meme, which popularized the confusing status of white women as potentially both oppressors and oppressed individuals. The idea being that white women use their apparent disadvantage – being a woman – to execute the covert maneuver of using white feminity to present oneself as a victim when in fact acting as an aggressor. A more benign

psychological interpretation of "Karen" effect is the "queen bee" syndrome in which women when elevated to a position of power use it as a weapon against those below them. While we do not find any evidence of anti-allyship, in untabulated analyses, we explore both gender and ethnicity gains over time following inter-group board gains, and we see some evidence of a trade-off emerge. There are significantly lower percent of non-white staff within the firm two years after the percent of females on the board increases. Similarly, there is significantly lower percent of female staff within the firm two years after the percent of non-white directors on the board increases. These results are not evident at the manager level suggesting gains on one dimension do not always spillover.

4 Regression Discontinuity Design

In the preceding subsection, we argued that OLS may provide consistent estimates in our setting. We now present our multi-pronged approach aimed at relaxing the assumptions embedded in the OLS approach. While estimating the relation between board diversity and the internal workings of firms allows us to explore the channel through which board diversity may have trickle-down effects on employees, using OLS raises a few concerns. First, firms that nominate and appoint more diverse directors may differ along other dimensions from firms that do not. Second, board turnover correlates with other firm characteristics that may also depend on the interplay between the director diversity and these characteristics.

Our first approach to causal inference is a fuzzy regression discontinuity design. It exploits natural variation in board diversity, which arises from features of the political system in the United States. The intuition for the empirical design is to use naturally occurring random threshold to replicate an experiment in which firms are randomly assigned a more or less diverse board. Specifically, we exploit the naturally occurring, but random threshold that receiving 50% of the vote share in a political election involving a diverse political candidate may signal to the leadership at local companies to increase the diversity of their board. Statistically, the passing demarcation from these close-call elections is essentially equivalent to an independent random event. On average, one would expect to find that the corporate governance and other characteristics of firms located

in jurisdictions in which a diverse candidate won with 50.1% of the vote are similar to firms located in jurisdictions in which the diverse political candidate failed to win with 49.9% of the vote.

To obtain estimates of the consequences of diverse political candidate winning, we follow the standard methods for a fuzzy RD design and adopt a potential outcomes framework. Let $Outcome_i(0)$ and $Outcome_i(1)$ denote the potential change in outcomes with and without treatment for firm i, respectively. Let $Inc\_Board\_Diversity_i \in \{0,1\}$ denote the treatment received, where $Inc\_Board\_Diversity_i = 1$ if firm i nominates a director that result in greater board diversity and $Inc\_Board\_Diversity_i = 0$ otherwise. The observed change in outcome for firm i is:

$$\begin{aligned} Outcome_i &= (1 - Inc\_Board\_Diversity_i) \cdot Outcome_i(0) + Inc\_Board\_Diversity_i \cdot Outcome_i(1) \\ &= \begin{cases} Outcome_i(0) & \text{if } Inc\_Board\_Div_i = 0 \\ Outcome_i(1) & \text{if } Inc\_Board\_Div_i = 1 \end{cases} \end{aligned} \tag{1}$$

Next, let $vote_i$ be the distance from the victory margin for the political candidate and win indicate the winning threshold. The relationship between the probability of board diversity increasing at local companies and $vote_i$ is:

$$\Pr\left[Inc\_Board\_Div_i = 1 | vote_i\right] = \begin{cases} g_0(vote_i) & \text{if } vote_i < win, \\ g_1(vote_i) & \text{if } vote_i \geq win. \end{cases} \tag{2}$$

Combining Equation (1) and (2), the effect of higher levels of board diversity for firms increasing their board diversity is identified as follows:

$$\tau_{Outcome} = \frac{\lim_{vote \downarrow win} E\left[Outcome | V = vote\right] - \lim_{vote \uparrow win} E\left[Outcome | V = vote\right]}{\lim_{vote \downarrow win} E\left[Inc\_Board\_Div | V = vote\right] - \lim_{vote \uparrow win} E\left[Inc\_Board\_Div | V = vote\right]} \tag{3}$$

In order to estimate the conditional expectations in Equation (3), we follow the fuzzy RD literature (Hahn et al., 2001; Lee and Lemieux, 2010; Cattaneo and Escanciano, 2017; Calonico et al., 2019), which shows robust inferences can be made from estimates recast as an IV regres-

sion. An indicator variable for the discontinuity, $T_i = I[vote_i \geq win]$, serves as an instrument for $Board\_Diversity_i$, where $Board\_Diversity_i$ captures whether firm i nominates a director that result in greater board diversity. The relevance condition is likely to hold because T_i affects the probability of diverse political candidates winning. The exclusion restriction is unlikely to be violated, because the random decision to make the passing threshold hold 50% as opposed 60% is unrelated to the outcome variable other than through its effect on the diverse candidate winning.

We consider several outcomes, including the change in the employee diversity at varying depths of the firm, gender and ethnicity pay gaps, corporate culture, and a variety of ESG ratings. In each case, the numerator is the difference in the expected outcome and the denominator is the difference in probability of board diversity increasing near the threshold. Our observations are at the firm-state-year level. When there are multiple elections involving a diverse candidate in a given state in a given year, we include each election as a separate observation. In some specifications, we include firm-specific corporate governance characteristics and census region fixed effects. However, for each outcome, we are careful to show the result is present without covariates and fixed effects. A recent RD paper suggests that even including pre-treatment covariates may bias the estimation (Hsu and Shen, 2019).

We begin by presenting evidence that the board and firm characteristics look similar along several observable dimensions in jurisdictions that experience close-call political elections that have diverse political candidates. Such balancing is consistent with the ideal experiment in which firms are treated with diverse local public leaders randomly. A key point of this regression discontinuity design is that it does not preclude potential matching between firm characteristics and treatment, rather the assumption is that the covariates are locally continuous at the passing threshold. Thus, social movements could be occuring in different jurisdictions at different rates, but as long as there is no discontinuity in social movements exactly at the passing threshold, which seems plausible, the assumptions necessary for identification are met. Put another way, randomized variation is a consequence of 50% being the election threshold rather than 60% and firm's inability to precisely control the local political outcomes near the passing threshold. This implies that an argument suggesting an outcome is simply trending over time or changing because of a different factor that

is correlated with a firm characteristic is not a valid criticism.

In fact, there is a prominent political economy literature that has evaluated manipulations around election outcomes. In their influential study, Lee et al. (2004) present evidence supporting the credibility of the regression discontinuity designs in the case of U.S. House of Representatives elections. Following that publication, the econometric approach has been heavily scrutinized, and the prevailing view is that the approach is applicable (Lee, 2008; Eggers et al., 2015) and that there is little evidence of manipulation. Consistent with existent studies, columns (1) through (4) of Table 6 provides detailed evidence of balancing for several pre-treatment covariates including board size, board independence, institutional ownership, board diversity, percent female, and percent non-white. Further in Panel B, we show balance along several firm dimensions including firm size, firm age, profitability, ROE, asset growth, sales growth, investment, SG&A, and lifecycle stage.

This sample is restricted to those firm-year observations within an optimally derived bandwidth of the threshold. Specifically, we follow the econometric procedure developed by Imbens and Kalyanaraman (2011) and further refined in Calonico et al. (2014) and Calonico et al. (2015). The procedure allows for different bandwidth selection on either side of the threshold and distinguishes between mean-square error (MSE) optimal bandwidths and coverage error ratio (CER)-optimal choices. Different estimators will have different bias and variance terms depending on the outcome of interest and the assumptions on heteroskedasticity and clustering. We consider a variety of optimal bandwidth selectors and report them in Appendix Table B.2. We observe little difference between the various MSE-optimal bandwidth selectors and the various CER-optimal selectors, and so choose the median bandwidth for each type as it may have better rate properties. We do, however, see more meaningful differences between the MSE-optimal and CER-optimal choices, something we explore more when we turn to the evidence for changes in board diversity.

Next, we explore the data linking diverse political candidates winning to subsequent increases in board diversity of local companies. Figure 2 presents visual evidence for a discontinuity in changes in board diversity from the year before the election to the year after the election as a function of the vote share crossing the win threshold. This discontinuity is critical for estimating the effect of an increase in board diversity on diversity initiatives within the firm. The figure illustrates the

discontinuity by plotting the average change in board diversity as a function of the proximity to the win threshold. If the diverse political candidate wins as is indicated by being above the win threshold, then the average broad-based board diversity measure changes by 0.08 to 0.10 standard deviations depending on the line of best fit. Figure 3 repeats this for board diversity based solely on gender and ethnicity. Again there is visual evidence for a discontinuity, although the magnitude of the change is smaller ranging from 0.04 to 0.05 standard deviation increase.

Table 7 shows the regression evidence for the discontinuity. Columns (1) to (4) examine the MSE-optimal bandwidth, columns (5) to (8) examine the CER-optimal bandwidth, and columns (9)-(12) use the full sample but allow for flexible polynomial form on either side of the threshold. Panel A examines broad-based board diversity. In all 12 regressions, we find a statistically significant increase in broad-based board diversity in relation to a diverse local politician winning. Across the various specifications, the point estimates are similar and suggest anywhere from 0.048 to 0.057 standard deviation increase in board diversity. Panel B examines the gender and ethnicity components of the index. Here, we see variation across the bandwidths. While each estimate is positive, only the MSE-optimal and polynomial bandwidths are statistically significant. We select the MSE-optimal bias-adjusted bandwidth for future tests. Ultimately, valid inference in a non-parametric setting such as ours requires the delicate balancing act of selecting a bandwidth small enough to remove smoothing bias, yet large enough to ensure adequate precision. Given that we supplement this research design with other research designs that focus on a different set of complier firms, we believe the complementary approaches help us address any loss in coverage attributable to our bandwidth selection.

Panel A of Table 8 shows the RD regression estimates for the effect of broad-based board diversity on employee diversity. Columns (1) to (4) show the changes for all employees from URGs, columns (5) to (8) show changes at the depth of managers from URGs depth, and columns (9) to (12) show changes at the depth of staff from URGs. Across all depths of the organization, we see greater broad-based board diversity is associated with greater representation of diverse employees. Including pre-election controls for board characteristics do not meaningful change the point estimates. The use of census region fixed effects changes typically diminishes the magnitude

of the point estimate. For example, comparing column (1) and (3), we see that the point estimate changes from 0.089 to 0.072. In all specifications, the results are significant at the 5% level. Comparing economic magnitudes, the point estimates for staff and managers are within the same standard error range. This is consistent with greater broad-based board diversity leading to DEI initiatives that improve hiring and retention policies across the whole organization.

Panel B of Table 8 shows the RD regression estimates for the effect of board diversity isolated to the gender and ethnicity components on employee diversity. Across all depths of the organization, we see greater board diversity in terms is gebder abd ethnicity is associated with greater representation of diverse employees. All specifications are significant at the 5% or 10% level. Again, the point estimates for manager and staff depths are similar and suggestive of broader DEI initiatives within the organization. Finally, we note that the economic magnitude is larger when focused on the gender and ethnicity specifically rather than broad-based board diversity. This is potentially consistent with the additional channels of homophily and allyship amplifying the influence of questioning the status quo.

Table 9 shows the RD regression estimates for the effect of broad-based board diversity on corporate culture. Columns (1) to (4) show the changes in the Glassdoor culture rating, columns (5) to (8) show changes in employees' perceptions of management, and columns (9) to (12) show changes in the community-oriented norms derived from textual analysis. We see greater broad-based board diversity is associated with improvements in the corporate culture. The point estimates are similar when we include pre-election controls for board characteristics and remain significant at the 10% level. For the Glassdoor ratings, the point estimate remains similar, but the standard errors increase such that the estimate is no longer statistically significant after census region fixed effects are included. While we employ techniques to adjust for potential bias, the use of fixed effects and controls remains controversial in the RD setting because of how they reweight the influence of particular observations. Overall, given that 8 of the 12 specifications we test are significant, we conclude there is evidence consistent with cultural improvements after board diversity increases.

Appendix Table Table B.3 reports our RD regression estimates for the effect of board diversity on salary gaps. We find no evidence that salary gaps are changing in a statistically significant way

in response to either broad-based board diversity or board diversity isolated to gender and ethnicity. In the salary gap case, even the sign of the estimates vary with exactly half being positive and half being negative, suggesting that board diversity has no relation to actual pay practices.

Appendix Table Table B.4 shows the RD regression estimates for the effect of broad-based board diversity on ESG ratings and "S" scores. Both Sustainalytics and KLD are insignificant in all specifications. For Sustainalytics the sign is always negative, and for KLD, the sign is always positive. For Refinitive, we do see evidence of improvements in both the overall ESG rating and in particular, the social rating. The fact that there is such divergence across rating agencies presents a challenge to any asset manager looking to incorporate gender and racial lens approaches into their investment strategies.

5 Other Experimental Designs

5.1 Variation in the Supply of Directors

Following the strategy pioneered by Bernile et al. (2018) we evaluate diversity gains using a shift-share design (i.e., a Bartik instrument) stemming from shifts in the supply of directors over time attributable to the plausibly exogenous changes to the availability of direct flights stemming from airline industry consolidation. To measure direct flights, we webscrape by zipcode the distance to all airports. We then use information from the Department of Transportation to determine if a direct flight is available. Finally, we obtain directors' home addresses from Lexis-Nexis searches for property records. We calculate potential directors as any employee in the Top 5 for compensation as reported in Execucomp at firms in the same industry. We then estimate a broad-based board diversity index supply based on the same six elements of our board diversity measure but using this potential supply of directors.

We present the results of this IV estimation approach in Table 10. We focus on cross-sectional variation as there is not enough within-firm variation over time to pass weak instrument tests. We find that greater broad-based board diversity is significantly associated with greater employee

diversity at all depths of the organization. We also find a higher number of stars for Glassdoor's five-star rating system for company culture. Our results on culture are also evident in other metrics evaluating employees' perceptions of work such as their designation as a "Best Place to Work." Finally, in Panel B we see significant evidence cultural norms associated with community-building are strengthened. In Panel C, we again see mixed evidence that ESG ratings agencies actually measure these internal social gains.

5.2 State Legislation

We exploit the staggered adoption of legislations on board diversity as exogenous variation in board diversity. So far there has been no legislations about board ethnic diversity, so we focus on the effect of legislations on board gender diversity.

In 2017, the Colorado legislature adopted a Joint Resolution (House Joint Resolution 17-1017) encouraging "equitable and diverse gender representation on corporate boards" and urging that by December 2020, public corporations headquartered in Colorado have a minimum number of female directors depending on the size of the board (i.e., if 9 or more directors, 3 should be women; if 5–8, then 2 women; if 4 or fewer, then two women). In 2018, California passed a bill (SB 826) mandating gender diversity on the boards of directors of publicly traded corporations with their "principal executive office" in the state. In 2019, Maryland law (HB1116) requires business entities–foreign or domestic, profit or nonprofit–with corporate headquarters in Maryland, to disclose in their Annual Reports the total number of directors and the total number of female directors. In 2019, Illinois enacted a board diversity disclosure law (Public Act 101-0589) requiring corporations to include additional information in their annual reports about directors' specific qualifications, self-identified gender and self-identified ethnicity. The Illinois law applies to publicly held-foreign or domestic-corporations with their "principal executive office" in Illinois. In 2020, Washington became the second state after California to address gender diversity on public company boards in its corporate statute. The Washington Business Corporation Act (WBCA) added Section 23B, which takes a comply or explain approach to gender diversity. A public company incorporated

in Washington state is considered to have a gender-diverse board of directors if individuals who self-identify as women comprise 25% or more of the directors for at least 270 days of the fiscal year before the annual shareholders meeting. In 2020, New York amended Section 408 of the Business Corporation Law, which requires for-profit domestic and foreign corporations authorized to conduct business in New York – not just those companies incorporated in New York – to include the number of directors and list how many are women in their biennial statement filings.

Given the institutional background, we examine the effect of state legislations on board gender diversity by estimating the following equation:

$$Y_{jst} = \alpha + \beta \left(Treat \times Post\right)_{jst} + \mu X_{jst} + \gamma_j + \rho_{st} + \varepsilon_{jst} \tag{4}$$

In the above equation, Y represents the outcome variable, such as the percent of female directors on the board or the percentage change in female directors on the board over a two year period. The observation unit is firm j either headquartered or incorporated in state s depending on the specific law in year t. $Treat \times Post$ is an indicator for firms either headquartered or incorporated in states that have passed laws that either explicitly mandate a minimum number or percentage of female directors, or require the disclosure of the number or percentage of female directors on the board, or appeal to a minimum number or percentage of female directors, by year t, and 0 otherwise. Specifically, it refers to firms headquartered in Colorado for 2017 and after, firms headquartered in California for 2018 and after, headquartered in Maryland for 2019 and after, headquartered in Illinois for 2019 and after, incorporated in Washington for 2020 and after, and headquartered in New York for 2020 and after.

Table 11 reports the estimates from difference-in-differences specification. After the state has passed legislations mandating the number of female directors or mandating the disclosure of the number of female directors or appealing for more female directors, the firms located in this state increase the gender diversity on their boards. As shown in Panel A column (2), on average, firms increase female board representation by 0.8 percentage point over one year, and as shown in Panel B column (2), by 2.2 percentage points over two years. This is statistically significant change,

indicating that legislations on board diversity does positively influence board gender diversity. Especially at the two-year horizon, our results hold across a variety of specifications including ones with firm and year fixed effects, and controlling for corporate governance and firm characteristics as well as clustering by headquarter state. In each specification in Panel B, the result is significant at the 1% level.

To further test the validity of the difference-in-differences approach, which relies on the assumption that no time-varying differences exist between the treatment and control groups, we present visual evidence to assess whether the gender diversity results are driven by preexisting differential trends in board gender diversity or are biased due to dynamic effects that may be developing slowly over time. In Figure 4, we show the simplified buckets for the treatment and controls firms, using the three years before and the three years after the treatment. For the control states, we use the year prior to the first state legislation change in Colorado so as not to confound potential spillovers in firms anticipating follow-on legislation in their own state. As the figure shows, the increase is more pronounced in treated states relative to controls states both in terms of raw percent female on the board and the percentage point change in female representations.

Next, in Figure 5, we show the dynamic coefficient estimates equivalent to the difference-in-differences specification with firm fixed effects. The figure shows a window spanning from ten years before the law change to three years after the law change on the left and five years before the law change to three years after the law change on the right. The figures plot the coefficient estimates when the percent female on the board is the dependent variable. In both cases, the line of best fit for the coefficient estimates prior to the law changes is depicted. This line helps to visualize the trend. While there is an upward trend leading up to the law changes, the coefficient estimates are positive and substantially higher after the law changes. This means that there is little evidence that the parallel trends assumption is violated.

Having shown evidence consistent with the law changes increasing gender diversity, we next explore homophily and allyship, two key channels for facilitating a link between board diversity and employee diversity. We examine the relationship between the percentage change in female representation on the board over two years in relation to employee diversity after two years. We

do so using an IV regression in which we instrument for the percentage point change in female representation using an indicator that equals one if the firm is headquartered in or incorporated in depending on the law change a treat state after the law changes.

Panel A of Table 12 shows that firms with an increase in female representation on the board increase the female representation at the company. Using the most conservative estimate, column (3), which includes firm and year fixed effects as well as firm and governance controls, suggests that a 2 percentage point increase in female board representation is associated with a 5.2% increase in female employment.[5] The result is significant at the 10% level, and it appears to be concentrated in the hiring of female staff. Panel A, column (9), suggests that a two-percentage point increase in female board representation is associated with a 3.0% increase in female staff. This result is significant at the 5% level. This is consistent with a homophily channel in which diverse directors are more likely to be vocal proponents of hiring and promoting candidates with similar demographics at the firm.

Next, in Panel B of Table 12, we examine the allyship channel, in which female board members use their position of power to provide inter-group support for other under-represented groups like non-white employees. Panel B shows that firms with an increase in female representation on the board also increase the non-white representation at the company. Column (3) of Panel B suggests that a 2-percentage point increase in female board representation is associated with a 5.0% increase in non-white employment and again this result is primarily driven by hiring of non-white staff. The staff level results are significant at the 1% level while the overall non-white employee results are significant at the 5% and 10% level depending on specification. As expected, given our evidence from the difference-in-difference tests, the t-statistic on the instrument is highlight significant and the F-statistic from the first stage of the IV regression exceed the requisite necessary to ensure minimal bias of the point estimate.

In Appendix Table B.5, we report our estimates for the effect of board gender diversity on salary gaps, again examining the homophily and allyship channels. Again we find little consistent

[5]Recall, the dependent variable is logged, so to translate the coefficient estimate into a percent, one calculates (exp(1.28)-1*100*2%).

evidence for reductions in the salary gap. While a few of the point estimates are significant, the pattern is not consistent. For example, even the sign of the estimates vary across specifications, suggesting that board gender diversity has no relation to actual pay practices.

Finally, given that it is not uncommon for social movements to precede legislation, in a robustness test, we examine social movements that seek to raise public awareness of the importance of diversity or by heart-wrenching incidents surrounding avoidable black deaths. Specifically, we focus on the variation across states in the salience of the black deaths. For example, the Black Lives Matter ("BLM") came to prominence following the death of Trayvon Martin Florida, so in our context firms headquartered in Florida are treated after the acquittal of George Zimmerman which became a prominent social media event. In total, we exploit the staggered variation across 12 states in black deaths receiving widespread media attention. The results are presented in Appendix Table B.6. We see no evidence that the percent of non-white directors increased in relation to the untimely deaths highlighted in the BLM campaigns.

In Appendix Table B.7, we examine the simple difference (i.e., the trend pre and post the start of the social movements). We find evidence that the "Me Too" which gained momentum in 2017 following the revelation of the Harvey Weinstein scandal is correlated with the appointment of more female directors. We see no evidence that the start of BLM is correlated with greater ethnic diversity or a percent of non-white directors. We believe it is worth noting that by comparing the magnitude of the result from legislative efforts vs. social movements, it can be inferred that to materially improve employee diversity, coercive powers like legislations are required, and social movements alone are unlikely to be enough. These findings also mitigate the concern that we document on the diversity of talent throughout this study are solely driven by local social movements, which improves both board and employee diversity simultaneously.

6 Conclusion

This study examines the effect of board diversity on employee diversity and corporate culture. We find that an increase in board diversity is associated with an increase in the representation

of diverse talent throughout the firm. Consistent with a cascading effect or trickle-down pattern, the gains for under-represented groups are more pronounced for managers. We also show that board diversity improves corporate culture. Firms with greater board diversity are more likely to have employees that rate the culture favorable on Glassdoor and receive a Best Places to Work award. Deeper textual analyses of Glassdoor employee reviews show that the cultural gains link to employees' improved perceptions of management and community-building norms. We test three distinct channels – cognitive diversity, homophily, and allyship – through which board diversity may improve employee diversity and culture and find support for all three.

While we find evidence of employee diversity and corporate culture are positively related to board diversity, we also see additional areas for targeted improvement for corporate leaders and policymakers. For example, we examine salary gap data, and find little evidence that greater board diversity reduces salary gaps for under-represented groups. Thus, while firms appear to be improving on the diversity dimension, they are not improving on the equity dimension of DEI. Second, we examine how ESG rating agencies account for these changes in employee diversity and corporate culture, if at all. Given the evidence of idiosyncratic divergence in different ESG rating agencies methodologies, we examine Sustainalytics, Refinitiv, and KLD. The evidence is mixed. Two out of the three rating agencies fail to reflect the changes we observe in either aggregate ESG measures or their social component of the ESG measures. As policymakers continue to grapple with how best to disclose and harmonize across relevant ESG information, our evidence suggests greater attention on culture is necessary. Achieving broader policy goals like social progress and equity will benefit from getting rating agencies to recognize the material importance of culture and thus, reflect it in ESG measures.

In conclusion, we contribute to the literature on effects of board diversity by identifying the cascade effect that board diversity affects organization from top levels of managers and the effect gradually takes place over years. Our findings also contribute to the ongoing debate on regulations regarding board diversity by providing a novel rationale for regulators to mandate board diversity as a top-down mechanism. Finally, our research speaks to a broader societal debate on diversity and its relation to stability and inequality. Diversity is highly desirable in its own right, and companies

must give all of their workers equal opportunities, pay, and promotion prospects regardless of their gender, ethnicity, sexual orientation or other characteristics. Inclusion is simply the right thing to do, and therefore, we encourage more research examining these important issues.

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Figure 1. The broad-based board diversity index is derived using the method outlined in Bernile et al. (2018), which reflects six components: gender, ethnicity, age, education, expertise, and other board experiences. This figure displays a heatmap of the correlations between the index and all of its components. Red reflects a negative correlation and blue a positive correlation.

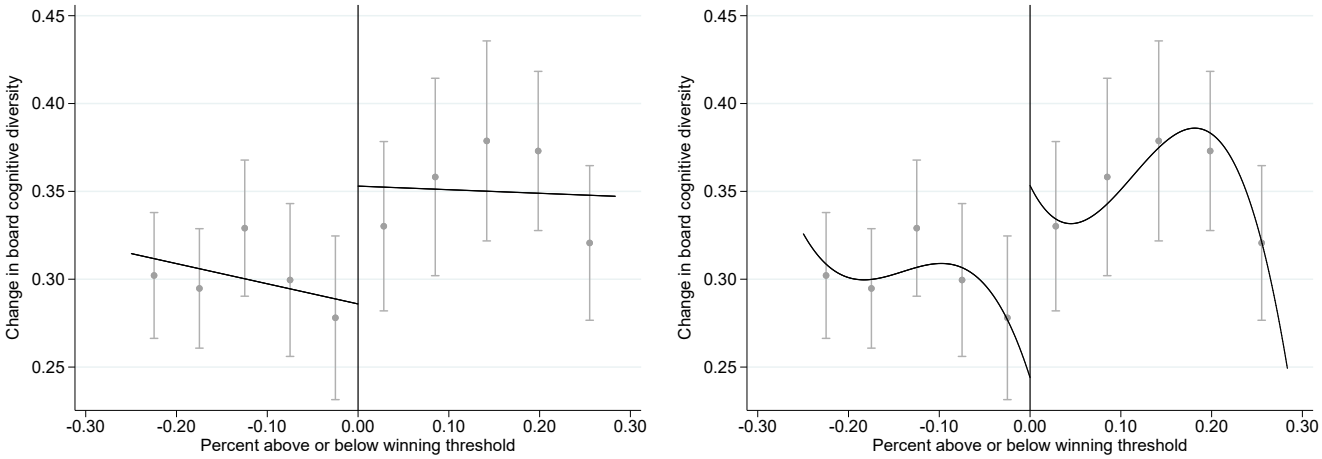


Figure 2. The figure on the left displays the average change in the broad-based board diversity following a close-call local political election involving a diverse candidate. If the diverse political candidate wins as is indicated by being above the passing threshold, then the broad-based board diversity index at firms in the same state as the election is significantly more likely to increase. The broad-based board diversity index is derived using the method outlined in Bernile et al. (2018), which reflects six components: gender, ethnicity, age, education, expertise, and other board experiences. Each dot is the average change in board cognitive diversity within the optimally derived bin width as derived by Calonico et al. (2019) and contains multiple underlying observations. The lines associated with the dots represent the upper and lower 90% confidence intervals. Solid lines are estimated using linear regressions on either side of the threshold and represent a monomial fit. The figure on the right displays the same information, but solid lines represent a polynomial fit on each side of the discontinuity.

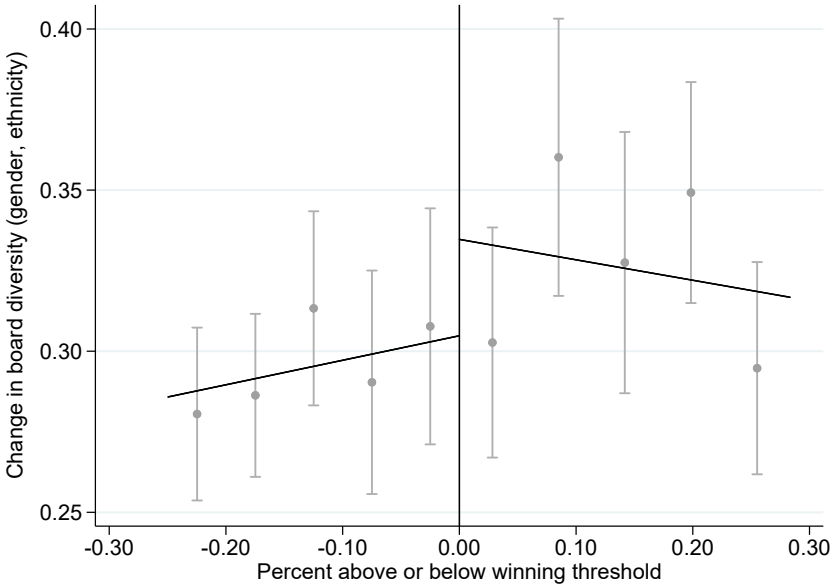


Figure 3. The figure displays the average change in board diversity isolating to the gender and ethnicity elements following a close-call local political election involving a diverse candidate. If the diverse political candidate wins as is indicated by being above the passing threshold, then the board diversity measured in terms of gender and ethnicity at firms in the same state as the election is significantly more likely to increase. Each dot is the average change in board diversity (gender, ethnicity) within the optimally derived bin width as derived by Calonico et al. (2019) and contains multiple underlying observations. The lines associated with the dots represent the upper and lower 90% confidence intervals. Solid lines are estimated using linear regressions on either side of the threshold and represent a monomial fit.

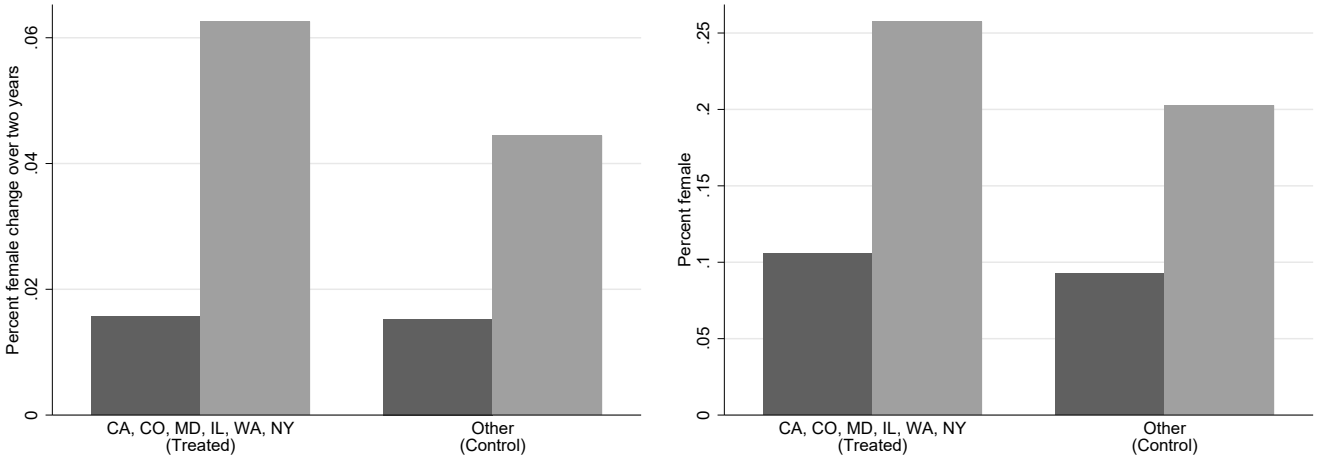


Figure 4. The figures display changes in the percent of directors who are female and the percentage change over two years surrounding the law changes. On the left, the plot shows the percentage change in directors who are female in the years before and after the law change for treated and control firms. On the right, the plot shows the percent of directors who are female in the years before and after the law changes for treated and control firms. Controls firms are defined as any firm not headquartered or incorporated in a treatment state in the year prior to the first state law change.

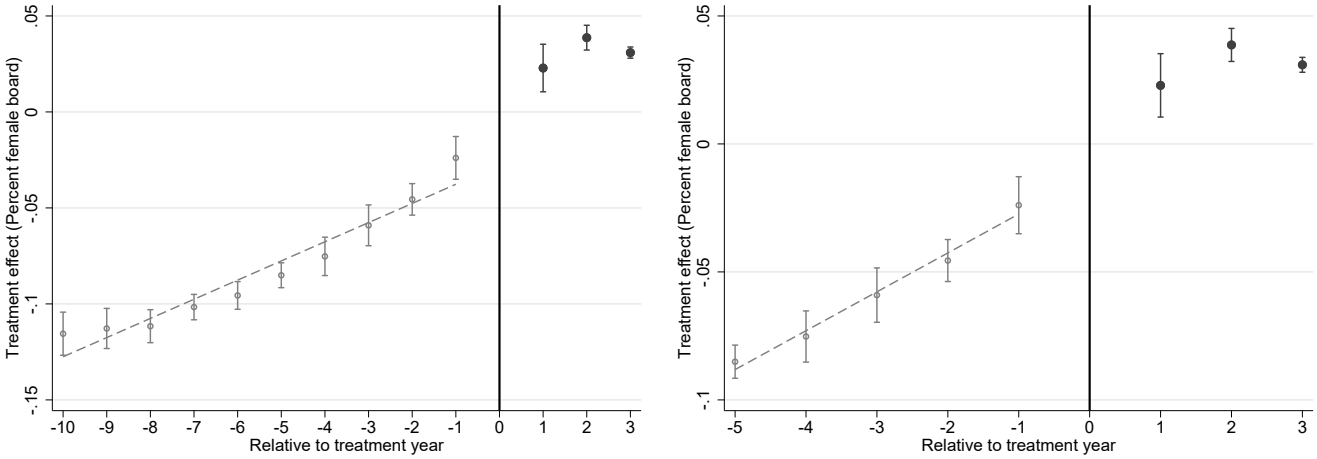


Figure 5. The figure displays the dynamic effects of state legislation changes on board gender diversity. The figures plot the impact of state legislation on the percent of directors who are female following the law changes by year relative to the law change. The figure shows a window spanning from ten years before the law change on the left to five years before the law change on the right. Coefficient estimates are normalized relative to the treatment year. The solid lines represent 90% confidence intervals, adjusted for firm fixed effects and headquarter state-level clustering. A full set of dummy variables for relative years are included in the regression, but only those in the window are plotted. The dashed line represents the line of best fit based on the coefficient estimates from the years prior to treatment. While the trend for increasing the percent female on boards is positive over time, the trend breaks after the law changes. The point estimates after the law change are higher than would be expected if the trend were to continue.

Table 1.

Univariate and Multivariate Analyses of Cognitive Diversity Channel on Employee Diversity and Salary Gaps

This table presents estimates of diverse employee representation and their salary gaps in relation to board diversity. Panel A displays estimates of employee representation and Panel B displays estimates of salary gaps. The focal dependent variables in columns (1) to (4) are all employees from URGs, in columns (5) to (8) managers from URGs, and in columns (9) to (12) staff from URGs. The key explanatory variable is the broad-based board diversity index form Bernile et al. (2018) that reflects gender, ethnic, and cognitive diversity. Both panels show ordinary least squares (OLS) estimates. Control variables include profitability, Tobin's Q, firm size, firm age, asset growth, sales growth, investment-to-capital, tangibility, lifecycle stage, equity volatility, board size, board independence, and institutional ownership. Fixed effects for all Panels are noted in the bottom rows. Robust standard errors clustered by firm and adjusted for small clusters are reported below the coefficient estimates. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	All employees from URGs				Managers from URGs				Staff from URGs			
Panel A. Employees	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Broad-based board diversity	0.233***	0.023**	0.005***	0.003**	0.237***	0.024**	0.005***	0.004***	0.224***	0.021*	0.004***	0.003**
	(0.014)	(0.011)	(0.001)	(0.001)	(0.014)	(0.011)	(0.001)	(0.001)	(0.014)	(0.012)	(0.001)	(0.001)
Observations	13860	13609	13801	13543	13860	13609	13801	13543	13860	13609	13801	13543
Adjusted R^2	0.254	0.620	0.997	0.998	0.235	0.622	0.997	0.997	0.315	0.610	0.998	0.998
	URG salary gap				URG manager salary gap				URG staff salary gap			
Panel B. Salary gaps	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Broad-based board diversity	0.012*	-0.001	-0.002	-0.003	0.020***	0.004	0.000	-0.001	0.029***	0.009	-0.003	-0.004
	(0.006)	(0.007)	(0.002)	(0.002)	(0.006)	(0.007)	(0.003)	(0.003)	(0.009)	(0.010)	(0.005)	(0.005)
Observations	13525	13274	13467	13209	13479	13228	13417	13159	11631	11417	11565	11343
Adjusted R^2	0.199	0.211	0.940	0.941	0.166	0.180	0.917	0.918	0.186	0.204	0.844	0.848
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes	No	No
Firm fixed effects	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes

Table 2.

Univariate and Multivariate Analyses of Homophily Channel for Employee Diversity

This table presents estimates of the change in the diversity of employees in relation to board diversity. The diversity focus is on gender in Panel A, ethnicity in Panel B, and under-represented groups in Panel C. The focal dependent variables in columns (1) to (4) represent all employees, in columns (5) to (8) managers, and in columns (9) to (12) staff. The key explanatory variable is the percent female directors, the percent non-white directors, and the board diversity index for gender and ethnicity in Panels A, B, and C, respectively. All panels show ordinary least squares (OLS) estimates. Control variables include profitability, Tobin's Q, firm size, firm age, asset growth, sales growth, investment-to-capital, tangibility, lifecycle stage, equity volatility, board size, board independence, and institutional ownership. Fixed effects for all Panels are noted in the bottom rows. Robust standard errors clustered by firm and adjusted for small clusters are reported below the coefficient estimates. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	All Female				Female Managers				Female Staff			
Panel A. Female employees	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Pct. female directors	4.212***	1.034***	0.076***	0.057**	4.242***	1.004***	0.079**	0.059**	4.094***	1.036***	0.053*	0.038
	(0.330)	(0.225)	(0.029)	(0.026)	(0.328)	(0.217)	(0.032)	(0.027)	(0.347)	(0.258)	(0.029)	(0.026)
Observations	13860	13609	13801	13543	13860	13609	13801	13543	13860	13609	13801	13543
Adjusted R^2	0.244	0.629	0.997	0.998	0.213	0.629	0.996	0.997	0.311	0.620	0.997	0.998
	All Non-white				Non-white Managers				Non-white Staff			
Panel B. Non-white employees	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Pct. non-white directors	2.420***	0.640***	0.091**	0.063**	2.523***	0.706***	0.097**	0.067**	2.100***	0.381*	0.086***	0.065**
	(0.352)	(0.184)	(0.036)	(0.031)	(0.352)	(0.180)	(0.038)	(0.032)	(0.362)	(0.208)	(0.032)	(0.030)
Observations	13848	13598	13789	13532	13848	13598	13789	13532	13848	13598	13789	13532
Adjusted R^2	0.176	0.614	0.997	0.998	0.163	0.617	0.997	0.997	0.233	0.601	0.998	0.998
	All URGs				URG Managers				URG Staff			
Panel C. URG employees	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Board diversity (gender, ethnicity)	0.120***	0.015	0.005**	0.005***	0.123***	0.016	0.005**	0.005***	0.112***	0.012	0.003*	0.004**
	(0.022)	(0.014)	(0.002)	(0.002)	(0.022)	(0.014)	(0.002)	(0.002)	(0.023)	(0.016)	(0.002)	(0.002)
Observations	13860	13609	13801	13543	13860	13609	13801	13543	13860	13609	13801	13543
Adjusted R^2	0.163	0.620	0.997	0.998	0.138	0.621	0.997	0.997	0.240	0.610	0.998	0.998
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes	No	No
Firm fixed effects	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes

Table 3.

Univariate and Multivariate Analyses of Homophily Channel for Salary Gaps

This table presents estimates of the change in salary gaps in relation to board diversity. The focus is on gender in Panel A, ethnicity in Panel B, and under-represented groups in Panel C. The focal dependent variables in columns (1) to (4) represent salary gaps for employees, in columns (5) to (8) for managers, and in columns (9) to (12) for staff. The key explanatory variable is the percent female directors, the percent non-white directors, and the board diversity index for gender and ethnicity in Panels A, B, and C, respectively. All panels show ordinary least squares (OLS) estimates. Control variables include profitability, Tobin's Q, firm size, firm age, asset growth, sales growth, investment-to-capital, tangibility, lifecycle stage, equity volatility, board size, board independence, and institutional ownership. Fixed effects for all Panels are noted in the bottom rows. Robust standard errors clustered by firm and adjusted for small clusters are reported below the coefficient estimates. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	All Female				Female Managers				Female Staff			
Panel A. Female salary gap	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Pct. female directors	-0.081**	-0.049	-0.003	-0.005	-0.078**	-0.061*	0.001	-0.000	0.014	0.010	0.001	-0.002
	(0.037)	(0.038)	(0.010)	(0.010)	(0.035)	(0.035)	(0.010)	(0.010)	(0.015)	(0.015)	(0.007)	(0.006)
Observations	13860	13609	13801	13543	13860	13609	13801	13543	13860	13609	13801	13543
Adjusted R^2	0.110	0.122	0.766	0.761	0.109	0.119	0.720	0.715	0.123	0.141	0.906	0.910
	All Non-white				Non-white Managers				Non-white Staff			
Panel B. Non-white salary gap	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Pct. non-white directors	-0.129***	-0.191***	0.001	0.002	-0.084**	-0.147***	0.002	0.003	-0.032***	-0.056***	-0.003	-0.000
	(0.047)	(0.045)	(0.013)	(0.013)	(0.040)	(0.038)	(0.012)	(0.012)	(0.012)	(0.010)	(0.005)	(0.004)
Observations	13848	13598	13789	13532	13848	13598	13789	13532	13848	13598	13789	13532
Adjusted R^2	0.125	0.155	0.969	0.974	0.081	0.132	0.824	0.971	0.033	0.180	0.417	0.944
	All URGs				URG Managers				URG Staff			
Panel C. URG salary gap	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Board diversity (gender, ethnicity)	-0.003	-0.008	0.001	0.001	-0.000	-0.009	0.000	-0.001	0.012	-0.001	-0.003	-0.004
	(0.009)	(0.009)	(0.003)	(0.003)	(0.010)	(0.010)	(0.004)	(0.004)	(0.014)	(0.014)	(0.007)	(0.007)
Observations	13525	13274	13467	13209	13479	13228	13417	13159	11631	11417	11565	11343
Adjusted R^2	0.197	0.211	0.940	0.941	0.163	0.180	0.917	0.918	0.183	0.204	0.844	0.848
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes	No	No
Firm fixed effects	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes

Table 4.

Univariate and Multivariate Analyses of Allyship Channel for Employee Diversity

This table presents estimates of the change in the diversity of employees in relation to board diversity. The diversity focus is on gender in Panel A, ethnicity in Panel B, and under-represented groups in Panel C. The focal dependent variables in columns (1) to (4) represent all employees, in columns (5) to (8) managers, and in columns (9) to (12) staff. The key explanatory variable is the percent female directors, the percent non-white directors, and the board diversity index for gender and ethnicity in Panels A, B, and C, respectively. All panels show ordinary least squares (OLS) estimates. Control variables include profitability, Tobin's Q, firm size, firm age, asset growth, sales growth, investment-to-capital, tangibility, lifecycle stage, equity volatility, board size, board independence, and institutional ownership. Fixed effects for all Panels are noted in the bottom rows. Robust standard errors clustered by firm and adjusted for small clusters are reported below the coefficient estimates. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	All Female				Female Managers				Female Staff			
Panel A. Female employees	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Pct. non-white directors	1.848***	0.139	0.074**	0.046	1.956***	0.210	0.080**	0.050	1.562***	-0.085	0.070**	0.048
	(0.358)	(0.188)	(0.037)	(0.031)	(0.359)	(0.183)	(0.039)	(0.033)	(0.365)	(0.212)	(0.033)	(0.030)
Observations	13848	13598	13789	13532	13848	13598	13789	13532	13848	13598	13789	13532
Adjusted R^2	0.197	0.627	0.997	0.998	0.166	0.627	0.996	0.997	0.268	0.618	0.997	0.998
	All Non-white				Non-white Managers				Non-white Staff			
Panel B. Non-white employees	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Pct. female directors	4.059***	0.700***	0.083***	0.064**	4.067***	0.646***	0.083***	0.063**	4.030***	0.790***	0.066**	0.052*
	(0.342)	(0.229)	(0.029)	(0.025)	(0.343)	(0.225)	(0.032)	(0.027)	(0.355)	(0.259)	(0.029)	(0.027)
Observations	13860	13609	13801	13543	13860	13609	13801	13543	13860	13609	13801	13543
Adjusted R^2	0.203	0.612	0.997	0.998	0.187	0.615	0.997	0.997	0.264	0.601	0.998	0.998
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes	No	No
Firm fixed effects	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes

Table 5.

Univariate and Multivariate Analyses of Board Diversity on Corporate Culture and Employees' Perceptions of Work

This table presents estimates of the change in corporate culture and employees' perceptions of work in relation to board diversity. The focal dependent variable in columns (1) to (4) is the Glassdoor overall rating, in columns (5) to (8) is the Glassdoor culture rating, and in columns (9) to (12) is a Best Places to Work award. In Panel A, the key explanatory variable is the broad-based board diversity index, and in Panel B, it is the board diversity index for gender and ethnicity. The panel shows ordinary least squares (OLS) estimates. Control variables include profitability, Tobin's Q, firm size, firm age, asset growth, sales growth, investment-to-capital, tangibility, lifecycle stage, equity volatility, board size, board independence, and institutional ownership. Fixed effects for all Panels are noted in the bottom rows. Robust standard errors clustered by firm and adjusted for small clusters are reported below the coefficient estimates. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	Glassdoor overall				Glassdoor culture				Best Places to Work			
Panel A. Culture ratings	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Broad-based board diversity	0.027***	0.010**	0.003	0.002	0.037***	0.019***	0.003	0.002	0.001***	0.000	-0.000	-0.000
	(0.004)	(0.005)	(0.005)	(0.005)	(0.006)	(0.006)	(0.006)	(0.006)	(0.000)	(0.000)	(0.000)	(0.000)
Observations	10748	10553	10718	10517	8456	8295	8422	8257	33715	32707	33360	32358
Adjusted R^2	0.050	0.102	0.324	0.331	0.026	0.079	0.414	0.419	0.017	0.024	0.168	0.175
	Glassdoor overall				Glassdoor culture				Best Places to Work			
Panel B. Culture ratings	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Board diversity (gender, ethnicity)	2.420***	0.640***	0.091**	0.063**	2.523***	0.706***	0.097**	0.067**	2.100***	0.381*	0.086***	0.065**
	(0.352)	(0.184)	(0.036)	(0.031)	(0.352)	(0.180)	(0.038)	(0.032)	(0.362)	(0.208)	(0.032)	(0.030)
Observations	13848	13598	13789	13532	13848	13598	13789	13532	13848	13598	13789	13532
Adjusted R^2	0.176	0.614	0.997	0.998	0.163	0.617	0.997	0.997	0.233	0.601	0.998	0.998
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes	No	No
Firm fixed effects	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes

Table 6.

Covariate Balance Test for Regression Discontinuity

This table reports the average characteristics for companies in the treatment group and the differences in the averages. Columns (1) and (2) report, average characteristics for companies where diverse politicians lose and win. Column (3) presents the difference between columns (1) and (2) and column (4) reports the t-statistic for equality of means across the two groups. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	Within optimal MSE-bandwidth			
	Diverse politician loses	Diverse politician wins	Difference	t-statistic
Panel A. Corporate governance pre-election	(1)	(2)	(3)	(4)
Broad-based board diversity	0.88	0.91	-0.03	0.97
Board diversity (gender, ethnicity)	0.56	0.57	-0.01	0.48
Percent female	0.14	0.14	-0.00	0.87
Percent non-white	0.12	0.12	-0.00	0.32
Board size	9.27	9.28	-0.02	0.69
Board independence	0.79	0.79	0.00	1.30
Institutional ownership	0.81	0.81	0.01	0.57
Observations	17,922	11,877	29,799	29,799
Panel B. Firm characteristics pre-election				
Profitability	0.12	0.12	0.00	1.05
Tobin's Q	1.70	1.70	-0.00	0.28
ROE	0.11	0.07	0.04	1.12
Firm size (log(total assets))	8.19	8.22	-0.03	1.69*
Firm age	25.74	25.44	0.30	1.56
Asset growth	0.10	0.10	0.00	1.13
Sales growth	0.07	0.07	0.00	0.31
Investment-to-capital	0.26	0.27	-0.01	1.51
Log(SG&A)	5.30	5.30	-0.00	0.14
Lifecycle stage	0.19	0.18	0.01	0.56
Equity volatility	0.09	0.09	-0.00	0.64
Observations	17,922	11,877	29,799	29,799

Table 7.

Board Diversity Changes After Close-call Local Political Elections

This table presents regressions of the change in board diversity on whether or not a diverse candidate won in a local political election for the United States congress or senate. Changes in board diversity are computed as the change from the year prior to the election to the year after the election. Panel A examines the broad-based board diversity index as defined in Bernile et al. (2018) and Panel B examines board diversity (gender, ethnicity) which reflect only those two components of the index. Estimates in columns (1) to (4) use the optimal mean square error (MSE) bandwidth; columns (5) to (8) use the optimal coverage error-rate (CER) bandwidth, and columns (9) to (12) introduce a polynomial on each side of the threshold and uses the full sample. Pre-election controls include board independence, board size, and institutional ownership. Fixed effects for all Panels are noted in the bottom rows. Robust standard errors are reported below the coefficient estimates. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	Dependent variable = Board cognitive diversity [t=-1, t=1]											
	MSE-optimal bandwidth				CER-optimal bandwidth				Polynomial			
Panel A.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Diverse local politican wins	0.048***	0.049***	0.048***	0.048***	0.049**	0.050**	0.050**	0.049**	0.057***	0.048**	0.057***	0.055**
	(0.017)	(0.017)	(0.017)	(0.017)	(0.025)	(0.024)	(0.025)	(0.024)	(0.021)	(0.021)	(0.022)	(0.021)
Observations	29,794	29,794	29,794	29,794	15,031	15,031	15,031	15,031	67,770	67,770	67,770	67,770
Size of bandwidth	[0.250, 0.285]				[0.143, 0.163]				Full sample			
Pre-election controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Census region fixed effets	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes

	Dependent variable = Board diversity (gender, ethnicity) [t=-1, t=1]											
	MSE-optimal bandwidth				CER-optimal bandwidth				Polynomial			
Panel B.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Diverse local politican wins	0.031**	0.031**	0.030**	0.029**	0.026	0.026	0.026	0.027	0.036**	0.037**	0.030*	0.030*
	(0.013)	(0.013)	(0.013)	(0.013)	(0.019)	(0.019)	(0.019)	(0.019)	(0.016)	(0.016)	(0.016)	(0.016)
Observations	29,794	29,794	29,794	29,794	15,031	15,031	15,031	15,031	67,770	67,770	67,770	67,770
Size of bandwidth	[0.250, 0.285]				[0.143, 0.163]				Full sample			
Pre-election controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Census region fixed effets	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes

Table 8.

Fuzzy Regression Discontinuity Design Estimates of Board Diversity on Employee Diversity

This table reports estimates of the effect of board diversity on employee diversity. The sample uses the close-call political elections involving diverse candidates but limits the bandwidth to the optimal mean square error (MSE) bandwidth derived by Calonico et al. (2019), which allows for robust bias-corrected inference. Panel A examines the broad-based board diversity index as defined in Bernile et al. (2018) and Panel B examines board diversity (gender, ethnicity) which reflect only those two components of the index. Changes in board diversity are computed as the change from the year prior to the election to the year after the election. Changes in employment are computed from the year of the election to two years after the election to allow for new board directors to have influence. Pre-election controls include board independence, board size, and institutional ownership. Fixed effects for all Panels are noted in the bottom rows. Robust standard errors are reported below the coefficient estimates. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	Employees from URGs				URG managers				URG staff			
Panel A.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Broad-based board diversity	0.089**	0.087**	0.072**	0.071**	0.085**	0.082**	0.068**	0.066**	0.084**	0.081**	0.070**	0.068**
	(0.037)	(0.035)	(0.032)	(0.031)	(0.036)	(0.034)	(0.031)	(0.030)	(0.036)	(0.034)	(0.033)	(0.032)
Observations	28,551	28,551	28,551	28,551	28,551	28,551	28,551	28,551	28,551	28,551	28,551	28,551
	Employees from URGs				URG managers				URG staff			
Panel B.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Board diversity (gender, ethnicity)	0.145**	0.148**	0.123*	0.123*	0.138**	0.141**	0.115*	0.115*	0.138**	0.140*	0.120*	0.119*
	(0.071)	(0.074)	(0.065)	(0.066)	(0.069)	(0.071)	(0.063)	(0.063)	(0.069)	(0.071)	(0.066)	(0.066)
Observations	28,551	28,551	28,551	28,551	28,551	28,551	28,551	28,551	28,551	28,551	28,551	28,551
Size of bandwidth	[0.250, 0.285]				[0.250, 0.285]				[0.250, 0.285]			
Pre-election controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Census region fixed effets	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes

Table 9.

Fuzzy Regression Discontinuity Design Estimates of Board Diversity on Corporate Culture

This table reports estimates of the effect of board diversity on corporate culture. The sample uses the close-call political elections involving diverse candidates but limits the bandwidth to the optimal mean square error (MSE) bandwidth derived by Calonico et al. (2019), which allows for robust bias-corrected inference. Changes in board diversity are computed as the change from the year prior to the election to the year after the election. Changes in corporate culture are computed from the year of the election to two years after the election to allow for new board directors to have influence. Pre-election controls include board independence, board size, and institutional ownership. Fixed effects for all Panels are noted in the bottom rows. Robust standard errors are reported below the coefficient estimates. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	Glassdoor culture rating				Glassdoor management rating				Community-oriented norms			
Panel A.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Broad-based board diversity	0.345*	0.361*	0.287	0.298	0.322*	0.327*	0.286	0.294	0.309*	0.310*	0.186**	0.189**
	(0.203)	(0.219)	(0.208)	(0.221)	(0.187)	(0.188)	(0.191)	(0.196)	(0.185)	(0.184)	(0.094)	(0.095))
Observations	28,551	28,551	28,551	28,551	28,551	28,551	28,551	28,551	28,551	28,551	28,551	28,551
Size of bandwidth	[0.250, 0.285]				[0.250, 0.285]				[0.250, 0.285]			
Pre-election controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Census region fixed effets	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes

Table 10.

Instrumental Variable Estimates of Board Diversity from Shifts in the Supply of Directors

This table presents results from instrumental variable (IV) regressions examining the inner workings of firms in relation to board diversity. The key explanatory variable is board cognitive diversity as defined in Bernile et al. (2018) and the instrument stems for the availability of direct flights between potential directors hometown and corporate headquarters. Panel A displays estimates for employee diversity, Panel B for corporate culture, and Panel C for ESG "Social" ratings. Additional control variables include profitability, firm size, firm age, lifecycle stage, board independence, board size, and institutional ownership. Fixed effects for all Panels are noted in the bottom rows. Robust standard errors are reported below the coefficient estimates. The first-stage F-statistic is the Kleibergen-Paap Wald statistic. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	All URGs		URG managers		URG staff	
Panel A. Employee diversity	(1)	(2)	(3)	(4)	(5)	(6)
Broad-based board diversity	0.905***	0.790*	0.931***	0.874**	0.864***	0.703*
	(0.071)	(0.406)	(0.071)	(0.420)	(0.073)	(0.406)
Observations	5,170	5,139	5,170	5,139	5,170	5,139
t-statistic on instrument	7.67	2.45	7.67	2.45	7.67	2.45
First-stage F-statistic	58.9	6.0	58.9	6.0	58.9	6.0
	Glassdoorg culture rating		Best Places to Work		Community-oriented norms	
Panel B. Corporate culture	(1)	(2)	(3)	(4)	(5)	(6)
Broad-based board diversity	0.107***	0.068	0.018***	0.022	0.381***	-0.096
	(0.026)	(0.093)	(0.003)	(0.015)	(0.037)	(0.120)
Observations	1,813	1,805	6,164	6,127	3,440	3,423
t-statistic on instrument	4.29	2.50	8.19	2.39	6.41	3.81
First-stage F-statistic	18.4	6.3	67.0	5.7	41.1	14.5
	Sustainalytics		Refinitiv		KLD	
Panel C. ESG "Social" Ratings	(1)	(2)	(3)	(4)	(5)	(6)
	0.814	-3.829	0.139***	0.098*	0.970***	0.541
	(0.717)	(3.232)	(0.022)	(0.055)	(0.081)	(0.395)
Observations	2,857	2,838	3,343	3,324	4,337	4,316
t-statistic on instrument	4.80	2.42	8.19	2.39	6.41	3.81
First-stage F-statistic	23.1	5.9	29.7	6.0	58.9	6.0
Controls	No	Yes	No	Yes	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes

Table 11.

Difference-in-difference Estimates of State Legislation on Board Gender Diversity

This table reports estimates of the effect of state legislation on board gender diversity. $Treat \times Post$ is an indicator variable equal to 1 if the state where the firm is headquartered or located depending on the specific law has passed a law that either explicitly mandates a minimum number or percentage of female directors, or requires the disclosure of the number or percentage of female directors on the board, or appeals to a minimum number or percentage of female directors by year t. Panel A displays estimates for the change in the percent of female directors on the board over a one-year period, Panel B for the change in the percent of female directors on the board over a two-year period. Robust standard errors are reported below the coefficient estimates in odd columns, and robust standard errors cluster-adjusted for state headquarters are reported below the coefficient estimates in even columns. Fixed effects for all Panels are noted in the bottom rows. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	Dependent variable = Change in percent female over one year							
Panel A.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Treat$	-0.001	-0.001						
	(0.001)	(0.001)						
$Treat \times Post$	0.008**	0.008*	0.006*	0.006	0.006	0.006	0.007*	0.007
	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)	(0.004)	(0.005)
Observations	12,173	12,149	12,043	12,019	12,041	12,017	11,810	11,786
R-squared	0.028	0.028	0.103	0.103	0.104	0.104	0.106	0.106
	Dependent variable = Change in percent female over two years							
Panel B.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
$Treat$	-0.001	-0.001						
	(0.001)	(0.002)						
$Treat \times Post$	0.022***	0.022***	0.021***	0.021***	0.020***	0.020***	0.020***	0.020***
	(0.006)	(0.005)	(0.007)	(0.002)	(0.007)	(0.003)	(0.007)	(0.003)
Observations	10,595	10,574	10,444	10,424	10,442	10,422	10,237	10,217
R-squared	0.049	0.049	0.186	0.187	0.189	0.189	0.191	0.19
Governance controls	No	No	No	No	Yes	Yes	Yes	Yes
Firm controls	No	No	No	No	No	No	Yes	Yes
HQ-state clusters	No	Yes	No	Yes	No	Yes	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	No	Yes	Yes	Yes	Yes	Yes	Yes

Table 12.

Instrumental Variable Tests of Homophily and Allyship Channels Using State Legislation

This table presents results from instrumental variable (IV) regressions examining employee diversity in relation to board gender diversity. The key explanatory variable is the change in the percent of female directors on the board over a two-year period, and the instrument is an indicator variable equal to one if the state where the firm is headquartered or located depending on the specific law has passed a law that either explicitly mandates a minimum number or percentage of female directors, or requires the disclosure of the number or percentage of female directors on the board, or appeals to a minimum number or percentage of female directors by year t. Panel A displays estimates for the homophily channel (i.e., board gender diversity on employee gender diversity), Panel B for the allyship channel (board gender diversity on employee ethnic diversity). Robust standard errors clustered-adjusted for state headquarters are reported below the coefficient estimates. Fixed effects for all Panels are noted in the bottom rows. The first-stage F-statistic is the Kleibergen-Paap Wald statistic. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	Dependent variable = Employee gender diversity in t=2								
	All females			Female managers			Female staff		
Panel A. Homophily channel	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Change in percent female over two years	1.792**	1.767*	1.280*	1.693*	1.667	1.146	1.360**	1.324**	0.926**
	(0.882)	(0.892)	(0.639)	(0.989)	(1.000)	(0.721)	(0.594)	(0.602)	(0.407)
Observations	10,394	10,392	10,187	10,394	10,392	10,187	10,394	10,392	10,186
	Dependent variable = Employee ethnic diversity in t=2								
	All non-whites			Non-white managers			Non-white staff		
Panel B. Allyship channel	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Change in percent female over two years	1.690**	1.670*	1.251*	1.530	1.508	1.054	1.305***	1.278***	0.972***
	(0.841)	(0.850)	(0.626)	(1.073)	(1.088)	(0.838)	(0.354)	(0.358)	(0.293)
Observations	10,394	10,392	10,187	10,394	10,392	10,187	10,394	10,392	10,187
t-statistic on instrument	8.16	7.93	6.85	8.16	7.93	6.85	8.16	7.93	6.85
First-stage F-statistic	66.7	62.9	46.9	66.7	62.9	46.9	66.7	62.9	46.9
Governance controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Firm controls	No	No	Yes	No	No	Yes	No	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

INTERNET APPENDIX

A Variable Definitions

Broad-based board diversity is derived using the method outlined in Bernile et al. (2018), which reflects six components: gender, ethnicity, age, education, expertise, and other board experiences. Gender, age, expertise, and board experience come from ISS. Ethnicity comes from ISS FTP feed when available or using the "ethnicolr" algorithm and research assistant searches for any director that the algorithm has less than 80% confidence in the ethnicity. Educational institutions come from BoardEx. The gender component is percent female. The age component is the standard deviation of age, and board experience component is the standard deviation of the number of other board experiences the director has. For the remaining three characteristics, we use Herfindahl concentration indexes. For ethnicity, the categories are white, black, hispanic, and asian. For education, the most elite school attended is used. Because higher Herfindahl indexes indicate greater concentration, we multiply the index by negative one. Then, we combine the index components by normalizing each component by its mean and standard deviation, so that their scale is comparable and then equally weight each factor to construct the broad-based diversity index.

Board diversity (gender, ethnicity) reflect the gender and ethnicity components of the broad-based board diversity index.

Percent female is the percent of board memebers who are female.

Percent non-white is the percent of board members that are non-white.

Board size is the total number of directors on the board.

Board independence is the percent of board members that are independent directors.

Institutional ownership data comes from Thomson-Reuters via 13F SEC filings. All ownership percentages are derived based on the number fo shares outstanding and correspond to the calendar dates.

Directors skills ISS Director qualifications database has information on a set of sixteen unique skills or experiences that ISS deems as useful for assessing director qualifications. The categories are: audit/accounting, CEO/Managing Director/Chairman, CFO, corporate social responsibility/socially responsible investing, financial, government/military, human resources, industry, international, leadership, mergers and acquisitions, operations, risk, sales/marketing/public relations, strategic planning, technology/engineering. We calculate three measures of skill diversity. One for the overall board, one for the members of the board from URGs, and one for the white male members of the board.

Assets = ATQ

Asset Growth $= ATQ/ATQ_{t-1}$

Book Leverage $= (DLCQ + DLTTQ)/(DLCQ + DLTTQ + MEQ)$

Cash flow-to-Capital $= (IBQ + DPQ)/PPENTQ_{t-1}$

Equity volatility is the annual volatility

Firm Age = Either Jay Ritter's founded date for firms, or if the firm is not available in his dataset, years since first observed in Compustat.

Firm Size $= log(ATQ)$, in which ATQ is in real 2010 dollars.

Investment-to-Capital $= ((CAPXY - SPPEY) - (CAPXY_{t-1} - SPPEY_{t-1}))/PPENTQ_{t-1}$

Lifecycle Stage $= RETQ/ATQ$

Log(SG&A) $= log(1 + XSGA)$, in which $XSGA$ is in real 2010 dollars and set to 0 if missing.

Market Value of Assets $(MVA) = MEQ + DLCQ + DLTTQ + PSTKQ - TXDITCQ$

Profitability $= OIBDPQ/ATQ$

Return on Equity $= (OIBDPQ - DVCQ)/CEQQ$

Sales Growth $= REVTQ/REVTQ_{t-1}$

Tobin's Q $= MVA/ATQ$

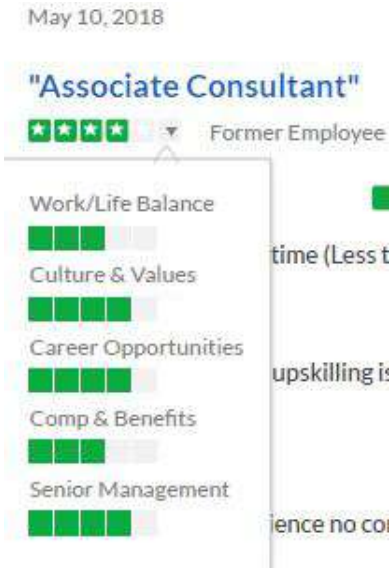
Best Places to Work is an indicator variable equal to 1 if a firm is listed on Fortune's annual Best Places to Work list, which has been published annually since 1998. Companies must be five years or older to participate and have at least 1000 employees. Both private and public firms participate. Companies pay a fee to participate. The selection criteria for the list is based on employees' responses to a proprietary employee survey developed by the Great Place to Work Institute. For a complete list of all the companies and the respective ranks, please visit: http://www.greatplacetowork.com/best-companies/100-best-companies-to-work-for

Kinder, Lydenberg, Domini (KLD) ESG Ratings are produced to guide institutional investors concerned with socially responsible investment. They consider community, employee, environmental, governance, product, and social issues. Within each broad category, KLD creates two sets of indicators measuring management best practices (these are referred to as strengths) and the most serious challenges management faces (these are referred to as concerns). The overall strengths and concerns rating is the sum of the indicators across the broad category.

Refinitiv ESG Ratings are produced in aggregate and separately for each dimensuon.

Sustainalytics ESG Ratings are produced in aggregate and separately for each dimension.

Glassdoor ratings are derived from crowd-sourced employee reviews on www.glassdoor.com. Each employee review has a "Culture & Values" star rating, which we convert into a count variable that ranges from 1 to 5, with 5 stars representing the best external culture rating. We limit our sample to the ratings provided by current employees who rated the firm during the survey year. The figure below helps to illustrate exactly which component (just the second row) that we use as our Glassdoor culture rating. In addition, we consider the other rating metrics including the overall firm rating, Glassdoor management rating, the recommends rating, and the employees' approval of CEO rating.

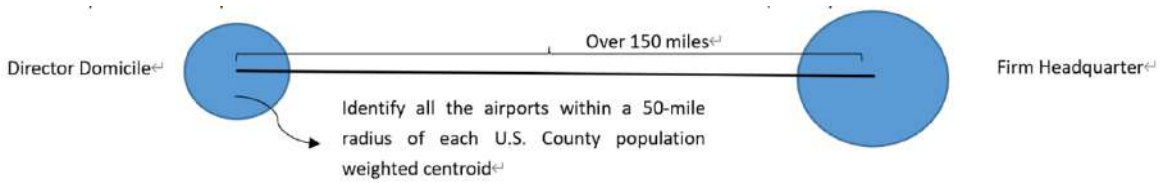


Glassdoor community-oriented norms are derived from natural language processing (NLP) of the text of the Glassdoor reviews. To transform the Glassdoor reviews into cultural values, we use the approach in (Popadak, 2016) and expanded upon in (Grennan, 2022a). Specifically, we use a semi-supervised machine learning (ML) method in which we train a variety of models using 5000 hand-labeled reviews for 40+ cultural norms that aggregate into 8 cultural values. Community-oriented is one of the cultural values and the hand-labeled norms associated with community-oriented include: embracing diversity, supporting personal growth, supporting career advancement and longevity, balancing work-and-life, making the office fun, and being purpose-driven. For each norm, it is labeled as 1 if the norm is present, 0 if it is not present, and -1 if the review indicates the opposite norms (e.g., intolerant of diversity) is present. In addition to the labeling other attributes input into the ML models included sentiment scores overall, sentiment scores for the pros and cons text, Glassdoor culture ratings, a vector of signed word counts using the presence of negation words as the adjoining words when mapped using word dependency identified by the Stanford ML library. Then, for cultural element the most accurate ML model in a horse-race between five broad categories of ML models: simple ML models, neural nets, topic modelling, deep learning, and BERT. For example, the simple ML models include logistic regression, random forest, decision tree, and gradient boosting classifiers. The deep learning models use the neural network from Keras and also considers ensemble methods such as adaptive boosting. Given that cultural norms represent

an imbalanced classification, we overcome this challenge using the synthetic minority oversampling technique ("SMOTE"). Finally, using the best out-of-sample accuracy for individual cultural norm, we then applied that model to the remaining millions of reviews. To aggregate to a firm-year level, the average across the firm reviews based on current employees in a given year are used. Firm-years with fewer than 25 employee reviews are not included.

Election data and political candidates gender and ethnicity Data on whether a political candidate is female comes from Rutgers: https://cawp.rutgers.edu/facts/elections/election_watch. The vote share comes from the Harvard Dataverse on U.S. elections https://dataverse.harvard.edu/dataset.xhtml?persistentId=doi:10.7910/DVN/IGOUN2. The politician's ethnicity comes from a multi-pronged search. First, the algorithm "ethnicolr" was used. Then, any candidate not classified as white was manually checked. In addition, candidates classified as white but with less than 80% confidence were manually checked. Finally, using the list of African-American, Asian-American, Hispanic, Latino and Pacific Islands Americans that have won and held office in the U.S. Congress and Senate, we manually verified that their ethnicity was correctly coded.

Shift in supply of diverse directors is derived via a multi-step process. First, we identify the pool of potential directors for each firm-year as individuals serving or who have served as actual directors of all other S&P 1500 firms in the same size quintile in a given year. Next, we collect potential director domicile information at the zip-code level. Bernile et al. (2018) provided the address data for us up to 2013 (the end date of their sample) and we collected additional data using internet searches and Lexis-Nexis housing records. Third, we collect firm headquarters zip-code information. Fourth, we identify non-local potential directors as those who reside in counties that are at least 150 miles away from the firm headquarter county. Fifth, we count the number of non-stop flights connecting any two U.S. counties in each month during the sample period. To do this, we identify all airports within a 50-mile radius of director zip-code using the website https://www.travelmath.com/nearest-airport/. Next, we count the actual number of monthly flights that are a direct connection between headquarters and all airports within a 50-mile radius of the potential director's home using data from https://www.transtats.bts.gov/. Then, we construct a weighted diversity index of potential candidates using the exact same six components of our broad-based diversity index – gender, ethnicity, age, education, expertise, and other board experiences – but weighting the individual candidates by the average number of monthly direct flights available between their home and headquarters. This weighted potential diversity index is the instrumental variable. The figure below helps to illustrate the process.



Social movements focuses on Black Lives Matter ("BLM") and MeToo social movements. BLM was founded in 2013 in response to the acquittal of George Zimmerman in the killing of Trayvon Martin. A study of the first three years of BLM on Twitter highlights how attention to the social issue spikes around key events (e.g., Tamir Rice's and Sandra Bland's death). We follow this strategy and designate treated firms as those headquartered in a state where social media conversations

spiked surrounding a black death. Specifically, we code Florida as treated and the key event occuring in 2013 follwoing the acquittal of George Zimmerman. New York as treated and the key event occuring in 2014 in response to Eric Garner's death. Missouri as treated and the key event occuring in 2014 in respose to Michael Brown's killing. Ohioas treated and the key event occuring in 2014 in response to Tamir Rice's killing. South Carolina as treated and the key event occuring in 2015 in response to Walter Scott's killing. Maryland as treated and the key event occuring in 2015 in response to Freddie Gray's killing. Texas as treated and the key event occuring in 2015 in response to Sandra Bland's killing. Louisiana as treated and the key event occuring in 2016 in response to Alton Sterling's killing. Minnesota as treated and the key event occuring in 2016 in response to Philando Castile's killing. California as treated and the key event occuring in 2018 in response to Stephon Clark's killig. Georgia as treated and the key event occuring in 2020 in repsonse to Ahmaud Arbery's killing. Kentucky as treated and the key event occuring in in 2020 in response to Breonna Taylor's killing. We code the earlier date as the key event of the state if there is more than one death (e.g., George Floyd's death in Minnesota in 2020). MeToo originated in 2006 on MySpace by a sexual assault survivor and is meant to empower women through empathy. On October 5 and 6, 2017, Harvey Weinstein allegations hit the media and many celebrities started sharing their MeToo stories bolstering the movements popularity. When doing the simple difference rather than the difference-in-differences, we focus on 2017 form MeToo and 2013 for BLM.

B Additional Tables

Table B.1.

Univariate and Multivariate Analyses of Board Diversity on Environmental, Social, Governance Scores

This table presents estimates of the change in employee diversity in relation to board diversity. In Panel A, the focal dependent variables in columns (1) to (4) are aggregate ESG scores from Sustainalytics, in columns (5) to (8) from Refinitiv, and in columns (9) to (12) from KLD. In Panel B, the focal dependent variables in columns (1) to (4) are the social component of ESG scores from Sustainalytics, in columns (5) to (8) from Refinitiv, and in columns (9) to (12) from KLD. The key explanatory variable is the board diversity index. Both panels show ordinary least squares (OLS) estimates. Control variables include profitability, Tobin's Q, firm size, firm age, asset growth, sales growth, investment-to-capital, tangibility, lifecycle stage. Fixed effects are noted in the bottom rows. Robust standard errors clustered by firm and adjusted for small clusters are reported below the coefficient estimates. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	Sustainalytics				Refinitiv				KLD			
Panel A. ESG ratings	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Broad-based board diversity	1.150***	0.648***	0.062	0.059	0.041***	0.013***	0.002	0.002	0.260***	0.168***	-0.015	-0.014
	(0.096)	(0.099)	(0.073)	(0.072)	(0.002)	(0.002)	(0.002)	(0.002)	(0.026)	(0.022)	(0.024)	(0.024)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Observations	6593	6429	6047	5895	14157	13813	14108	13757	12949	12664	12796	12516
Adjusted R^2	0.141	0.265	0.840	0.843	0.124	0.405	0.747	0.753	0.098	0.140	0.555	0.559
	Sustainalytics				Refinitiv				KLD			
Panel B. ESG "Social" ratings	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Board cognitive diversity	0.929***	0.563***	0.128	0.127	0.042***	0.014***	0.001	0.001	0.275***	0.170***	0.033*	0.030*
	(0.128)	(0.138)	(0.093)	(0.094)	(0.002)	(0.002)	(0.002)	(0.002)	(0.021)	(0.018)	(0.018)	(0.018)
Controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes
Observations	6040	5887	6000	5848	14157	13813	14108	13757	12949	12664	12796	12516
Adjusted R^2	0.097	0.216	0.791	0.791	0.115	0.386	0.751	0.755	0.116	0.184	0.594	0.597

Table B.2.

Optimal Bandwidth Selection

This table presents estimates of the optimal bandwidth based on a variety of bandwidth selection procedures as discussed in Calonico et al. (2019). The bandwidth is determined for the sample of close-call political elections involving diverse candidates in relation to the board cognitive diversity index as defined in Bernile et al. (2018).

	Board cognitive diversity	
	Below cut-off	Above cut-off
	(1)	(2)
Two-sided MSE-optimal bandwidths	0.240	0.285
Minimum of MSE-optimal sum and difference	0.250	0.250
Median of two-sided, sum, and difference	0.250	0.285
Two-sided CER-optimal bandwidths	0.137	0.163
Minimum of CER-optimal sum and difference	0.143	0.143
Median of two-sided, sum, and difference	0.143	0.163

Table B.3.

Fuzzy Regression Discontinuity Estimates of Board Diversity on Salary Gaps

This table reports estimates of the effect of board diversity on salary gaps for under-represented groups (URGs). The sample uses the close-call political elections involving diverse candidates but limits the bandwidth to the optimal mean square error (MSE) bandwidth derived by Calonico et al. (2019), which allows for robust bias-corrected inference. Panel A examines board cognitive diversity as defined in Bernile et al. (2018) and Panel B examines board diversity (gender, ethnicity) which reflect only those two components of the index. Changes in board diversity are computed as the change from the year prior to the election to the year after the election. Changes in salary gaps are computed from the year of the election to two years after the election to allow for new board directors to have influence. Pre-election controls include board independence, board size, and institutional ownership. Fixed effects for all Panels are noted in the bottom rows. Robust standard errors are reported below the coefficient estimates. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	Salary gap from URGs				Managers' salary gap from URGs				Staff salary gap from URGs			
Panel A.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Broad-based board diversity	-0.045	-0.042	-0.038	-0.036	0.020	0.018	0.013	0.012	-0.013	-0.007	0.000	0.005
	(0.058)	(0.056)	(0.058)	(0.057)	(0.067)	(0.064)	(0.068)	(0.067)	(0.094)	(0.090)	(0.092)	(0.091)
Observations	27,645	27,645	27,645	27,645	27,559	27,559	27,559	27,559	23,345	23,345	23,345	23,345
	Salary gap from URGs				Managers' salary gap from URGs				Staff salary gap from URGs			
Panel B.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Board diversity (gender, ethnicity)	-0.073	-0.072	-0.062	-0.060	0.032	0.030	0.021	0.021	-0.019	-0.010	0.000	0.007
	(0.095)	(0.097)	(0.097)	(0.098)	(0.106)	(0.108)	(0.110)	(0.112)	(0.131)	(0.134)	(0.132)	(0.134)
Observations	27,645	27,645	27,645	27,645	27,559	27,559	27,559	27,559	23,345	23,345	23,345	23,345
Size of bandwidth	[0.250, 0.285]				[0.250, 0.285]				[0.250, 0.285]			
Pre-election controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Census region fixed effets	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes

Table B.4.

Fuzzy Regression Discontinuity Estimates of Board Diversity on ESG Ratings

This table reports estimates of the effect of board diversity on ESG ratings. The sample uses the close-call political elections involving diverse candidates but limits the bandwidth to the optimal mean square error (MSE) bandwidth derived by Calonico et al. (2019), which allows for robust bias-corrected inference. The main explanatory variable is board cognitive diversity as defined in Bernile et al. (2018). Panel A displays estimates from aggregate ESG ratings, and Panel B displays estimates of the Social ("S") component in isolation. Columns (1) to (4) show estimates from Sustainalytics, columns (5) to (8) from Refinitiv, and (9) to (12) from KLD. Changes in board diversity are computed as the change from the year prior to the election to the year after the election. Changes in ESG ratings are computed from the year of the election to two years after the election to allow for new board directors to have influence. Pre-election controls include board independence, board size, and institutional ownership. Fixed effects for all Panels are noted in the bottom rows. Robust standard errors are reported below the coefficient estimates. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	Sustainalytics				Refinitv				KLD			
Panel A. ESG ratings	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Broad-based board diversity	-6.799	-6.584	-11.573	-9.910	0.177*	0.179*	0.179*	0.180*	3.405	0.814	1.196	0.699
	(7.373)	(6.943)	(15.628)	(11.635)	(0.099)	(0.094)	(0.106)	(0.103)	(6.826)	(2.091)	(2.315)	(1.827)
Observations	10,754	10,754	10,754	10,754	20,951	20,951	20,951	20,951	5,355	5,355	5,355	5,355
	Sustainalytics				Refinitv				KLD			
Panel B. ESG "Social" ratings	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Broad-based board diversity	-13.263	-12.812	-18.918	-16.270	0.202*	0.198**	0.209*	0.207*	9.889	4.238	5.267	4.144
	(13.936)	(12.880)	(24.774)	(18.363)	(0.108)	(0.100)	(0.118)	(0.113)	(17.151)	(4.049)	(5.131)	(3.508)
Observations	10,540	10,540	10,540	10,540	20,951	20,951	20,951	20,951	5,355	5,355	5,355	5,355
Size of bandwidth	[0.250, 0.285]				[0.250, 0.285]				[0.250, 0.285]			
Pre-election controls	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Census region fixed effets	No	No	Yes	Yes	No	No	Yes	Yes	No	No	Yes	Yes

Table B.5.

Instrumental Variable Tests of Salary Gaps Using State Legislation

This table presents results from instrumental variable (IV) regressions examining employee diversity in relation to board gender diversity. The key explanatory variable is the change in the percent of female directors on the board over a two-year period, and the instrument is an indicator variable equal to one if the state where the firm is headquartered or located depending on the specific law has passed a law that either explicitly mandates a minimum number or percentage of female directors, or requires the disclosure of the number or percentage of female directors on the board, or appeals to a minimum number or percentage of female directors by year t. Panel A displays estimates for the homophily channel (i.e., board gender diversity on female salary gap), Panel B for the allyship channel (board gender diversity on ethnicity salary gap). Robust standard errors clustered-adjusted for state headquarters are reported below the coefficient estimates. Fixed effects for all Panels are noted in the botto rows. The first-stage F-statistic is the Kleibergen-Paap Wald statistic. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	Dependent variable = Female salary gap in t=2								
	Female salary gap			Female manager salary gap			Female staff salary gap		
Panel A. Homophily channel	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Change in percent female over two years	0.477	0.497	0.498	0.492	0.514	0.522	0.019	0.016	0.019
	(0.523)	(0.548)	(0.565)	(0.534)	(0.559)	(0.576)	(0.114)	(0.117)	(0.131)
Observations	10,394	10,392	10,187	10,394	10,392	10,187	10,394	10,392	10,186
	Dependent variable = Non-white salary gap in t=2								
	Non-white salary gap			Non-white manager salary gap			Non-white staff salary gap		
Panel B. Allyship channel	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Change in percent female over two years	-0.418***	-0.421***	-0.379**	0.489**	0.510**	-0.254**	-0.103	-0.106	-0.086
	(0.110)	(0.113)	(0.153)	(0.193)	(0.200)	(0.101)	(0.086)	(0.088)	(0.100)
Observations	10,394	10,392	10,187	10,394	10,392	10,187	10,394	10,392	10,187
t-statistic on instrument	8.16	7.93	6.85	8.16	7.93	6.85	8.16	7.93	6.85
First-stage F-statistic	66.7	62.9	46.9	66.7	62.9	46.9	66.7	62.9	46.9
Governance controls	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Firm controls	No	No	Yes	No	No	Yes	No	No	Yes
Year fixed effets	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effets	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table B.6.

Difference-in-difference Estimates of Black Lives Matter on Board Diversity

This table reports estimates of the effect of the Black Lives Matter social movement on board diversity. $Treat \times Post$ is an indicator variable equal to 1 if the state where the firm is headquartered where social media conversations spiked surrounding a black death by year t. For a full list of deaths and states, please see variable definitions in Appendix A. Panel A displays estimates for the change in the percent of non-white directors on the board over a one-year period, Panel B for the change in the percent of non-white directors on the board over a two-year period. Robust standard errors are reported below the coefficient estimates in odd columns, and robust standard errors cluster-adjusted for state headquarters are reported below the coefficient estimates in even columns. Fixed effects for all Panels are noted in the bottom rows. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

	Dependent variable = Change in percent non-white over one year							
Panel A.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treat	0.000	0.000						
	(0.001)	(0.001)						
Treat × Post	-0.001	-0.001	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.001)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Observations	12,162	12,138	12,031	12,007	12,029	12,005	11,798	11,774
R-squared	0.004	0.004	0.103	0.101	0.103	0.101	0.105	0.103
	Dependent variable = Change in percent non-white over two years							
Panel B.	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treat	-0.000	0.000						
	(0.001)	(0.002)						
Treat × Post	-0.003	-0.003	-0.001	-0.001	-0.001	-0.001	-0.002	-0.002
	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)	(0.003)
Observations	10,585	10,564	10,434	10,414	10,432	10,412	10,227	10,207
R-squared	0.007	0.007	0.218	0.215	0.218	0.215	0.220	0.217
Governance controls	No	No	No	No	Yes	Yes	Yes	Yes
Firm controls	No	No	No	No	No	No	Yes	Yes
HQ-state clusters	No	Yes	No	Yes	No	Yes	No	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	No	No	Yes	Yes	Yes	Yes	Yes	Yes

Table B.7.

Social Movements and Board Diversity: Simple Difference

This table reports estimates of the effect of the MeToo and Black Lives Matter social movement on board diversity. In Panel A, $\#MeToo$ is an indicator variable equal to one for 2017 and later. In Panel B, $\#BLM$ is an indicator variable equal to one for 2013 and later. Robust standard errors clustered by year and firm are reported below the coefficient estimates. Each regression includes governance and firm controls, including profitability, Tobin's Q, firm size, ROE, firm age, asset growth, sales growth, investment-to-capital, SG&A, lifecycle stage, board size, board independence, and the percent of shares held by institutional investors. Fixed effects for all Panels are noted in the bottom rows. ***, ** and * indicate p-values of 1%, 5%, and 10%, respectively.

			Dependent variable =			
	% female	Chg. % female	Chg. % female (2 yrs)			
Panel A.	(1)	(2)	(3)			
$\#MeToo$	0.021***	0.007***	0.013***			
	(0.002)	(0.002)	(0.002)			
Observations	13,531	11,810	10,237			
R-squared	0.772	0.104	0.189			
	HHI ethnicity	Chg. HHI ethnicity	Chg. HHI ethnicity (2 yrs)	% non-white	Chg.% non-white	Chg. % non-white (2 yrs)
Panel B.	(1)	(2)	(3)	(4)	(5)	(6)
$\#BLM$	-0.011	-0.001	-0.021*	-0.009**	-0.001	0.002
	(0.017)	(0.008)	(0.011)	(0.004)	(0.002)	(0.003)
Observations	13,531	11,810	10,237	13,519	11,798	10,227
R-squared	0.668	0.088	0.179	0.833	0.104	0.219
Governance controls	Yes	Yes	Yes	Yes	Yes	Yes
Firm controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes