What is the Value of Workforce Diversity?*

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JEL Codes: G14, G32.

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1. Introduction

Recent social events have increased public awareness about workplace diversity and firms have responded by implementing initiatives to increase diversity among non-executive employees. In particular, many firms have committed to hiring underrepresented minorities. Further, in August 2020, the Securities and Exchange Commission (SEC) adopted the amendment of *Regulation S-K* to improve corporate disclosure related to human capital.[1] The SEC Chairman, Mr. Jay Clayton, said:

> Today we modernized our public company business disclosure rules for essentially the first time in over 30 years. Building on our time-tested, principles-based disclosure framework, the rules we adopt today are rooted in materiality and seek to elicit information that will allow today's investors to make more informed investment decisions. I am *particularly supportive of the increased focus on human capital disclosures, which for various industries and companies can be an important driver of long-term value.*

Although the push for diversity is widely supported by social and political forces, there is limited evidence on the impact of diversified non-executive workforce on firm performance and capital market consequences. It is also not immediately clear whether investors are able to assess the value of diversity.

In this paper, I focus on two interrelated research questions: First, I examine whether diversity among non-executive employees is related to firm characteristics, including firm value, operational performance, and corporate innovation. Second, I investigate whether the market fairly

[1] See https://www.sec.gov/news/press-release/2020-192.

estimates the benefit of diversified non-executive workforce. To keep the analysis manageable, I focus on a specific form of diversity based on race/ethnicity.[2]

Ex-ante it is unclear whether non-executive workforce diversity would be beneficial to firms. One viewpoint suggests that diversity-enhancing policies do not increase firm value. For example, demographic heterogeneity may lead to higher productivity costs due to communication friction, lack of trust, and various psychological and social biases (e.g., Lazear (1999), Giannetti and Yafeh (2011)). Further, in response to affirmative action, top managers may prioritize social commitments to gain favor with key stakeholders, such as local politicians, non-governmental organizations, or labor unions, which could come at the expense of shareholders (Tirole (2001), Benabou and Tirole (2010), Cheng, Hong and Shue (2023)).

An alternative perspective posits that corporate managers adopt diversity-enhancing policies to increase firm value. In particular, diversity can encourage knowledge spillovers among employees, leading to better decision-making and problem-solving abilities at the aggregate-level (Hong and Page (2001), Hong and Page (2004)). Diversity initiatives can also stimulate the creation of new ideas and facilitate knowledge transfer (Kerr and Lincoln (2010), Gompers and Wang (2017)). Additionally, workforce diversity may provide firms with valuable information about product markets, reducing their costs and improving their competitiveness in global markets (Wright et al. (1995)). Overall, under this view, firms engage in social responsibility activities because they are expected to improve firm value, in line with the concept of "doing well by doing good" (e.g., Dowell, Hart, and Yeung (2000), Edmans (2011), Dimson, Karakaş, and Li (2015), Servaes and Tamayo (2013), Kang, Kim, and Oh (2022)).

[2] Other forms of diversity such as gender-based, age-based, cultural, and geographic diversity could affect firm valuation. However, the economic mechanisms linking diversity and firm outcomes could differ across these forms of diversity. I examine these related topics in my ongoing research.

The key empirical challenge in studying the economic value of non-executive employee diversity is the lack of sufficient data on the personal demographic information at the firm level. Descriptive labor information within firms can be obtained from the Equal Employment Opportunity (EEO) data, but this data is confidential and has only been voluntarily disclosed by a limited number of firms. Furthermore, the EEO data does not include any information about individual employees.

In this paper, I overcome this challenge by extracting demographic information from individual employee resumes at the firm level. The dataset includes 114 million job-year observations from 27 million positions held by 16 million employees across 4,405 firms during the 1990 to 2021 period. Importantly, the dataset is representative of the demographic distribution of non-executive workforce and mid-managers in the private sector, mitigating potential concerns regarding selection bias.

Using resume-level data, I find that non-executive diversity does not have an immediate impact on return on assets (ROA) and it has only a weak positive relation with profitability growth in the following year. However, diversity has a strong relation with corporate innovation, a key long-run intangible investment. Specifically, I find a positive relation between non-executive racial/ethnic diversity, particularly among middle-tier managers[3], and future innovation outputs such as the number and value of patents. In economic terms, one standard deviation in non-

[3] Middle-level managers serve as important intermediaries between top executives and rank-and-file employees in a firm, facilitating effective leadership and communication. They play a vital role in complex and geographically dispersed organizations, acting as mediators between different levels and units (Wooldridge, Schmid, and Floyd (2008)). Compared to top managers, middle-tier managers have a deeper understanding of daily operations and are adept at identifying operational issues. Firms often grant stock options to middle managers to enhance retention (Oyer and Schaefer (2005)). Diversity among middle managers has been found to have a significant impact on innovation outcomes (Schubert and Tavassoli (2020)). Social networks are instrumental in helping firms attract talented middle-tier personnel, as evidenced by research on career choices of recent MBA graduates (Hacamo and Kleiner (2021)).

executive diversity is associated with 6.23%, and a $0.037 billion increase in the value per patent. Interestingly, the increase in innovation occurs without an increase in R&D expenses.

Surprisingly, despite the positive impact on long-term value creation performance, the market undervalues the diversity of non-executive employees within organizations. I find a negative relation between racial/ethnic diversity among non-executive employees and firm valuation, particularly when the diversity among mid-tier managers is higher. In economic terms, one standard deviation increase in non-executive diversity is associated with 0.1082 lower Tobin's Q. Relative to the mean Tobin's Q of 2.175, this represents a 4.98% lower valuation. Further, this relation weakens over time. These findings suggest that the market does not fully recognize the value of minority employees, potentially because it focuses more on short-term outcomes. Overall, the market's emphasis on short-term outcomes overshadows the long-term value contributed by minority non-executive employees.

To quantify the economic magnitude of this market mis-valuation, I develop a trading strategy that involves longing firms with high non-executive employee diversity and shorting firms with low non-executive employee diversity. The strategy generates a statistically and economically significant risk-adjusted return of about 7% per year. These findings remain robust across various alternative specifications, including alternative diversity measures, different sample periods, different return weighting schemes, and different benchmark factor models.

I also find that equity analysts and investors do not accurately assess the impact of non-executive employee diversity on corporate earnings. Notably, equity analysts consistently underestimate the earnings of firms with high non-executive employee diversity. This negative relation remains robust even after I account for various factors that account for earnings surprises

and analyst biases, as highlighted in previous studies such as Hughes, Liu, and Su (2008) and So (2013). The mis-valuation of mid-tier managers largely drives this effect.

Additionally, event study evidence reveals that stock prices significantly decrease (increase) in response to negative (positive) earnings surprises. These findings indicate that investors behave similarly to equity analysts, failing to adequately incorporate non-executive employee diversity into their earnings expectations.

Together, these findings contribute to the emerging literature on the importance of diversity, equity, and inclusion policies. Specifically, my paper highlights the importance of diversity beyond the boardroom, building upon recent studies that focus on diversity among top executives and board members. For example, Giannetti and Zhao (2019) demonstrate that firms with ancestrally diverse boards drive innovation, but this diversity can also lead to performance volatility, decision-making inefficiencies, and boardroom conflicts. Further, Bernile, Bhagwat, and Yonker (2018) show that multi-dimensional board diversity is associated with reduced risk and improved performance. More recently, Klick (2021) documents that academic research on boardroom gender diversity and firm performance often yields mixed results or insignificant findings. A notable exception is Parrotta, Pozzoli, and Pytlikova (2014), who study the workforce diversity in Denmark and conclude nationality and linguistic grouping diversity is negatively correlated with firm productivity in Denmark.[4] My findings provide complementary evidence and suggest that there is a positive relation between the racial/ethnic diversity of non-executive employees and long-term corporate performance, which the market fails to recognize immediately.

[4] Parrotta, Pozzoli, and Pytlikova (2014) refer to the diversity based on nationality and linguistic grouping as "ethnic" diversity, which contrasts with my measurement of racial/ethnic diversity.

Additionally, my work is related to literature on the effects of human capital and intangible assets on firm value. This line of research finds that market participants do not fully recognize the significance of corporate intangibles on human capital growth, such as employee satisfaction (Edmans (2011)), employee ratings (Green et al. (2019)), and labor flows (Agrawal, Hacamo, and Hu (2021)). Further, Fedyk and Hodson (2022) demonstrate that the market overestimates the value of technical human capital. My results provide a new perspective and highlight the potential mispricing of racial/ethnic diversity of non-executive employees, particularly mid-level managers.

2. Data and Variables

2.1 Non-executive workforce data

My main data set contains detailed resume-level data from Revelio Labs. It contains online professional profiles mainly from LinkedIn. Revelio Labs provides work experience, location, educational history, and demographic information for each individual. The data contains current or historical positions, educational history, name, and demographics (gender and race/ethnicity) information for each individual.

By combining Revelio Labs data with Compustat and CRSP, I create a comprehensive panel dataset that matches employees to employers that includes 114 million job-year observations from 27 million positions held by 16 million employees across 4,405 firms during the 1990 to 2021 period. I benchmark the employees at public firms in my sample against these firm-reported employment numbers in the Compustat database to check the coverage ratio. My sample only contains data on US-based employees, while US public firms report their overall (global) employment numbers. Specifically, the mean and median of my sample employment to Compustat (global) employment coverage ratio are 35.43% and 21.15%, respectively. My data coverage is

similar to Fedyk and Hodson (2022), who also utilize resume-level data from different data providers.

There is no significant correlation between the coverage ratio (my sample relative to Compustat) and any of the diversity measures described in Section 3.2, i.e., the correlations range from 0.028 to 0.04. This finding alleviates concerns regarding potential selection bias. For instance, if non-executive minority employees are less inclined to have online profiles, firms with low coverage ratios might exhibit artificially low diversity measures due to an underrepresentation of minority employees. However, such concerns are not applicable in the context of my study.

Revelio Labs compiles employee names and locations in conjunction with data from the Social Security Administration and the US Census to make predictions about race/ethnicity and gender. Among all employees in my sample, 27.38% are classified as belonging to racial/ethnic minority groups,[5] while 44.62% are identified as female. Additionally, Revelio Labs uses an ensemble model to create seniority metric with seven ordinal seniority levels.[6] I exclude the C-suite level from my analyses as my focus is on the non-executive workforce.[7] I classify all non-executive employees into the following two groups based on their job positions: mid-level managers (MM) and rank-and-file employees (RF). The MM group consists of individuals at the manager, vice president, and director levels within the firm, while the RF category contains

[5] 9.66% Black, 8.45% Asian and Pacific Islander, and 9.27% Hispanic. I focus on White, African-American, Asian and Pacific Islander, and Hispanic racial/ethnic categories, as Revelio Labs assign each individual into one of the 4-class race/ethnicity taxonomy. Figure A.2 shows the distribution of the percentage of each race/ethnicity during my sample period among all non-executive employees (Panel A) and on mid-tier managers (Panel B).

[6] The seven ordinal seniority levels are: 1. Entry level/Intern (e.g., Accounting Intern, Software Engineer Trainee, Paralegal); 2. Junior Level (e.g., Account Receivable Bookkeeper, Junior Software QA Engineer, Legal Adviser); 3. Associate/Analyst Level (e.g., Senior Tax Accountant; Lead Electrical Engineer; Attorney); 4. Manager Level (e.g., Account Manager; Superintendent Engineer; Lead Lawyer); 5. Vice President Level (e.g., Chief of Accountants; VP Network Engineering; Head of Legal); 6. Director Level (e.g., Managing Director, Treasury; Director of Engineering, Backend Systems; Attorney, Partner); and 7. C-suite Level (e.g., CFO; COO; CEO).

[7] The Revelio Labs data on top executives is sparse. I define diversity measures of top executives using the BoardEx data and use them as control variables in my analysis.

employees at entry-level, interns, juniors, associates, and analysts. Based on this classification, I identify about 26.85% MM and 73.15% RF positions.

I compare the distribution of demographic characteristics among employees in my sample with the job patterns for minorities and women in private industry, as reported in the EEO-1 data.[8] The EEO data spans from 1996 to 2021 and provides demographic information for ten job categories: [9] Executive/Senior Level Officials & Managers, First/Mid-Level Officials & Managers,[10] Professionals, Technicians, Sales Workers, Office & Clerical Workers, Craft Workers, Operatives, Laborers, and Service Workers. To focus on non-executive employees and considering that white-collar positions are more likely to be represented in the Revelio Labs sample than blue-collar positions, I use the following EEO categories as a basis of comparison for my non-executive sample: First/Mid-Level Officials & Managers, Professionals, Technicians, Sales Workers, and Office & Clerical Workers, excluding manual worker categories. Additionally, I specifically employ the First/Mid-Level Officials & Managers category to benchmark the demographic characteristics of mid-tier managers in my analysis.

Figure 1 presents the comparison results. Specifically, for each year, I present the percentage of minorities as the number of minority employees divided by the number of total employees. In Panel A, the percentage of minorities among all non-executive employees is 16.29% in my sample and 20.18% in the EEO sample in 1996. Both samples show a similar increasing trend, reaching 29.98% in my sample and 36.72% in the EEO sample by 2021. In Panel B, the percentage of minorities among mid-tier managers in my sample closely aligns with the EEO

[8] See https://www.eeoc.gov/statistics/employment/jobpatterns/eeo1/historical.
[9] The detailed definition of each category can be found at: https://www.eeoc.gov/eeo-1/job-patterns-minorities-and-women-private-industry-glossary.
[10] Prior to 2007, EEO does not differentiate between "Executive/Senior Level Officials & Managers" and "First/Mid-Level Officials & Managers." Instead, both were grouped together under the single category of "Officials & Managers." To justify the proportions of "First/Mid-Level Officials & Managers" before 2007, I utilize the average ratios of this subgroup relative to the total "Officials & Managers" from 2007 to 2021.

sample, with an average difference of about 1.4% throughout the entire period. These comparable trends and magnitudes suggest that my sample broadly represents the distribution of minorities in the private sector and alleviates potential concerns of selection bias, such as overrepresentation of minority employees.

2.2 Non-executive diversity measures

My workforce dataset allows me to aggregate individual employment durations across various firms and measure the non-executive diversity based on race/ethnicity. Every month, I tally the headcount of employees belonging to White and minority racial/ethnic groups. Then, I determine the proportion of employees in each group by dividing the number of employees in that group by the total number of employees in the firm. Next, I aggregate the diversity on a 12-month (3-month) rolling basis to capture the non-executive diversity within each firm. Specifically, the proportion of minorities (*PMINO*) among the workforce in each firm is defined as:

$$PMINO_{i,t} = \frac{NMinorities_{i,m-k,m-1}}{NEmployees_{i,m-k,m-1}}, \quad (1)$$

$$PMINOMM_{i,t} = \frac{NMinoritiesMM_{i,m-k,m-1}}{NMM_{i,m-k,m-1}}, \quad (2)$$

$$PMINORF_{i,t} = \frac{NMinoritiesRF_{i,m-k,m-1}}{NRF_{i,m-k,m-1}}, \quad (3)$$

where *m* represents the calendar month of the end of fiscal year *t*. $NEmployees$ is the average count of non-executive employees for firm *i* during the 12-month period ($k = 12$)[11]. $NEmployees$ can be further divided into two racial/ethnic groups: Whites and *Minorities*. Additionally, it can be divided into two seniority groups: middle-tier managers (*MM*) and rank-and-file employees

[11] For stock return analyses with firm-month panel, I calculate the average over the three months, i.e., *k*=3.

(*RF*). In an analogous manner, I construct the percentage of minorities on board, *PMINOBD*, using BoardEx data.[12]

2.3 Sample Statistics

Table 1 presents the summary statistics for employee diversity measures (Panel A) and firm characteristics (Panel B) of the full sample. On average, 20% of non-executive employees are racial/ethnic minorities. Further examination reveals that among non-executive employees, 16.9% are mid-tier managers and 21.9% are rank-and-file employees who identify as minorities. Additionally, on average, 8.5% of board members belong to minority groups.[13] [14] Overall, the composition of my sample closely mirrors the job patterns for minorities in the private sector.

Panel C of Table 1 displays the cross-correlations among the firm-level diversity measures. The board diversity measure exhibits a low correlation with non-executive employee diversity. This evidence suggests that non-executive diversity measures are distinct from the diversity levels of top executives and board members.

Figure A.1 displays the demographic distributions for each of the Fama-French 12 industry categories. Industries with relatively high percentages of minorities among non-executive employees and mid-managers include *BusEq* (Business Equipment), *Telcm* (Telephone and Television Transmission), and *Enrgy* (Oil, Gas, and Coal Extraction and Products). The difference between the industry with the highest percentage of minorities (BusEq) and the lowest (Manuf) is less than 10%, indicating that my sample is not biased towards any specific industry.

[12] I predict the race/ethnicity based on the name of directors provided by BoardEx. See: https://pypi.org/project/ethnicolr/.

[13] According to the EEO's report, the average representation of minorities among Executive/Senior Level Officials and Managers in private industry from 2007 to 2021 is 8.62%.

[14] The "Missing Pieces Report (4th edition)" published by the Alliance for Board Diversity and Deloitte emphasizes that race/ethnic minorities hold 12.8% of board seats in 2010 among Fortune 500 companies, which should ideally have a higher representation of minorities on their boards compared to other firms.

3. Non-executive Employee Diversity and Valuation

In this section, I present my main empirical results. Specifically, I examine the impact of non-executive employee diversity on firm value, operational performance, and innovation.

3.1 Estimation Framework

I estimate the following regression:

$$Y_{i,t+L} = \beta Diversity_{i,t} + CX_{i,t} + \delta_i + \tau_t + \varepsilon_{it}\,, \tag{4}$$

where $Y_{i,t+L}$ is the firm level outcome variables, including firm value, operational performance, and innovation. My main variable of interest is $Diversity_{i,t}$. It is represented by firm i's annual workforce diversity in year *t*, i.e., *PMINO*, *PMINOMM* and *PMINORF* described in Section 2.2.

Motivated by Edmans (2011), I consider a vector of firm-specific controls (*X*) in year *t*, including market capitalization (ln(ME)), book-to-market ration (B/M), Cash, Dividend Yield, zero dividends indicator (DD), dividend-to-price (D/P) ratio, and firm age (ln(Age)). To address the potential concern that non-executive employee diversity is related to diversity within the board of directors, I incorporate controls for board of directors' diversity, *PMINOBD*. Finally, my regression specification includes firm and year fixed effects, which account for potential time-invariant heterogeneity at the firm level and year-specific shocks. Standard errors are clustered at the firm level.

3.2 Non-Executive Employee Diversity and Operational Performance

To begin, I assess the link between non-executive employee diversity and the firm's short-term operational performance. Specifically, I investigate whether non-executive employee diversity is associated with improvements in operational performance at the firm level. In these tests, operational performance is measured as return on assets (*ROA*) and profitability growth in the following year. *ROA* is measured as the net income scaled by assets in the previous year.

Profitability growth is measured as the percentage change of gross profitability ratio, where gross profitability is measured as the difference between revenues and cost of goods sold, scaled by assets in the previous year.

The results are reported in Table 2. In Columns (1) and (2), I find that *PMINO*, *PMINOMM* and *PMINORF* are positively but insignificantly associated with *ROA* in the following year. In Column (3) and (4), *PMINO* and *PMINOMM* are significantly related to profitability growth in the next year at 10% level. In economic terms, a 1% increase in PMINO is associated with 0.1851% increase in profitability growth during the following year as the mean profitability growth rate is only 0.5%.[15]

Overall, the *ROA* and profitability growth regression estimates indicate that there is only a weak relation between diversity of non-executive employees and short-term corporate performance.

3.3 Non-Executive Employee Diversity and Firm Innovation

Next, I investigate whether non-executive employee diversity is associated with superior long-run performance. I focus on the influence of minority non-executive employees on corporate innovation, a typical long-term intangible investment. I measure both the innovation input and output in year *t+1*. Innovation input is measured by R&D expenses, defined as research and development spending scaled by lagged assets, where missing R&D values are set to zero. Innovation output is measured by the number of patents, the average value per patent, and the number of citations.[16]

[15] To test whether diversity improves profitability going forward, I examine the profitability growth in year *t*+2. I find that both *PMINO* and *PMINOMM* exhibit statistically significant positive correlations with profit growth, and their magnitudes are stronger compared to year *t+1*.

[16] The patent data is from Kogan et al. (2017), available at https://github.com/KPSS2017/Technological-Innovation-Resource-Allocation-and-Growth-Extended-Data.

Table 2 reports the innovation regression estimates. In Columns (1) and (2), *PMINO* and *PMINORF* show no statistically significant relation with R&D expenses. Additionally, *PMINOMM* demonstrates a negative relation with R&D expenses.[17] Specifically, one-standard-deviation increase in *PMINOMM* corresponds to a 9.28% (= -0.05 × 0.128 / 0.069) decrease in R&D expenses relative to its mean value (= 0.069).

Further, I find that a higher level of diversity is associated with increased innovation outputs. In Columns (3) and (5), I find that *PMINO* is positively associated with innovation output, as evidenced by the larger number of patents and higher average value per patent[18]. In economic terms, one standard deviation increase in *PMINO* is associated with 6.23% ($= e^{0.4875\times0.124} - 1$) increase in the number of patents, and a \$0.037 billion (= 0.2974 × 0.124) increase in the value per patent.

Higher diversity among both mid-tier managers and rank-and-file employees is associated with higher levels of innovation, but the economic impact of diversity among mid-tier managers is larger (see Columns (4) and (6)). Specifically, for one standard deviation increase in *PMINOMM*, there is a 4.07% ($= e^{0.3113\times0.128} - 1$) increase in the number of patents and a \$0.022b (= 0.1710 × 0.128) increase in the value per patent. In comparison, for one standard deviation increase in *PMINORF* is linked to a 3.14% ($= e^{0.2077\times0.149} - 1$) increase in the number of patents and a \$0.017b (= 0.1118 × 0.149) increase in the value per patent. Last, the estimates in Column (7) and (8) show that the level of non-executive employee diversity has a positive but insignificant relation with the number of citations. Overall, I find that the presence of minority non-executive employees, particularly minority mid-managers, is associated with better innovation outcomes, without any significant increase in innovation expenses.

[17] My findings remain consistent after excluding zero or missing R&D values or using the concurrent R&D expenses.
[18] My findings remain consistent for innovation outputs during the next 3 years.

Collectively, short-term and long-term performance regression estimates indicate that the higher level of racial/ethnic diversity is associated with marginally superior operational performance and higher levels of innovation. The relation between employee diversity and firm performance is particularly stronger when there is greater diversity among middle-tier managers.

3.4 Non-Executive Employee Diversity and Firm Value

Does the market fully understand the value of non-executive diversity? Or, does the market's emphasis on short-term outcomes overshadow the long-term value contributed by minority non-executive employees? To answer these questions, I assess the link between non-executive employee diversity and firm valuation. In firm valuation regressions, the dependent variable is the value of the firm, Tobin's *q*, defined as the market value of the firm's equity and liabilities scaled by the book value of the firm's equity and liabilities. From a theoretical perspective, the potential relation between non-executive employee diversity and firm value is unclear. Further, even if diversity improves firm value, the market may not be able to fully assess the value of non-executive employee diversity.

Table 4 presents the results of my baseline firm valuation regressions. The evidence shows that the minority proportion in the workforce (*PMINO*) is negatively related to the concurrent firm value (see Columns (1)). Specifically, a one-standard-deviation increase in *PMINO* corresponds to a 0.1082 (= -0.8727 × 0.124) lower Tobin's *q* in the concurrent year, which is 4.98% lower relative to the mean of Tobin's *q* (= 2.175). Interestingly, when I split total employees into MM (mid-level managers) and RF (rank-and-file) categories, only *PMINOMM* exhibits a statistically

significant negative association with firm value (coefficient = -0.6160, *t*-statistic = -3.31). The estimate on *PMINORF* is negative but insignificant (see Column (2)).[19]

To examine the persistence of the valuation effect over time, I additionally assess the future value of the company in the subsequent two years. *PMINO* and *PMINOMM* are weakly associated with negative valuation with decreasing magnitude in the next year (Column (3) and (4)), and this negative association disappears in year *t+2* (Column (5) and (6)).

Together, the firm valuation regression estimates suggest that the non-executive minority workforce variables have a negative relation on concurrent firm value as the market cannot immediately fully assess the value of non-executive employee diversity. However, this undervaluation is not consistent over time and tends to diminish within a two-year period, becoming insignificant by year *t+2*. Based on these findings, it appears that the market is slow in recognizing the value generated by minority non-executive employee diversity.

4. Non-executive Employee Diversity and Stock Return

4.1 Non-executive Employee Diversity Based Trading Strategies

If the market is unable to fully recognize the value of non-executive employee diversity, there could be a relation between the diversity of non-executive employees and future stock returns as investors may fail to accurately and immediately incorporate the value of non-executive employee diversity into stock prices. To examine the relation between non-executive employee diversity on asset prices, I develop a trading strategy that takes a Long position in firms with a high proportion of minority workers and a Short position in firms with a low proportion of minority employees. I use the average diversity measures over the past three months.

[19] After removing the book-to-market ratio, which is also a measure of valuation, from the set of controls, my results remain unaffected.

To measure the risk-adjusted performance of the Long-Short portfolio, I use Fama-French five-factors (Fama and French (2015)) and the Carhart (1997) factor:

$$r_{p,t} = \alpha + \beta_{MP} MP_t + \beta_{SMB} SMB_t + \beta_{HML} HML_t + \beta_{RMW} RMW_t + \beta_{CMA} CMA_t + \beta_{UMD} UMD_t + \varepsilon_t, \quad (5)$$

where t represents the calendar month, and $r_{p,t}$ is the monthly return of the value-weighted portfolio. MP is the market premium calculated as the value weighted market return on all NYSE-Amex-Nasdaq stocks minus the 1-month Treasury-bill rate. SMB (small minus big) is the average return of small firms minus the average return of big firms. HML (high minus low) is the average return of value (high book-to-market) firms minus the average return of growth (low book-to-market) firms. RMW (robust minus weak) is the average return of robust-profitability firms minus the average return of weak-profitability firms. CMA (conservative minus aggressive) is the average return of firms with low investment minus the average returns of firms with high investment. UMD (up minus down) is the average return of firms with high prior returns minus the average return of firms with low prior returns. To avoid potentially illiquid stocks driving my result, I exclude stocks with a stock price below $1 as of June.

I sort firms over a given month into quintiles based on the proportion of minority employees (*PMINO*) in the previous 3-month rolling basis. Further, I classify all firm employees into the following two groups based on their job positions: *MM* (mid-managers) and *RF* (rank-and-file). The dependent variable captures the difference in returns between firms in the top and bottom *PMINO* quintiles. Alpha (α), the main coefficient of interest, is the intercept that captures the average abnormal monthly returns of the L-S portfolio using the five-factor model.

The trading strategy performance estimates are reported in Table 5. In Column (1), I find that the returns of *PMINO* sorted portfolios vary in a monotonic manner. A trading strategy based

on *PMINO* generates a raw return of 1.224% per month for the Long portfolio and 0.762% per month for the Short portfolio. The L-S portfolio has a statistically significant alpha of 0.637% per month, which translates into an abnormal return of 7.64% per year.[20] In Column (3) and (5), the L-S portfolios based on *PMINOMM* and *PMINORF* generate statistically significant abnormal returns of 0.528% and 0.650% per month, respectively.

To examine the robustness of these estimates, I consider alternative specifications. First, I confirm the consistency of my results by restricting the analysis to time periods after 2010, which are periods following LinkedIn's public launch and increased popularity among employees (Column (2) (4) and (6))[21]. Second, I perform the same tests by using the Herfindahl index of diversity and find similar results. Third, my results are similar when I measure *PMINO* during the previous one month or 12 months, instead of the past three months. Fourth, my results are similar when I use other factor models, including the market model, the Fama and French (1993) three - factor model and the Carhart (1997) model. Fifth, my findings remain consistent when employing location-adjusted diversity measures. These measures involve subtracting the average diversity measures of all companies based in the same metropolitan statistical area (MSA) from my initial diversity measurements. This adjustment helps mitigate the influence of local labor market demographic conditions.

Collectively, the portfolio performance estimates show that workforce diversity, including diversity for both mid-level managers and rank-and-file employees, can be used to predict stock returns.

[20] In unablated results, the alpha is similar in magnitude when measuring portfolio returns using an equal-weighting scheme.

[21] "2010: LinkedIn shifts into hyper-growth mode, reaching 90 million members and nearly 1,000 employees in 10 offices around the world." See: https://press.linkedin.com/content/dam/press/docs/linkedin-company-fact-sheet-12-08-16.pdf.

4.2 Fama-MacBeth Regression Estimates

To further establish the relative importance of diversity levels of minority mid-level managers and rank-and-file employees, I estimate the following Fama and Macbeth (1973) regression:

$$r_{i,t} = b_0 + b_1 Diversity_{i,t-1} + cX_{i,t-1} + \epsilon_{i,t}, \quad (6)$$

where $r_{i,t}$ is firm *i*'s monthly return at month *t*. The $Diversity_{i,t-1}$ is my non-executive employee diversity measure, *PMINO.* $X_{i,t-1}$ is a vector of control variables for firm *i* in month *t-1*, including *PMINOBD* (Board Diversity), ln(ME) in June, ln(B/M), and various past return measures, such as the previous month return, $Ret_{-1,-1}$, previous year return,, $Ret_{-12,-2}$, and previous three year returns, $Ret_{-36,-13}$. The tests use Newey and West (1987) standard errors corrected for autocorrelation using 6 lags.

Table 6 reports the Fama-MacBeth regression results. Consistent with the univariate sort results, Column (1) shows that higher *PMINO* is associated with higher returns. In economic terms, a one standard deviation increase in *PMINO* is associated with an 8.82 basis points (= 0.7113 × 0.124) higher return in the following month. This magnitude is similar to the findings in Fedyk and Hodson (2022).

In Column (2), I break down the percentage of minority measure *(PMINO)* into mid-level managers (*PMINOMM*) and rank-and-file employees (*PMINORF*). Interestingly, I find that only *PMINOMM* is significantly positively associated with future returns (coefficient = 0.5548, *t*-statistic = 2.02). In contrast, *PMINORF* is not significantly correlated with future returns (coefficient = 0.1995, *t*-statistic = 0.75). Column (3) and (4) show that the estimates with controls yield similar results. Taken together, the Fama-MacBeth regression estimates illustrate that minority employees, especially mid-tier minority managers, are related to stock returns.

4.3 Non-Executive Employee Diversity and Earnings Expectations

In the next set of tests, I examine whether market's earnings expectations vary with employee diversity. Similar to Agrawal, Hacamo, and Hu (2021), I use sell-side equity analysts' earnings expectations as a proxy for informed investors, given their motivation to generate precise earnings forecasts. Specifically, the standardized unexpected earnings (SUE) for firm *i* in month *t* is defined as:

$$SUE_{i,t} = \frac{EPS_{i,t}^{actual} - \mu_{i,t}}{\sigma_{i,t}}, \tag{7}$$

where $EPS_{i,t}^{actual}$ is the ex-post actual EPS in the firm's upcoming quarter. $\mu_{i,t}$ and $\sigma_{i,t}$ are the mean and standard deviation of analysts' EPS forecasts for the upcoming quarterly earnings announcement for a given firm *i* in month *t*, respectively.

Motivated by So (2013), my earnings expectation regressions include various firm controls, including earnings per share when earnings are positive and zero otherwise (*E+*), negative earnings indicator (*NEGE*), negative and positive accruals per share (*ACC−*, *ACC+*), the percent change in total assets (*AG*), zero dividends indicator (*DD*), dividends per share (*DIV*), share price (*PRC*) and book-to-market value (*BM*) are included as control variables[22]. I also include board diversity measure to control executive diversity. All variables are defined in Appendix Table A.1.

Table 7 presents estimates from earnings surprises on Fama-MacBeth regressions. The estimates in Column (1) are consistent with my hypothesis and indicates that non-executive employee diversity can predict analyst forecast errors, specifically showing a positive correlation with future earnings surprises (coefficient = 1.2956, *t*-statistic = 7.15). In economic terms, one standard deviation increase in *PMINO* is associated with 0.16 (= 1.2956 × 0.124) increase in *SUE*.

[22] Refer to Hughes, Liu, and Su (2008) for additional insights on predictable components of earnings forecast errors and analyst biases.

More importantly, after I split employees into *MM* (mid-level managers) and *RF* (rank-and-file) categories in Column (2), only *PMINOMM* exhibits a statistically significant at 1% level with coefficient estimate of 1.1477. In Columns (3) and (4), my results remain similar in magnitude and statistical significance after adding controls. This evidence confirms that the link between employee diversity and earnings surprise is not driven by other earning-related controls.

The results align with my hypothesis, indicating that non-executive employee diversity contributes to the analysts' earnings forecast errors. The presence of higher non-executive employee diversity suggests improved earnings prospects; however, sell-side analysts do not seem to incorporate this information into their forecasts ahead of earnings announcements.

4.4 Market Reactions to Earnings Announcements

To assess whether investors demonstrate similar behavior to equity analysts by undervaluing the importance of non-executive employee diversity when formulating their earnings expectations, I conduct an estimation of market reactions to earnings announcements in my sample. Figure 2 illustrates the graphical representation of average cumulative abnormal returns (CAR) and their corresponding 95% confidence intervals for each day within the 10-day period surrounding earnings announcements. Similar to my hypothesis that investors neglect to integrate information from non-executive employee diversity into their earnings expectations, I observe negative (positive) stock price reactions to negative (positive) earnings surprises in the immediate days surrounding earnings announcements. Such findings would indicate that investors exhibit a similar behavior to equity analysts by incorporating their earnings forecasts into stock prices.

Taken together, these findings suggest that the market does not integrate information about non-executive employee diversity when forming their expectations. Higher levels of diversity are associated with more positive earnings forecast errors and higher abnormal stock returns. This

pattern holds across various empirical specifications, reinforcing the notion that non-executive employee diversity carries valuable earnings-related information that can be potentially exploited to develop profitable trading strategies.

5. Alternative Explanations and Robustness Checks

5.1 Does Gender Diversity Have Similar Effects?

One potential concern with my findings is that the observed valuation might be primarily attributed to firms' Diversity, Equity, and Inclusion (DEI) policies and their broader implications, rather than solely due to racial/ethnic diversity itself. This might occur because racial/ethnic diversity is just one of the outcomes stemming from DEI initiatives. Consistent with this conjecture, Li and Nagar (2012) present evidence that firms adopting same-sex domestic partnership benefits (SSDPB) outperform non-adopters and generate excess returns. Similarly, Edmans, Flammer, and Glossner (2023) utilize survey data to demonstrate that firms with a focus on DEI exhibit improved accounting performance and innovation, although they find no direct association with future returns.

To address the possibility that my results may be primarily driven by DEI policies and their implications, I investigate gender diversity, another key aspect of demographic diversity emphasized by DEI initiatives. The non-executive employee gender diversity measure is defined in an analogous manner as non-executive employee racial/ethnic diversity.

I find that the correlation between my gender diversity (*PFEM*) and racial/ethnic diversity measure is only 0.145, which indicates that the relationship between gender diversity and racial/ethnic diversity is relatively weak. Further, I find that the valuation and performance outcomes of gender diversity is different from racial/ethnic diversity. In Appendix A.3, gender diversity shows no significant relation with *ROA* and profitability growth, and exhibits a slight

negative correlation with the number of patents, primarily driven by rank-and-file employees (see Column (1) to (6)). Last, gender diversity does not demonstrate a negative association with firm value (Tobin's *q*). These results at least partially alleviate potential concerns that the underestimation of firm value that I demonstrate is not due to the undervaluation of specific racial/ethnic diversity.

These estimates also suggest that non-executive employee gender diversity and racial diversity are differently related with the performance and innovation of the firm, and the market does not mis-value gender diversity. These results align with the findings of Edmans, Flammer, and Glossner (2023), who also document insignificant or negative relation between their DEI measure based on survey data and racial/ethnic diversity at the senior management, CEO, or boardroom levels. Overall, my evidence does not support the conjecture that firm mis-valuation is mainly driven by broader DEI initiatives.

5.2 Return Reversal or Return Persistence?

My analysis focuses on determining whether the abnormal stock returns documented are prone to reversal over extended periods or if they exhibit persistence over time. If these returns do reverse over longer horizons, it raises doubts about the fundamental significance of non-executive employee diversity for stock prices. Instead, it is possible that non-executive employee diversity might merely be associated with transitory phenomena that temporarily influence prices in the short run.

To investigate this hypothesis, I employ the Fama and Macbeth (1973) regression method, similar to section 4.2, to assess the long-run returns over a 2-year period. I analyze the cumulative market-adjusted return for each stock on a monthly basis, spanning across the subsequent 8

quarters. For example, the first quarter (Q1) comprises the cumulative market-adjusted returns from month 1 to month 3, and the same pattern follows for the subsequent quarters.

Table A.3 presents the regression estimates for the long-term returns. The correlation between PMINO and cumulative market-adjusted returns generally maintains a positive and statistically significant relationship in the following five quarters (Columns (1) - (5)). However, in the remaining Columns (6) - (8), the correlation between *PMINO* and cumulative market-adjusted returns for any subsequent quarters is no longer statistically distinguishable from zero.

The data analysis indicates a gradually declining, yet positive association between non-executive diversity and cumulative market-adjusted returns for up to five quarters. However, beyond this period, the results become statistically insignificant. These results align with the findings presented in Table 4, indicating that the mis-valuation of non-executive employee diversity on stock prices might persist for over a year, but investors slowly integrate this information over time.

5.3 Robustness: Estimates Using Labor Flows

Although the *PMINO* measures provide a snapshot of the current diversity level within a firm, the change in firm prospects is reflected in the aggregation of the labor market decisions of different racial/ethnic groups. Agrawal, Hacamo and Hu (2021) demonstrate that net labor flows reflect the collective anticipations of the non-executive employees, which are shaped by the informative signals they observe regarding the firm's prospects.

I re-estimate all my regressions with the net labor flow measures for minorities and find qualitatively similar results. For example, for the trading strategy estimates reported in Table 5, the alpha is 0.626% per month (*t*-statistic = 3.28), or 7.51% per year for L-S portfolios based on monthly net labor flow of minorities.

6. Summary and Conclusions

This paper examines how the market values racial/ethnicity diversity. My main innovation is to use new measures of firm-level diversity among non-executive employees. I find that, despite an increasing trend in DEI initiatives, the market tends to undervalue the contributions of racially/ethnically diverse non-executive employees, particularly mid-tier corporate managers. Even though non-executive diversity is associated with higher levels of corporate innovation, the market does not fully recognize the value of minority employees, potentially because it focuses more on short-term outcomes. Examining the earnings forecasts of sell-side equity analysts, I show directly that market's earnings expectations do not account for the beneficial effects of diversity. A trading strategy that exploits market mis-valuation earns an annualized risk-adjusted return of over 7%.

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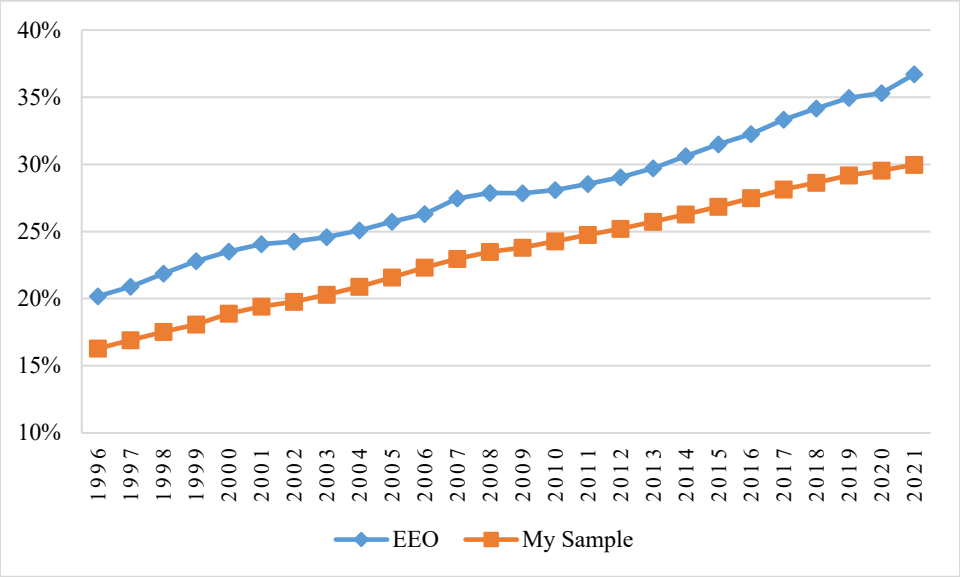
Panel A: Percentage of Minorities among Non-executive Employees



Panel B: Percentage of Minorities among Mid-tier Managers

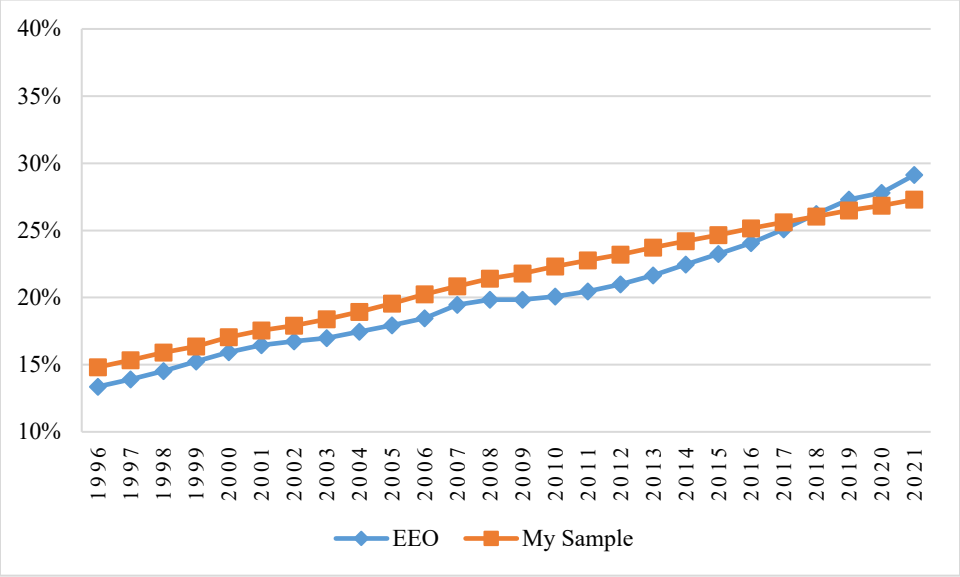
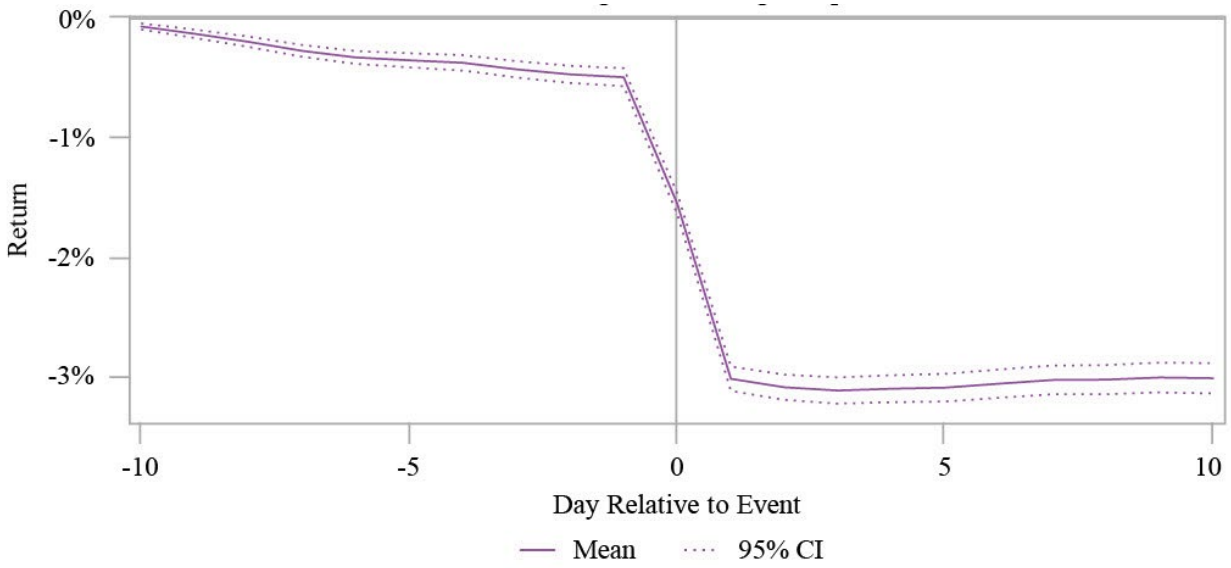


Figure 1: The figure illustrates the comparison of the representation of minorities in the EEO data (blue diamonds) and my sample (orange squares). Panel A displays the comparison among all non-executive employees, while Panel B focuses specifically on mid-tier managers.

Panel A: Negative Earnings Surprises



Panel B: Positive Earnings Surprises

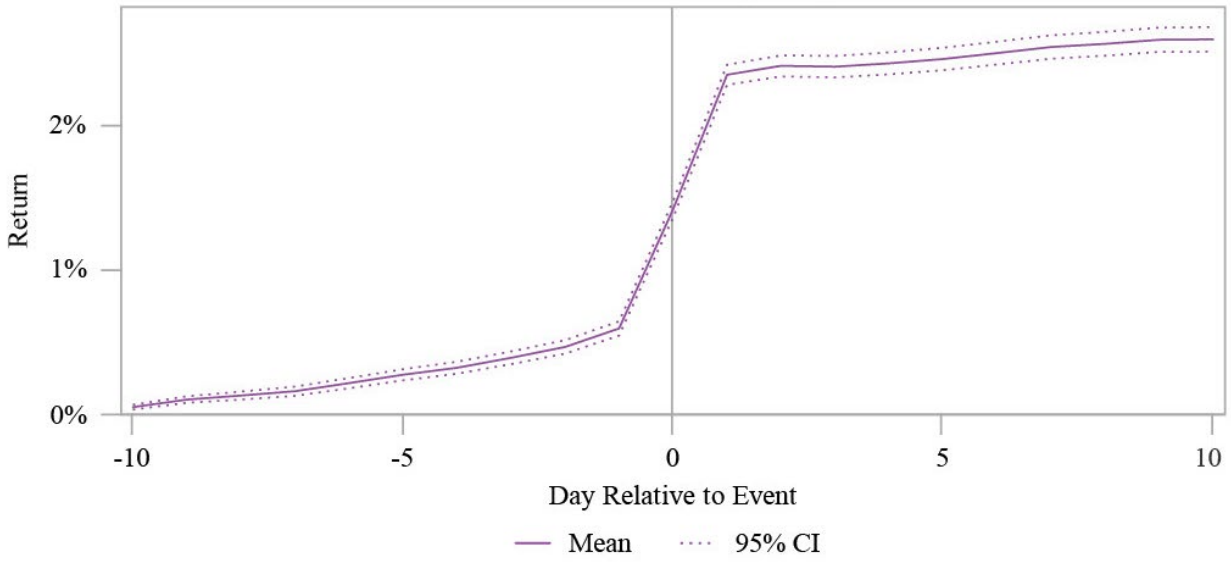


Figure 2: The figure illustrates the event study analysis of stock price reactions to earnings announcements. Panel A (B) displays the average cumulative abnormal stock returns and 95% confidence intervals surrounding negative (positive) earnings surprises over ten-day event windows centered around the earnings announcement dates. Earnings announcements are classified as negative (positive) surprises when the average earnings-per-share (EPS) forecast by equity analysts in the previous quarter is lower (higher) than the actual EPS announced by the firm. The benchmark factor loadings are estimated using daily returns for 100 days, commencing 50 days prior to the start of the event window. The horizontal axis represents the day relative to the earnings announcement date, while the vertical axis corresponds to the average cumulative abnormal stock return.

Table 1: Summary Statistics

This table presents summary statistics for employee diversity measures (Panel A) and firm characteristics (Panel B). The sample period is from 1990 to 2021. All variables are winsorized at 0.5th and 99.5th percentile levels. Appendix Table A.1 presents the definitions of all variables.

Panel A: Employee Diversity Measures

	Mean	SD	25th Pct.	Median	75th Pct.
PMINO	0.200	0.124	0.115	0.181	0.263
PMINOMM	0.169	0.128	0.087	0.150	0.226
PMINORF	0.219	0.149	0.119	0.195	0.288
PMINOBD	0.085	0.099	0.000	0.067	0.125

Panel B: Firm Characteristics

	Mean	SD	25th Pct.	Median	75th Pct.
Tobin's *q*	2.175	2.007	1.090	1.504	2.427
ROA	-0.032	0.278	-0.031	0.030	0.081
Profit Growth	0.005	0.931	-0.166	-0.011	0.129
R&D Expenses	0.069	0.201	0.000	0.000	0.068
ln(1+N Patents)	1.711	1.190	0.000	2.565	2.565
Value per Patent ($b)	0.115	0.482	0.000	0.002	0.020
ln(1+N Citations)	1.930	2.517	0.000	0.000	3.807
ln(ME)	6.250	2.118	4.730	6.236	7.687
BM	0.582	0.678	0.246	0.468	0.788
Leverage	0.217	0.224	0.023	0.166	0.338
Cash	0.297	0.640	0.036	0.119	0.334
Dividend Yield	0.029	0.106	0.000	0.000	0.032
DD	0.551	0.497	0.000	1.000	1.000
D/P Ratio	1.860	8.327	0.000	0.000	0.544
ln(Age)	2.786	0.841	2.197	2.833	3.401

Panel C: Cross-correlations of Diversity Measures

	PMINO	PMINOMM	PMINORF
PMINOMM	0.85		
PMINORF	0.913	0.624	
PMINOBD	0.422	0.412	0.366

Table 2: Operational Performance Regression Estimates

This table presents coefficient estimates from the firm performance regressions on the non-executive employee diversity, *PMINO*. The dependent variables are future ROA and profitability growth. ROA is measured as the net income scaled by assets in the previous year. Profitability growth is measured as the percentage change of gross profitability ratio, where gross profitability is measured as the difference between revenues and cost of goods sold, scaled by assets in the previous year. *PMINO* is the average monthly percentage of minority employees over the previous twelve months. The employees are subsampled into MM (mid-managers) and RF (rank-and-file). *PMINOBD*, ln(ME), BM, Cash, Dividend Yield, Zero dividends indicator (DD), D/P Ratio and ln(Age) are included as control variables. Appendix Table A.1 presents the definitions of all variables. All regressions include firm and year fixed effects. Robust t-statistics are in parentheses and are based on standard errors clustered at the firm level. *, **, and *** denote significance at 10%, 5%, and 1% level, respectively.

	ROA_{t+1}		$\text{Profit Growth}_{t+1}$	
	(1)	(2)	(3)	(4)
PMINO	0.0275		0.1851	
	[0.85]		[1.66]*	
PMINOMM		0.0197		0.1442
		[0.72]		[1.67]*
PMINORF		0.0104		0.0725
		[0.45]		[0.88]
PMINOBD	-0.0036	-0.0041	-0.0172	-0.0218
	[-0.14]	[-0.16]	[-0.24]	[-0.31]
ln(ME)	0.0279	0.0279	-0.0875	-0.0876
	[12.28]***	[12.30]***	[-12.97]***	[-12.99]***
BM	-0.0148	-0.0148	-0.0581	-0.0581
	[-5.59]***	[-5.59]***	[-4.58]***	[-4.59]***
Leverage	-0.0616	-0.0616	-0.0943	-0.0940
	[-4.49]***	[-4.49]***	[-2.11]**	[-2.10]**
Cash	0.0070	0.0070	-0.1759	-0.1758
	[1.25]	[1.25]	[-13.30]***	[-13.30]***
Dividend Yield	0.0014	0.0015	0.0469	0.0469
	[0.11]	[0.11]	[0.94]	[0.94]
DD	0.0106	0.0106	0.0213	0.0211
	[2.64]***	[2.63]***	[1.53]	[1.51]
D/P Ratio	-0.0003	-0.0003	-0.0003	-0.0003
	[-1.89]*	[-1.90]*	[-0.34]	[-0.36]
ln(Age)	0.0234	0.0234	0.0152	0.0151
	[5.01]***	[5.01]***	[1.01]	[1.01]
N	67,185	67,185	66,069	66,069
R^2	0.633	0.633	0.111	0.111
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

Table 3: Firm Innovation Regression Estimates

This table presents coefficient estimates from the firm innovation inputs and outputs regressions on the non-executive employee diversity, *PMINO*. The dependent variables are the firm's innovation expenses and outputs in the next year. Innovation expenses are measured by R&D expenses scaled by the total assets in the previous year. Innovation outputs are measured as the number of patents, value per patent ($b), and the number of citations in the next year. *PMINO* is the average monthly percentage of minority employees over the previous twelve months. The employees are subsampled into MM (mid-managers) and RF (rank-and-file). *PMINOBD*, ln(ME), BM, Cash, Dividend Yield, Zero dividends indicator (DD), D/P Ratio and ln(Age) are included as control variables. Appendix Table A.1 presents the definitions of all variables. All regressions include firm and year fixed effects. Robust t-statistics are in parentheses and are based on standard errors clustered at the firm level. *, **, and *** denote significance at 10%, 5%, and 1% level, respectively.

	R&D Expenses$_{t+1}$		ln(1 + N Patents)$_{t+1}$		Value per Patent ($b) $_{t+1}$		ln(1 + N Citations)$_{t+1}$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PMINO	-0.0386		0.4875		0.2974		0.4128	
	[-1.23]		[2.83]***		[4.50]***		[1.40]	
PMINOMM		-0.0500		0.3113		0.1710		-0.0391
		[-2.03]**		[2.27]**		[3.86]***		[-0.18]
PMINORF		-0.0000		0.2077		0.1118		0.2352
		[-0.00]		[1.86]*		[3.44]***		[1.26]
PMINOBD	-0.0316	-0.0295	0.3151	0.3059	0.0804	0.0784	-0.5037	-0.4793
	[-1.45]	[-1.38]	[2.19]**	[2.13]**	[1.37]	[1.34]	[-1.90]*	[-1.80]*
ln(ME)	-0.0115	-0.0115	0.0985	0.0986	0.0562	0.0564	0.2212	0.2218
	[-8.81]***	[-8.80]***	[9.45]***	[9.47]***	[7.63]***	[7.65]***	[10.19]***	[10.22]***
BM	-0.0159	-0.0158	0.0551	0.0549	0.0255	0.0253	0.0892	0.0896
	[-10.88]***	[-10.89]***	[3.48]***	[3.47]***	[4.50]***	[4.48]***	[3.03]***	[3.05]***
Leverage	-0.0163	-0.0164	-0.0016	-0.0014	0.0081	0.0079	-0.2386	-0.2397
	[-1.70]*	[-1.71]*	[-0.03]	[-0.03]	[0.32]	[0.31]	[-2.57]**	[-2.58]**
Cash	-0.0193	-0.0193	-0.0170	-0.0173	-0.0140	-0.0143	0.0191	0.0186
	[-6.33]***	[-6.36]***	[-2.16]**	[-2.19]**	[-4.02]***	[-4.06]***	[1.19]	[1.16]
Dividend Yield	0.0053	0.0052	0.0112	0.0113	0.1228	0.1232	-0.1148	-0.1156
	[0.60]	[0.59]	[0.23]	[0.23]	[1.69]*	[1.69]*	[-0.94]	[-0.95]
DD	-0.0043	-0.0043	0.0242	0.0234	0.0225	0.0224	0.0762	0.0753
	[-2.06]**	[-2.03]**	[0.96]	[0.93]	[1.53]	[1.51]	[1.55]	[1.53]
D/P Ratio	-0.0002	-0.0002	0.0046	0.0045	0.0051	0.0051	-0.0020	-0.0019
	[-3.05]***	[-2.98]***	[5.85]***	[5.83]***	[2.33]**	[2.33]**	[-0.68]	[-0.65]
ln(Age)	-0.0214	-0.0214	0.0266	0.0259	-0.0179	-0.0182	0.3770	0.3781
	[-7.08]***	[-7.09]***	[0.75]	[0.73]	[-1.05]	[-1.07]	[4.98]***	[4.99]***
N	67,234	67,234	38,619	38,619	26,183	26,183	38,619	38,619
R^2	0.557	0.558	0.723	0.723	0.698	0.698	0.730	0.730
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table 4: Firm Valuation Regression Estimates

This table presents coefficient estimates from the firm valuation regressions on the non-executive employee diversity, *PMINO*. The dependent variables are Tobin's *q* (Q) in the concurrent and the next two years. Q is measured as the ratio of the market value of a firm's equity and liabilities to the book value of equity and liabilities. *PMINO* is the average monthly percentage of minority employees over the previous twelve months. The employees are subsampled into *MM* (mid-managers) and *RF* (rank-and-file). *PMINOBD*, ln(ME), BM, Cash, Dividend Yield, Zero dividends indicator (DD), D/P Ratio and ln(Age) are included as control variables. Appendix Table A.1 presents the definitions of all variables. All regressions include firm and year fixed effects. Robust *t*-statistics are in parentheses and are based on standard errors clustered at the firm level. *, **, and *** denote significance at 10%, 5%, and 1% level, respectively.

	Q_t		Q_{t+1}		Q_{t+2}	
	(1)	(2)	(3)	(4)	(5)	(6)
PMINO	-0.8727		-0.4813		-0.1927	
	[-3.28]***		[-1.82]*		[-0.69]	
PMINOMM		-0.6160		-0.3950		-0.3360
		[-3.31]***		[-2.00]**		[-1.54]
PMINORF		-0.2197		0.0226		0.1569
		[-1.25]		[0.13]		[0.84]
PMINOBD	-0.0523	-0.0423	-0.0288	-0.0247	0.0070	0.0186
	[-0.25]	[-0.20]	[-0.14]	[-0.12]	[0.03]	[0.09]
ln(ME)	0.6198	0.6198	0.1599	0.1597	-0.0198	-0.0198
	[31.80]***	[31.82]***	[9.39]***	[9.40]***	[-1.16]	[-1.16]
BM	-0.3840	-0.3841	-0.3560	-0.3562	-0.2759	-0.2760
	[-16.55]***	[-16.55]***	[-17.41]***	[-17.42]***	[-15.42]***	[-15.43]***
Leverage	0.2526	0.2515	0.1116	0.1103	0.1470	0.1464
	[2.38]**	[2.37]**	[1.10]	[1.09]	[1.41]	[1.40]
Cash	0.3234	0.3235	0.0048	0.0049	-0.0110	-0.0110
	[6.21]***	[6.21]***	[0.23]	[0.23]	[-0.58]	[-0.58]
Dividend Yield	0.5402	0.5394	0.6185	0.6179	0.5899	0.5895
	[5.01]***	[4.99]***	[5.85]***	[5.84]***	[5.50]***	[5.50]***
DD	0.0288	0.0300	-0.0651	-0.0643	-0.0715	-0.0712
	[0.81]	[0.85]	[-1.87]*	[-1.85]*	[-2.09]**	[-2.08]**
D/P Ratio	-0.0120	-0.0120	-0.0130	-0.0130	-0.0135	-0.0135
	[-4.93]***	[-4.92]***	[-5.05]***	[-5.06]***	[-5.48]***	[-5.48]***
ln(Age)	-0.5429	-0.5433	-0.4443	-0.4449	-0.3677	-0.3680
	[-13.02]***	[-13.04]***	[-11.18]***	[-11.20]***	[-8.90]***	[-8.91]***
N	68,942	68,942	67,167	67,167	63,157	63,157
R^2	0.593	0.593	0.545	0.546	0.547	0.547
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes

Table 5: Performance of Diversity-Based Trading Strategies

This table presents coefficient estimates from the calendar-time portfolio return analysis. Each month, firms are sorted into quintiles based on the non-executive employee diversity, *PMINO*, which is the average monthly percentage of minority employees over the previous three months. The long (short) portfolio consists of firms with the highest (lowest) *PMINO*. The employees are subsampled into *MM* (mid-managers) and *RF* (rank-and-file). The long-short portfolios are rebalanced monthly, and returns are computed using value-weighted specifications. Abnormal returns are assessed using the Fama and French (2015) five-factor and the Carhart (1997) model. Appendix Table A.1 presents the definitions of all variables. Monthly returns and alphas are reported in percentages for the long-short portfolio and each individual quintiles, and *t*-statistics are in parentheses. *, **, and *** denote significance at 10%, 5%, and 1% level, respectively.

	PMINO		PMINOMM		PMINORF	
	(1)	(2)	(3)	(4)	(5)	(6)
α (%)	0.637	0.387	0.528	0.295	0.65	0.452
	[3.66]***	[2.03]**	[3.26]***	[2.09]**	[3.75]***	[2.15]**
MP	0.214	0.241	0.189	0.206	0.256	0.266
	[4.15]***	[5.15]***	[4.31]***	[4.80]***	[5.34]***	[5.97]***
SMB	-0.52	-0.52	-0.571	-0.477	-0.556	-0.555
	[-11.58]***	[-6.33]***	[-10.12]***	[-5.63]***	[-10.48]***	[-7.08]***
HML	-0.222	-0.27	-0.286	-0.35	-0.171	-0.266
	[-2.00]**	[-1.66]*	[-3.47]***	[-2.56]**	[-1.42]	[-1.48]
RMW	-0.447	-0.199	-0.324	-0.1	-0.482	-0.304
	[-6.55]***	[-2.34]**	[-5.03]***	[-1.31]	[-6.84]***	[-2.71]***
CMA	-0.314	-0.414	-0.149	-0.288	-0.312	-0.379
	[-2.11]**	[-1.48]	[-1.08]	[-1.28]	[-2.12]**	[-1.29]
UMD	-0.029	0.022	-0.062	0.029	0.006	0.042
	[-0.68]	[0.27]	[-1.35]	[0.38]	[0.14]	[0.47]
R-squared	0.482	0.458	0.457	0.533	0.488	0.437
Raw long return (%)	1.224	1.599	1.219	1.554	1.25	1.645
Raw short return (%)	0.762	0.905	0.836	0.946	0.739	0.876
H = 5 (α%)	0.343	0.169	0.299	0.131	0.348	0.201
	[3.39]***	[1.38]	[3.13]***	[1.49]	[3.27]***	[1.37]
4 (α%)	0.048	-0.051	0.006	-0.048	0.084	-0.043
	[0.86]	[-0.91]	[0.11]	[-0.71]	[1.36]	[-0.51]
3 (α%)	-0.14	-0.021	-0.097	-0.003	-0.107	-0.035
	[-2.02]**	[-0.27]	[-1.39]	[-0.05]	[-1.55]	[-0.51]
2 (α%)	-0.116	-0.078	-0.161	-0.101	-0.144	-0.081
	[-1.57]	[-0.99]	[-2.12]**	[-1.29]	[-1.98]**	[-1.08]
L = 1 (α%)	-0.294	-0.218	-0.229	-0.164	-0.303	-0.251
	[-2.78]***	[-2.10]**	[-2.22]**	[-1.95]*	[-2.92]***	[-2.37]**
Starting Year	1990	2010	1990	2010	1990	2010
Months	384	144	384	144	384	144

Table 6: Fama-MacBeth Cross-sectional Regression Estimates

This table presents coefficient estimates of Fama and MacBeth (1973) cross-sectional regressions of monthly returns on the non-executive employee diversity. *PMINO* is the average monthly percentage of minority employees over the previous three months. The employees are subsampled into *MM* (mid-managers) and *RF* (rank-and-file). *PMINOBD*, *ME* (firm size), *B/M* (book-to-market), and $Ret_{-x,-y}$ (cumulative stock return from month *t-x* to month *t-y*, inclusive) are included as control variables. Appendix Table A.1 presents the definitions of all variables. *t*-statistics are in parentheses and are based on Newey and West (1987) standard errors corrected for autocorrelation using 6 lags. *, **, and *** denote significance at 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
PMINO	0.7113		0.7078	
	[1.94]*		[2.36]**	
PMINOMM		0.5548		0.6469
		[2.02]**		[2.57]**
PMINORF		0.1995		0.0874
		[0.75]		[0.39]
PMINOBD	0.1470	0.1305	0.1815	0.1787
	[0.45]	[0.41]	[0.61]	[0.62]
ln(ME)			-0.0147	-0.0222
			[-0.32]	[-0.47]
ln(BM)			0.1435	0.1220
			[1.54]	[1.31]
Ret t-1, t-1			-0.0304	-0.0303
			[-6.86]***	[-6.80]***
Ret t-12, t-2			0.0014	0.0013
			[0.53]	[0.51]
Ret t-36, t-13			-0.0018	-0.0019
			[-2.26]**	[-2.38]**
N	743,708	731,816	720,529	709,124
R^2	0.004	0.006	0.046	0.048
Months	384	384	384	384

Table 7: Earnings Surprises Regression Estimates

This table presents coefficient estimates of Fama and MacBeth (1973) cross-sectional regressions of quarterly earnings surprises on the non-executive employee diversity, *PMINO*. Standardized unexpected earnings ($SUE_{i,t}$) is the actual earnings per share minus the consensus of analyst' forecasts scaled by the standard deviation. *PMINO* is the average monthly percentage of minority employees over the previous three months. The employees are subsampled into *MM* (mid-managers) and *RF* (rank-and-file). Following So (2013), E+, NEGE, ACC−, ACC+, AG, DD, DIV, PRC and BM are included as controls. *PMINOBD* is included as an additional control. Appendix Table A.1 presents the definitions of all variables. *t*-statistics are in parentheses and are based on Newey and West (1987) standard errors corrected for autocorrelation using 6 lags. *, **, and *** denote significance at 10%, 5%, and 1% level, respectively.

	(1)	(2)	(3)	(4)
PMINO	1.2956		1.1856	
	[7.15]***		[6.07]***	
PMINOMM		1.1477		1.5016
		[3.95]***		[6.33]***
PMINORF		0.2213		-0.0845
		[0.99]		[-0.36]
PMINOBD	0.4613	0.4351	0.5815	0.5264
	[1.54]	[1.60]	[2.02]**	[1.86]*
E+			-0.0652	-0.0641
			[-3.75]***	[-3.65]***
NEGE			-0.3335	-0.3432
			[-3.69]***	[-3.79]***
ACC+			-0.0005	-0.0006
			[-1.20]	[-1.25]
ACC-			-0.0002	-0.0002
			[-0.81]	[-0.77]
AG			-0.1248	-0.1145
			[-3.01]***	[-2.63]***
DD			0.1739	0.1730
			[3.62]***	[3.57]***
DIV			0.0899	0.0949
			[1.81]*	[1.83]*
PRC			0.0030	0.0028
			[1.89]*	[1.74]*
BM			-0.3002	-0.3036
			[-3.83]***	[-3.83]***
N	327,392	326,621	288,176	287,664
R^2	0.009	0.011	0.036	0.037
Months	384	384	384	384

Appendix A

Table A.1: Variable Definitions

Variable	Definitions	Source
Panel A: Employee Diversity Measures		
PMINO	The average monthly percentage of minority non-executive employees over the previous three or twelve months.	Revelio Labs
PMINOMM	The average monthly percentage of minority mid-tier managers over the previous three or twelve months.	Revelio Labs
PMINORF	The average monthly percentage of minority rank-and-file employees over the previous three or twelve months.	Revelio Labs
PMINOBD	The percentage of minority board members in the fiscal year.	BoardEx
Panel B: Firm Characteristics		
Tobin's *q*	The market value of the firm's equity and liabilities scaled by the book value of the firm's equity and liabilities.	Compustat
ROA	The net income scaled by total assets in the previous year.	Compustat
Profit Growth	Profitability growth is measured as the percentage change of gross profitability ratio, where gross profitability is measured as the difference between revenues and cost of goods sold, scaled by total assets in the previous year.	Compustat
R&D Expenses	R&D expenses scaled by the total assets in the previous year.	Compustat
ln(1+N Patents)	The natural logarithm of one plus the number of patents.	Kogan et al. (2017)
Value per Patent ($b)	The total value of all patents scaled by the number of patents.	Kogan et al. (2017)
ln(1+N Citations)	The natural logarithm of one plus the number of citations.	Kogan et al. (2017)
ln(ME)	The natural logarithm of market value of equity.	Compustat
BM	The book to market ratio as the book value of equity divided by the market value of equity. The book value of equity depends on availability in the following order: the shareholders' equity, or commons/ordinary equity. If both items are missing, the shareholders' equity is total assets minus total liabilities and minority interests.	Compustat, CRSP
Leverage	The sum of short-term debt and long-term debt, divided by total assets.	Compustat
Cash	The cash and short-term investment scaled by total assets in the previous year.	Compustat
Dividend Yield	The sum of the past 12-month dividend cash amount, divided by the book value of equity at the end of the fiscal year.	Compustat, CRSP
DD	A dummy takes a value of one when the past 12-month dividends is zero, and zero otherwise.	CRSP

D/P Ratio	The dividend-price (D/P) ratio, where D is the sum of the past 12-month dividends, and P is the end-of-month stock price.	CRSP
ln(Age)	The natural logarithm of the firm age, where the age is determined as the number of years since its IPO date, the first date in Compustat, or the first date in CRSP, whichever occurred earlier.	Compustat, CRSP
E+	Earnings per share when earnings are positive and zero otherwise.	Compustat
NEGE	A dummy takes a value of one when earning is negative, and zero otherwise.	Compustat
ACC+, ACC-	Negative and positive accruals per share, where accruals equal the change in current assets plus the change in debt in current liabilities minus the change in cash and short-term investments and minus the change in current liabilities.	Compustat
AG	The percent change in total assets.	Compustat
DIV	Dividends per share.	Compustat, CRSP
PRC	The share price at the end of the fiscal year.	Compustat

Table A.2: Valuation and Performance on Gender Diversity

This table presents coefficient estimates from the firm valuation and performance regressions on the gender diversity among non-executive employees, *PFEM*. The dependent variables are Tobin's *q* (Q) in the concurrent and the next two years. Q is measured as the ratio of the market value of a firm's equity and liabilities to the book value of equity and liabilities. ROA is measured as the net income scaled by assets in the previous year. Profitability growth is measured as the percentage change of gross profitability ratio. ln(1+N Patents) is the number of patents. *PFEM* is the average of the monthly percentage of female employees over the previous twelve months. The employees are subsampled into *MM* (mid-managers) and *RF* (rank-and-file). *PFEMBD*, ln(ME), BM, Cash, Dividend Yield, Zero dividends indicator (DD), D/P Ratio and ln(Age) are included as control variables. Appendix Table A.1 presents the definitions of all variables. All regressions include firm and year fixed effects. Robust *t*-statistics are in parentheses and are based on standard errors clustered at the firm level. *, **, and *** denote significance at 10%, 5%, and 1% level, respectively.

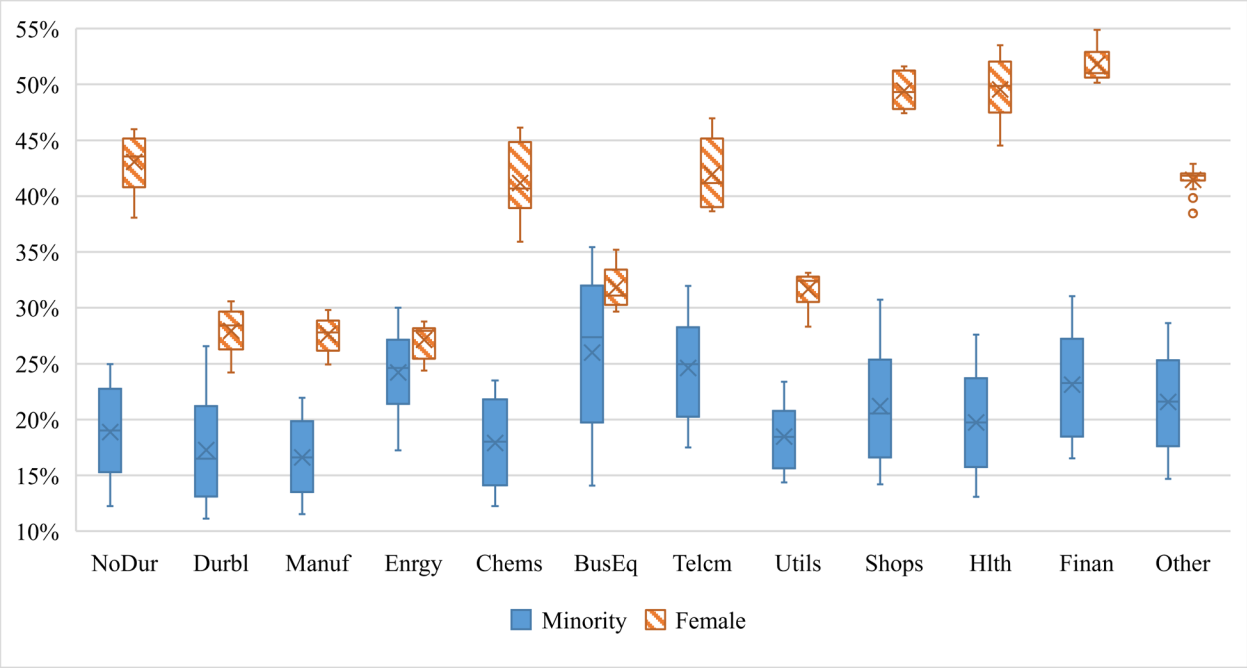
	ROA_{t+1}		$\text{Profit Growth}_{t+1}$		$\ln(1+\text{N Patents})_{t+1}$		Q_t	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PFEM	0.0266		-0.0808		-0.2489		0.3038	
	[0.85]		[-1.00]		[-1.59]		[1.45]	
PFEMMM		0.0148		-0.0867		-0.0736		0.2710
		[0.72]		[-1.48]		[-0.58]		[2.03]**
PFEMRF		0.0128		0.0535		-0.1900		0.0059
		[0.65]		[0.83]		[-2.02]**		[0.04]
PFEMBD	-0.0038	-0.0035	0.0191	0.0171	-0.1357	-0.1325	0.0434	0.0521
	[-0.19]	[-0.17]	[0.32]	[0.28]	[-1.01]	[-0.99]	[0.27]	[0.32]
N	67,185	67,185	66,069	66,069	38,619	38,619	68,942	68,942
R^2	0.633	0.633	0.111	0.111	0.722	0.722	0.593	0.593
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Table A.3: Return Persistence Regression Estimates

This table presents coefficient estimates of Fama and MacBeth (1973) cross-sectional regressions of cumulative market-adjusted returns on the non-executive employee diversity spanning across the subsequent 8 quarters. Each column corresponds to the cumulative market-adjusted returns in each subsequent quarter. *PMINO* is the average monthly percentage of minority employees over the previous three months. *PMINOBD*, *ME* (firm size), *B/M* (book-to-market), and $Ret_{-x,-y}$ (cumulative stock return from month *t-x* to month *t-y*, inclusive) are included as control variables. Appendix Table A.1 presents the definitions of all variables. *t*-statistics are in parentheses and are based on Newey and West (1987) standard errors corrected for autocorrelation using 12 lags. *, **, and *** denote significance at 10%, 5%, and 1% level, respectively.

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
PMINO	2.2391	2.385	2.4999	2.5713	2.2857	1.8741	1.7516	1.472
	[2.39]**	[2.43]**	[2.35]**	[2.22]**	[1.82]*	[1.53]	[1.52]	[1.42]
PMINOBD	0.9617	1.0875	1.1948	1.4474	1.3476	1.2063	1.0543	0.7855
	[0.94]	[1.04]	[1.26]	[1.56]	[1.44]	[1.25]	[1.16]	[0.86]
ln(ME)	-0.143	-0.1975	-0.2112	-0.2104	-0.1803	-0.1665	-0.1367	-0.1039
	[-0.99]	[-1.34]	[-1.43]	[-1.36]	[-1.21]	[-1.13]	[-0.94]	[-0.74]
ln(BM)	0.3456	0.3283	0.2609	0.1859	0.2607	0.2718	0.2815	0.2975
	[1.14]	[1.13]	[0.84]	[0.54]	[0.77]	[0.83]	[0.89]	[1.00]
Ret t-1, t-1	-0.0187	0.0071	0.0158	0.0037	-0.0219	-0.0251	-0.0091	0.0065
	[-2.09]**	[0.77]	[1.82]*	[0.41]	[-2.79]***	[-2.68]***	[-1.36]	[1.06]
Ret t-12, t-2	0.0009	-0.0048	-0.0099	-0.0125	-0.0112	-0.0099	-0.0101	-0.0111
	[0.12]	[-0.69]	[-1.90]*	[-2.94]***	[-2.39]**	[-2.68]***	[-2.96]***	[-3.24]***
Ret t-36, t-13	-0.0058	-0.004	-0.0022	-0.0018	-0.0004	0.0017	0.0011	-0.0002
	[-2.15]**	[-1.66]*	[-0.96]	[-0.79]	[-0.17]	[0.86]	[0.63]	[-0.16]
N	720,529	720,067	718,712	716,131	712,335	700,898	689,111	677,568
R^2	0.051	0.047	0.045	0.043	0.041	0.039	0.038	0.037
Months	384	384	384	384	384	381	378	375

Panel A: Distribution among Non-executive Employees



Panel B: Distribution among Mid-tier Managers

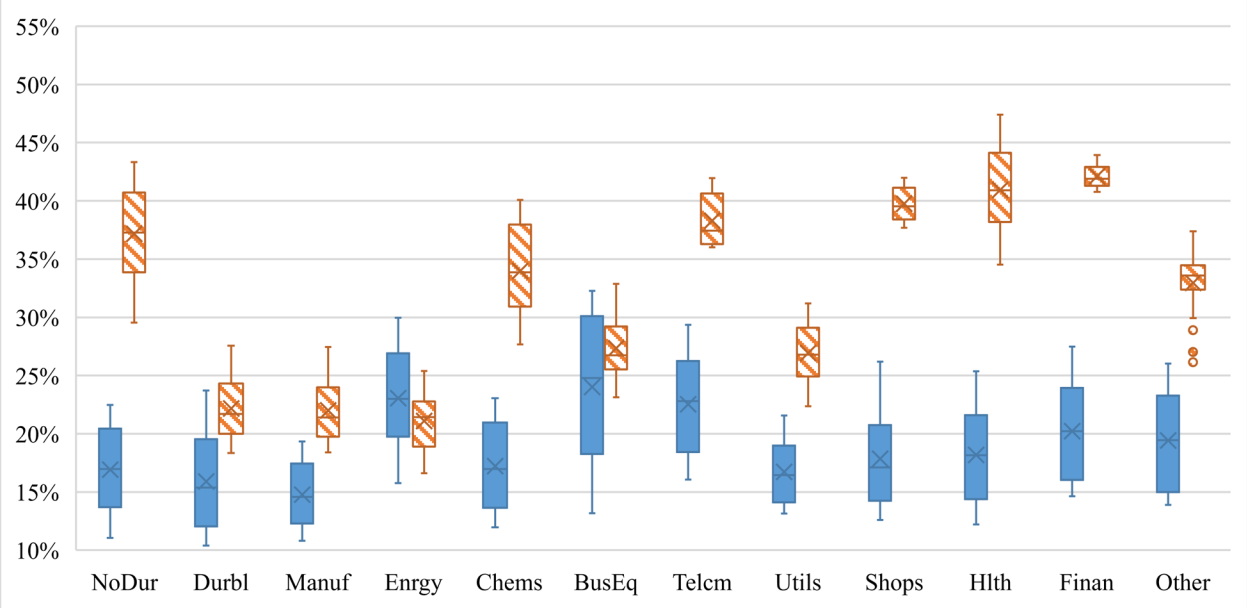
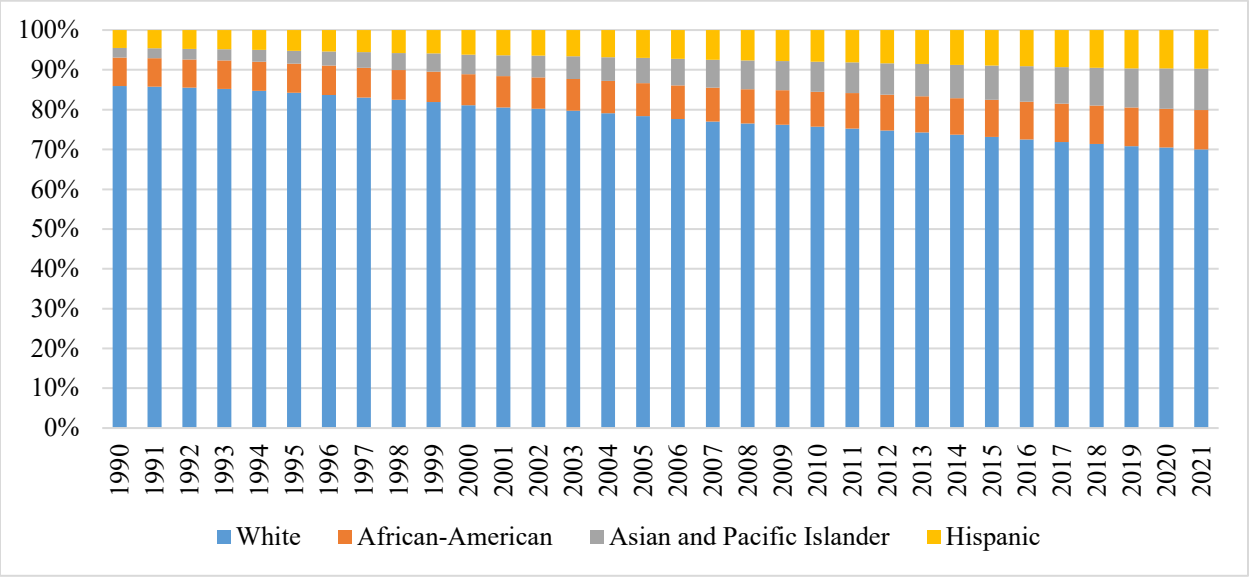


Figure A.1: The figure illustrates the distribution of the average percentage of minorities (solid blue) and the percentage of females (striped orange) across the Fama-French 12 industry categories. Panel A displays the distribution among all non-executive employees, while Panel B focuses specifically on mid-tier managers.

Panel A: Distribution among Non-executive Employees



Panel B: Distribution among Mid-tier Managers

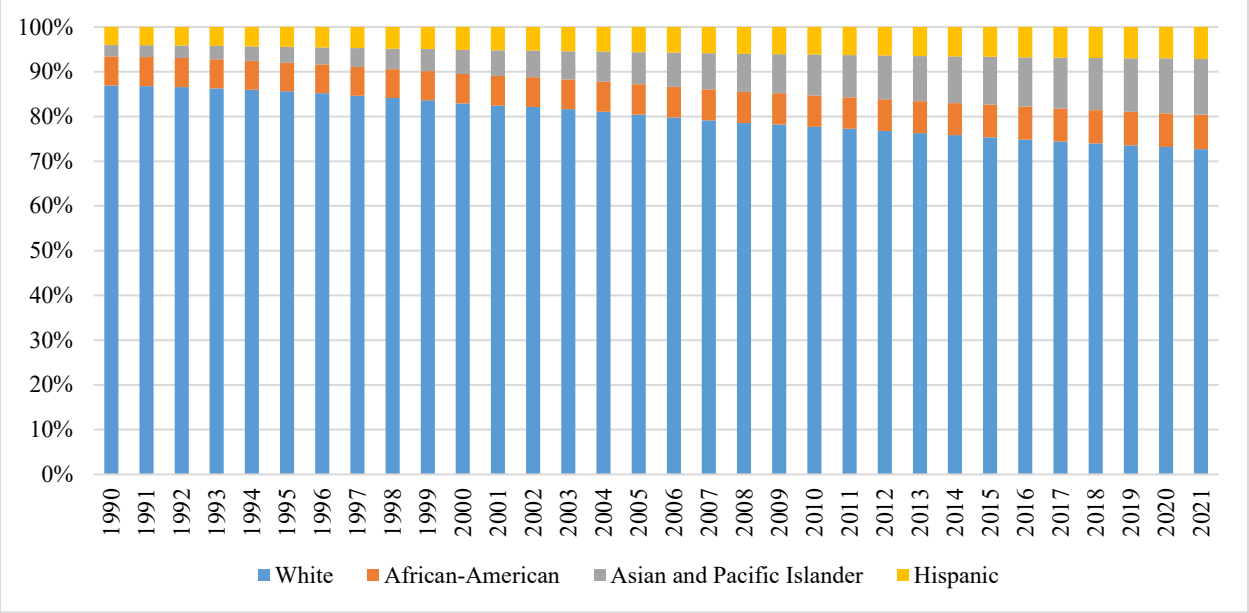


Figure A.2: The figure illustrates the distribution of the percentage of each race/ethnicity during my sample period. Panel A displays the distribution among all non-executive employees, while Panel B focuses specifically on mid-tier managers.