

# An Empirical Analysis of Diversity and Firm Performance

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## Abstract

Diversity is one of the core values of modern society, with far-reaching philosophical, political, and economic implications. While prior academic research offers mixed evidence on the link between diversity and future firm value, many studies suffer from limited scope and outdated data. This research addresses these gaps through a comprehensive empirical analysis of more than 8,000 publicly listed companies across over 40 countries, spanning approximately two decades through Q1/2025. Leveraging 14 distinct diversity indicators and 19 performance metrics, the findings reveal a complex and dynamic relationship: in many cases, greater diversity is associated with improved future firm performance, which in turn fosters greater investment in diversity—suggesting a circular, bidirectional effect. The evidence also points out potential nonlinear patterns, with some forms of diversity exhibiting convex or concave relationships with firm performance. These results highlight the importance of setting realistic expectations: while diversity is not a guaranteed driver of financial returns, it is also not detrimental. Diversity may confer broader societal benefits, such as enhanced trust, innovation, and social cohesion. Policy efforts are likely to be more effective when focused on promoting diversity through economic incentives, rather than relying solely on regulatory mandates, which may entail unintended social and administrative costs.

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# 1 Introduction

Diversity (along with equality and inclusion, aka DEI) has gained broad global acceptance in recent years. It is regarded as a core value underpinning the UN SDG (Sustainable Development Goals). Nonetheless, several diversity-related policy initiatives remain controversial. For example, gender quotas for corporate boards—adopted in many countries<sup>1</sup>—have drawn criticism in some academic literature. Yu and Madison (2021) found the implementation of such quotas tended to negatively impact firm performance. Lipton (2021) argued that quotas simply politicize the selection of board without necessarily improving corporate governance or performance. Calder and Boden (2023) also suggested that such quotas are based on stereotypes about women and their leadership styles. In the US, President Trump’s winning of the White House was partly fueled by rhetoric opposing “woke” culture, reflecting broader societal resistance to how diversity has been framed and implemented. Similar populist movements have emerged in other countries, including France (Gotev (2024)), Hungary (Thorpe and Bennett (2025)) and Australia (Fildes (2025)).

As shown in Figure 1a, ethnicity diversity at the board and executive level among US public companies has improved considerably in the past 30 years.<sup>2</sup> Female representation at the top has also improved significantly. On the contrary, average sentiment toward diversity (computed using annual reports and quarterly earnings call transcripts) peaked around 2022-2023, but has since declined (see Figure 1b).<sup>3</sup> The murder of George Floyd in 2020 and the subsequent Black Lives Matter (BLM) movement prompted many companies to formalize DEI policies. However, political backlash—particularly President Trump’s opposition to DEI—has led several firms to reduce or reframe diversity-related language in corporate disclosures (see Xiao, Rogers, and Murray (2025) and Murray and Bohannon (2025)).

Diversity is a broad and sometimes contested topic, particularly with respect to its relationship to firm value. This research focuses on the empirical link between diversity and corporate performance, aiming to move beyond theoretical and philosophical debates. I will begin with an academic literature review, followed by a detailed discussion of the data,

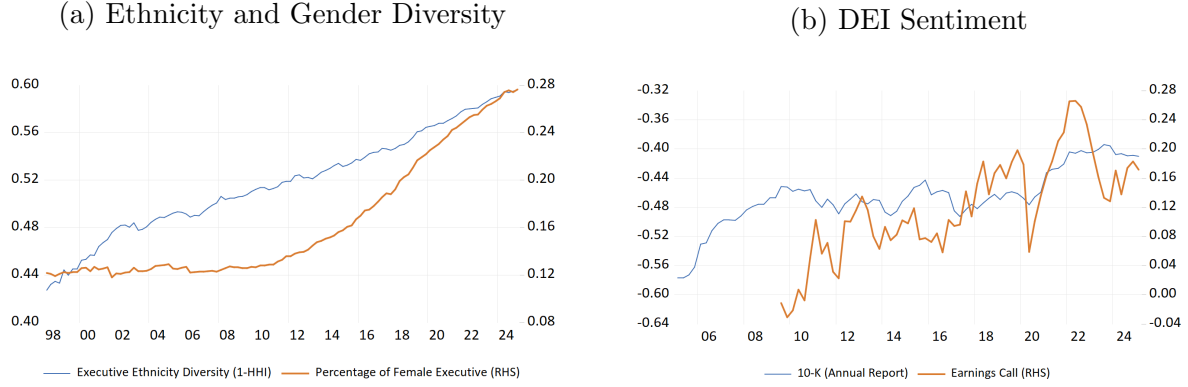
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1. Norway introduced a 40% gender quota on corporate boards in 2005, and other countries have since followed, see European Commission’s New EU Rules to Improve Gender Balance in Corporate Boards Enter into Application.

2. I collect firm-level board and executive meta data for all public companies in the MSCI USA index (around 500 firms) since 1997. Ethnicity diversity is measured as  $1 - HHI$  at the board and key executive level, where  $HHI$  refers to Herfindahl-Hirschman Index. The  $HHI$  is a widely used measure of concentration, ranging from 0.0 to 1.0, with higher values indicating greater homogeneity. See Herfindahl (1950) and Hirschman (1980) for historical background.

3. First, I apply the bag-of-words (BOW) approach to identify diversity-related paragraphs in each annual report (Form 10-K for US companies) and quarterly earnings call. Next, I compute the sentiment of each diversity-related paragraph, where sentiment is based on the Loughran-McDonald dictionary (see Loughran and McDonald (2011)).

Figure 1: Trend of Workplace Diversity in the US



measures of diversity and firm performance, as well as econometric techniques. Then, I will address some counter-arguments and limitations before concluding.

The analysis draws on a comprehensive, up-to-date dataset covering over 8,000 publicly listed firms across more than 40 countries over a 20-year period.<sup>4</sup> Specifically, the study investigates the following research questions:

- Is there a statistically significant relationship between diversity and firm value?
- More importantly, is the relationship causal? Does greater diversity enhance future performance, or do high-performing firms tend to adopt more diverse practices?
- Could the relationship be circular, i.e., performance drives diversity, which in turn reinforces performance?
- Does the relationship vary by types of diversity, industry context, or geography/culture setting?

This study also contributes methodologically by applying recent advances in machine learning and causal econometrics. For instance, gender and ethnicity classifications are inferred using the algorithms introduced by Blevins and Mullen (2015) and Treeratpituk and Giles (2012), respectively. To measure firm-level diversity intensity and sentiment, I apply natural language processing techniques—specifically, the bag-of-words (BOW) model and the sentiment framework of Loughran and McDonald (2011)—to a large collection of multilingual corporate annual reports and call transcripts. Moreover, to value each company’s patents and citations, I apply the graph neural networks (GNNs) and network centrality algorithms.

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4. Details on data description will be covered in the empirical analysis section.

## 2 Literature Review

The advocates argue that diversity spurs innovation and improves decision-making, thereby boosting financial performance. Consultants and business leaders frequently claim that greater racial and ethnic diversity yields economic benefits. For instance, McKinsey & Company has published a series of influential reports (2015, 2018, 2020, 2023) documenting a strong, statistically significant relationship between executive diversity and adjusted earnings across a sample of anonymized large public companies. However, academic studies generally fail to replicate these findings. Bermiss, Green, and Hand (2024) found no reliable evidence that race/ethnicity diversity predicts cross-sectional variations in any of the measures of firm-level financial performance.<sup>5</sup>

Bermiss, Green, and Hand (2024) further observed that companies with stronger financial performance are more likely to increase their executive diversity, whereas diversity did not predict future performance after controlling for past performance. The authors argue that financially successful firms have greater capacity to diversify—both in resources and due to increased scrutiny from stakeholders and activist investors. Therefore, it is plausible that these dynamics create a self-reinforcing loop—successful firms achieve a high degree of diversity, which further reinforces their commitment to diversity, and vice versa for struggling companies.

Overall, academic evidence on the diversity-performance link remains mixed. Due to space limitations, I focus on three prominent meta studies in this section. Kapil and Kaur (2025) reviewed literature published in peer-reviewed journals between 2001 and 2023 and found mixed effects of female board representation on firm performance. While the overall evidence supports a business case for greater gender diversity in leadership, the effect appears stronger in developed economies than in emerging markets. Post and Byron (2015) analyzed 140 studies covering over 90,000 firms worldwide, concluded that the link between women on boards and firm outcomes is weak or non-existent. Similarly, Pletzer et al. (2015) found no reliable overall impact of board gender diversity on financial performance.

These inconsistencies may stem from heterogeneity across firms, industries, or national contexts. I propose that the relationship between diversity and firm performance could be nonlinear. As the adage goes, “too much of a good thing can be harmful.” Firms with balanced representation in leadership may outperform those that are either homogeneously composed or aggressively diversified in ways that compromise cohesion or effectiveness. Yu and Madison (2021) also found such a nonlinear pattern. Moreover, the relationship could be bidirectional, in that diversity and firm value enhance each other circularly. This could

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5. The authors gather diversity data from the leadership pages of S&P 500 companies’ websites.

be why previous studies failed to detect a direct linkage.

### 3 Research Methodology

This section begins by defining the key constructs of diversity and firm performance. It then outlines the scope of the analysis, including the research universe under investigation. Finally, it presents the empirical methodologies employed to identify and isolate the potentially intricate relationship between diversity and firm performance.

#### 3.1 Defining Diversity and Firm Performance

Prior to conducting empirical analysis, it is essential to define both diversity and firm performance. Diversity encompasses a range of dimensions—including gender, race/ethnicity, and age—both at the leadership and broad corporate levels. All three major meta studies Kapil and Kaur (2025), Post and Byron (2015), and Pletzer et al. (2015)) found that the scope of existing literature is somewhat limited—constrained in both scope (most studies focused on US or European firms) and timeliness (most studies use data prior to the mid-2010s). Moreover, while gender diversity has received substantial attention, other dimensions of diversity remain underexplored. This study seeks to address these gaps.

##### 3.1.1 Measuring Diversity

This research adopts a broader set of diversity measures in 14 different indicators. As illustrated in Figure 2, these metrics are only modestly correlated, suggesting they capture different aspects of diversity. Almost all diversity measures are positively correlated—firms that invest in one area of diversity often demonstrate strength in others.

**Gender, Ethnicity, and Age Diversity at the leadership level.** To measure gender diversity, I compute the percentage of female directors for each public company at each quarter end. The board and key executive meta data is sourced from S&P Capital IQ. Gender is inferred from executives’ first names and dates of birth, following Blevins and Mullen (2015), using the Baby Names dataset from the Social Security Administration. While some ambiguity exists at the individual level, aggregate estimates are sufficiently accurate for large scale aggregate analysis. Ethnicity diversity is proxied by the Herfindahl-Hirschman index (HHI),<sup>6</sup> calculated from the proportional representation of ethnicities at the board level for each firm and quarter. Similar to gender, there is no ethnicity categorization in the S&P

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6. The *HHI* is a common measure of concentration, ranging from 0.0 and 1.0, with higher values indicating less diversity. See Herfindahl (1950) and Hirschman (1980) for historical background.

Capital IQ database. Leveraging Treeratpituk and Giles (2012) algorithm, which achieves 84% accuracy in test data, we can also infer each executive’s ethnic background. While classification at the individual level may be imperfect, the aggregate accuracy is adequate for this research. The age diversity—or more accurately—tenure diversity is computed as the HHI on each key executive’s tenure at a given firm. Tenure is defined as number of years an individual has served at that specific position at the same firm. I also include tenure diversity for the CEO, CFO, and all executives levels. Firms with more homogenous, long-tenured leadership teams tend to exhibit lower diversity in this dimension.

**Overall firm-level diversity and inclusion.** To complement leadership-based diversity measures, I incorporate firm-level indicators from FactSet Truvalue Labs, a leading ESG rating agency.<sup>7</sup> Truvalue’s ESG rating follows closely the 26 key issues specified by the SASB (Sustainability Accounting Standards Board). One key issue—“employee engagement, diversity, & inclusion”—closely aligns with the conceptual definition of diversity in this study. “The category addresses a company’s ability to ensure that its culture and hiring and promotion practices embrace the building of a diverse and inclusive workforce that reflects the makeup of local talent pools and its customer base. It addresses the issues of discriminatory practices on the bases of race, gender, ethnicity, religion, sexual orientation, and other factors.” Specifically, I study the *Insight* score (a medium horizon measure of diversity) and *Momentum* score (year-over-year change in Insight score).

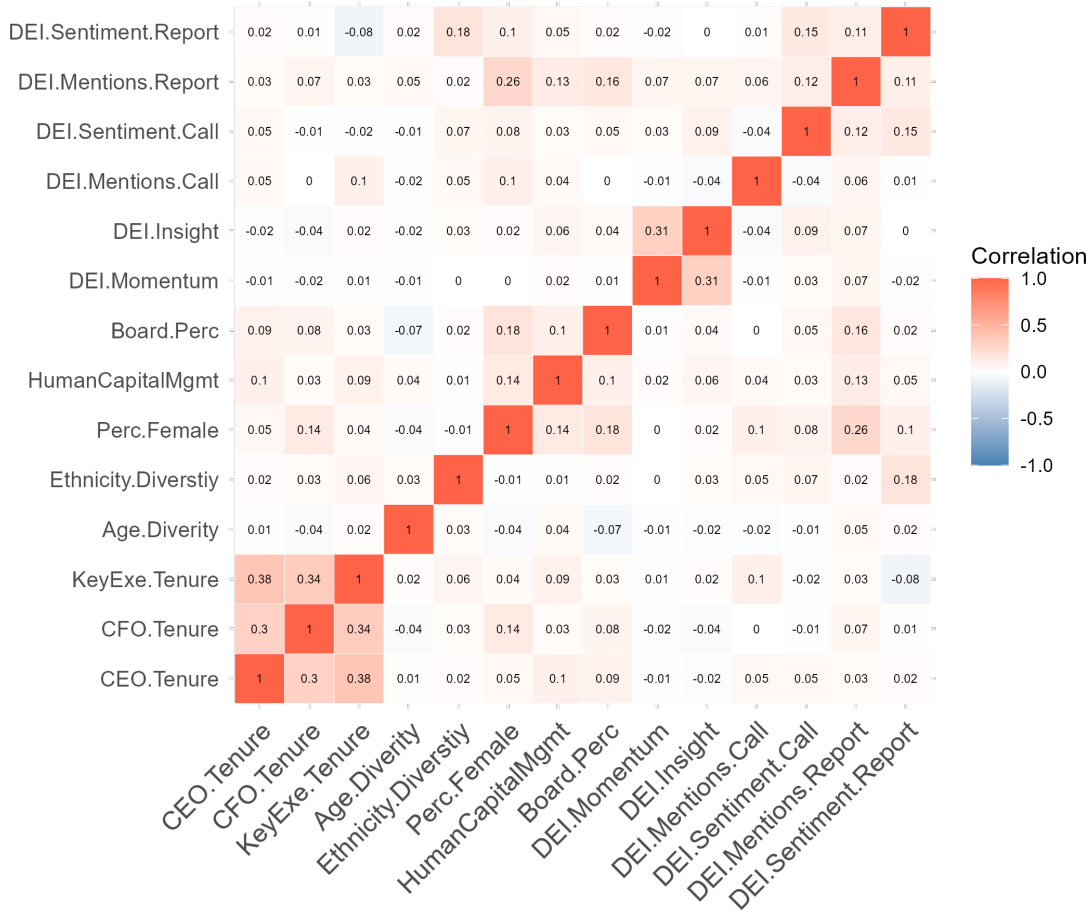
**Human Capital Management and Board rating** are sourced from MSCI ESG Rating. MSCI is the world’s largest ESG rating agency. MSCI relies on its large team of ESG analysts to rate each company, based on each firm’s own filings and other public data. The most related variable is *human capital development*, which reflects how a company recruits, retains, and develops its human capital—diversity being one of the key inputs. In addition to human capital management, MSCI provides a composite metrics evaluating board effectiveness, with gender diversity being one of its key components.

**Intensity and sentiment of diversity.** To assess each company’s view on diversity, I construct two text-based diversity measures—the diversity intensity and sentiment—based on annual reports and quarterly earnings calls, respectively. US-listed companies are required to file Form 10-K with the SEC, while public companies in other countries publish annual reports. Most global public companies also conduct regular conference calls and host investor’s day events, with transcripts typically available publicly. I begin by applying topic modeling to identify diversity-related paragraphs in these documents. The keyword list related to diversity is derived from sources such as SASB, Association for Financial Pro-

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7. Truvalue Labs, founded in 2013 and acquired by FactSet in 2018, employs an AI-driven approach that processes unstructured content from over 100,000 sources daily.

Figure 2: Correlation Matrix, Diversity Metrics



fessional’s Diversity, Equity & Inclusion Vocabulary, American Psychological Association Inclusive Language Guidelines. Latent Dirichlet Allocation (LDA) is used to extract topics from the text corpus. Diversity intensity is defined as the number of paragraphs related to diversity, while sentiment (on diversity) is computed using a bag-of-word (BOW) approach.<sup>8</sup>

### 3.1.2 Measuring Firm Performance

To capture firm performance, I employ 11 distinct metrics. While these measures are moderately correlated, they exhibit clear clustering patterns—for example, profitability indicators in the lower-left quadrant and innovation-related metrics in the upper-right—corner, as shown in Figure 3.

**Profitability** is assessed using gross margin, operating margin, and return on equity (ROE). Gross margin is defined as a company’s gross profit (revenue in excess of COGS

8. See Lane and Dyshel (2025) for details on BOW and topic modeling.



or cost of goods sold) divided by revenue, i.e.,  $GrossMargin = \frac{Revenue - COGS}{Revenue}$ . Operating margin adjusts gross profit by subtracting SG&A (selling, general, and administrative costs):  $OperatingMargin = \frac{Revenue - COGS - SG\&A}{Revenue}$ . ROE reflects a company’s net profit relative to its book value of shareholders’ equity:  $ROE = \frac{NetIncome}{Shareholders' Equity}$ . These three measures provide a layered view of profitability—gross margin reflects production efficiency, operating margin incorporates administrative costs, and ROE measures bottom-line return to equity holders after accounting for financial leverage.<sup>9</sup>

**Growth** is measured by year-over-year percentage change in revenue and earnings per share (EPS). EPS are adjusted for corporate actions such as stock splits and share repurchases.

**Financial leverage** is proxied by long-term debt/equity ratio, which reflects the extent to which a firm relies on debt financing relative to shareholder equity—serving as an indicator of its capital structure conservatism. As detailed in Bhandari (1988), it is critical to account for financial leverage in asset pricing research.

**Accounting quality** is proxied by accruals. As explained in Sloan (1996), the accrual anomaly concerns the non-cash component of earnings, known as accruals, which capture the difference between reported earnings and underlying cash flows.

**Valuation** is measured by book-to-market, one of the most widely used metrics for equity valuation, computed as the book value of equity divided by the market value of equity. A high book-to-market ratio suggests that a company’s stock is undervalued relative to its peers—in other words, investors do not value the firm as much as other comparable companies. It is a standard indicator of how the market prices a firm’s stock relative to its accounting book value.

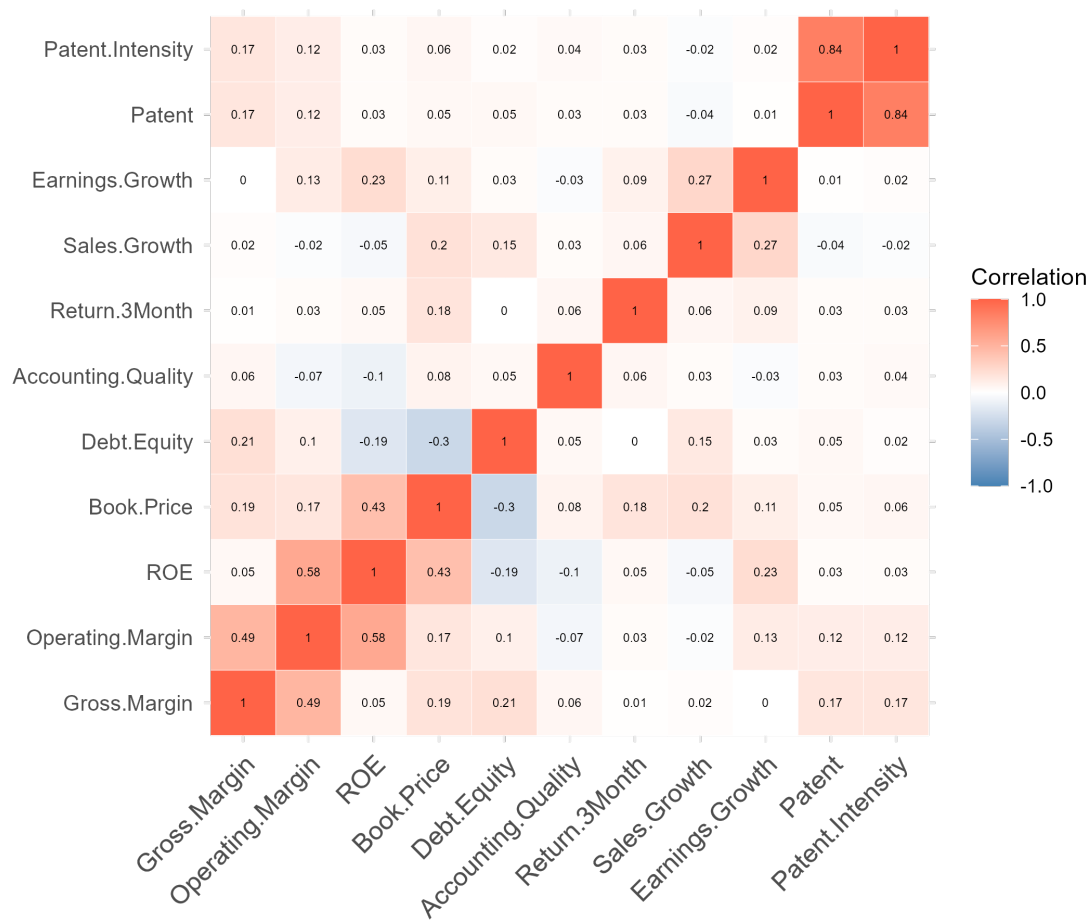
**Stock performance** is computed as the firm’s subsequent three-month stock return—both price appreciation and dividend reinvestment.

**Technological Innovation** is proxied by the changes in a firm’s patent filings. Firm-level patent data is sourced from the USPTO (United States Patent and Trademark Office). First, I map each patent to each firm in a point-in-time manner. Next, patent importance is assessed through a citation-based network, where each patent both cites and is cited by others. I construct a large-scale citation network and apply the PageRank algorithm, following Brin and Page (1998), to quantify the influence of each company’s patents. Two factors are computed—year-over-year change in the number of patent filings and year-over-year change in patent importance.

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9. See Wahlen, Baginski, and Bradshaw (2011) for a comprehensive discussion of profitability metrics.

Figure 3: Correlation Matrix, Performance Metrics



## 3.2 Research Universe

The empirical analysis is based on a panel dataset comprising over 8,000 publicly listed companies across more than 40 countries. For each firm, 14 diversity measures and 11 performance indicators are collected at quarterly frequency, from the early 2000s through Q1/2025.

The sample includes all public companies in the MSCI World<sup>10</sup> and MSCI Emerging Markets<sup>11</sup> indices since early 2000s. At each cross section (i.e., each calendar quarter-end), the universe contains approximately 1,900-2,800 companies (see Figure 4a).<sup>12</sup> However, coverage of diversity data varies by countries and by data sources (see Figure 4b for an example using MSCI ESG Rating data).

**Region Classification:** To mitigate small-sample bias arising from limited firm representation in many countries,<sup>13</sup> I aggregate individual countries into six broad regions—the US, Europe, Japan, Australia/New Zealand/Canada, Emerging Markets excluding China, and China.

**Data Frequency:** The data is sampled at the quarterly frequency, aligning with the reporting frequency of most public companies. Quarterly reporting is the standard in the US, Canada, China, and Japan, while companies in other regions typically report either quarterly or semi-annually. The sample begins in Q1/1995; however, most diversity-related variables become available only from the late 2000s.

All diversity and performance measures are normalized cross-sectionally, at each quarter end, within each of the six regions.

## 3.3 Econometric Techniques

To examine the temporal dynamics between diversity and firm performance, I apply three distinct structural models. Each is designed to uncover different aspects of the relationship—whether predictive (lead), concurrent, or potentially lagged. These models are implemented using a large panel dataset spanning multiple regions and time periods.

- **Lead Model:** Each diversity metric is used as a predictor in a series of panel regressions, where the dependent variable is a future firm performance measure. Two forecast horizons are examined: one fiscal quarter ahead and the average over the subsequent

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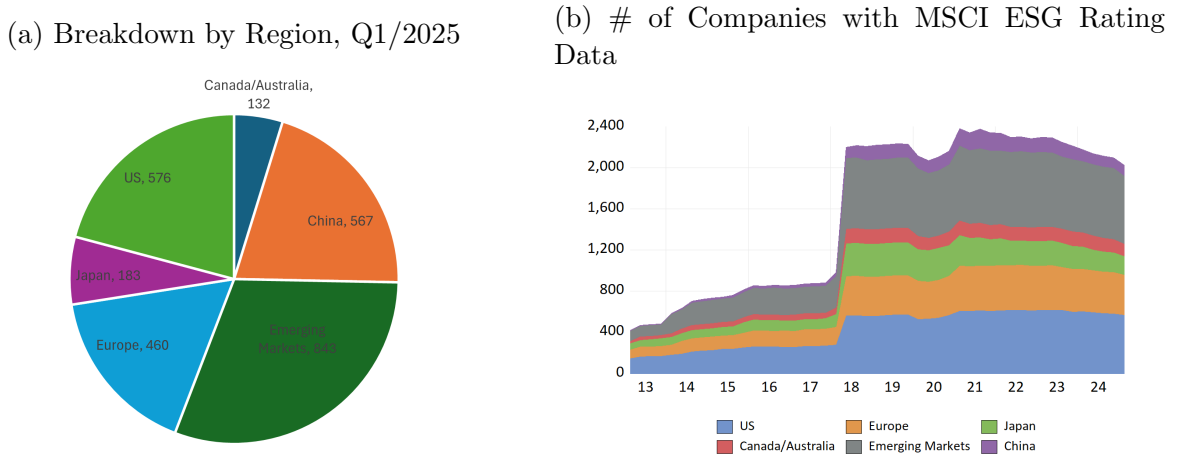
10. MSCI World covers around 20 developed countries and markets.

11. MSCI Emerging Markets (MSCI EM) comprises firms from roughly 20 emerging economies.

12. Constituent firms in the MSCI indices vary over time, reflecting additions and deletions. This study uses point-in-time index membership as of each quarter-end.

13. Small sample sizes can impair statistical inference and reduce the reliability of estimated relationships.

Figure 4: Research Universe



three fiscal years. This model aims to assess whether diversity is associated with subsequent improvements in firm performance, controlling for observable firm characteristics at the time of measurement.

- **Contemporaneous Model:** Each diversity measure is regressed on the corresponding contemporaneous firm performance metric. Both diversity and performance are measured at the same quarter end. This specification evaluates whether there is a statistically significant association between diversity and firm performance at a given point in time, without asserting any lead, lag or causal relationship.
- **Lag Model:** Each firm performance is regressed on future diversity measure. Performance is measured in the current period, while diversity is measured in the subsequent quarters. This framework assesses whether firms with stronger historical performance are more likely to increase their diversity going forward, helping to disentangle potential reverse causality in the diversity–performance relationship.

Designing a proper empirical test of the relationship between diversity and firm performance presents several challenges. Neither diversity nor performance are randomly assigned to firms—both are shaped by macro factors such as country, culture, industry, as well as firm-specific attributes like size,<sup>14</sup> profitability, financial leverage, and other characteristics. To mitigate these confounding factors and isolate the relationship of interest, I employ a fixed-effects panel regression framework that controls for both firm-specific and time-specific heterogeneity.

14. Edmans, Flammer, and Glossner (2023) suggested that size is important in diversity study.

The choice of **dependent variable** varies by model specification. In the Lead and Contemporaneous models, diversity measures serve as the dependent variables, allowing for the assessment of whether diversity predicts or co-moves with performance metrics. In contrast, the Lag model reverses this structure, using performance measures as the dependent variables to evaluate whether stronger historical performance is associated with subsequent increases in diversity.

The regression includes standard firm-level control variables commonly used in empirical asset pricing literature, including:

- Size, defined as the natural logarithm of market capitalization (see Fama and French (1992))
- Book-to-market (see Fama and French (1992))
- Price momentum (see Jegadeesh and Titman (1993))
- Profitability (see Fama and French (2015))
- Asset growth (see Cooper, Gulen, and Schill (2008))
- Financial leverage (see Bhandari (1988))

These variables help account for firm heterogeneity that may influence both diversity and performance outcomes.

To control for firm- and temporal-effects, I include firm and period fixed effects. Firm fixed effects account for time-invariant characteristics specific to each company, while period fixed effects absorb common shocks and macroeconomic conditions that vary over time.

To ensure reliable statistical inference, I employ the Newey–West heteroskedasticity and autocorrelation-consistent (HAC) procedure for estimating standard errors (see Newey and West (1987)). This approach adjusts for potential serial correlation and heteroskedasticity in the residuals, which is particularly important given the persistence observed in diversity, firm performance, and other control variables.

Within each region, for each diversity and performance pair, I estimate the following fixed-effect panel regression:

$$p_{i,t+\tau} = \beta_0 + \beta_1 d_{i,t} + \sum_{k=1}^6 \beta_{c,k} x_{i,t} c_{i,t}^k + \lambda_i + \delta_t + \varepsilon_{i,t}$$

Where,  $p_{i,t+\tau}$  is the performance metric of firm  $i$  at future time  $t + \tau$ ,  $\beta_0$  is the estimated intercept term,  $\beta_1$  is our primary interest, measuring the impact of diversity on future performance,  $d_{i,t}$  is diversity metric of firm  $i$  at time  $t$ ,  $\beta_{c,k}$  is the estimated coefficients for

each of the  $k = 6$  control variables,  $c_{i,t}^k$  is the  $k$ th control variable of firm  $i$  at time  $t$ ,  $\lambda_i$  is the estimated firm-specific fixed effect,  $\delta_t$  is time period fixed effect, and  $\varepsilon_{i,t}$  is the regression residual of firm  $i$  at time  $t$ .

## 4 Main Findings

To assess the empirical relationship between diversity and firm value, I examine all pairwise combinations of 14 diversity measures and 19 firm performance variables. The 11 core performance metrics are further augmented by alternative horizons—short-term (next quarter) and long-term (three-year average)—for financial ratios such as gross margin, operating margin, ROE, book-to-market, long-term debt/equity ratio, accruals, revenue growth, and earnings growth, resulting in 19 performance variables in total. This yields a total of 266 unique regression models ( $14 \times 19 = 266$ ). These models are further estimated separately across six geographic regions, resulting in 1,368 total regressions. Due to variation in data coverage, 928 of these regressions are successfully estimated. As pointed out by James et al. (2021), making statistical inference with multiple testing can be challenging. There are both statistical and machine learning approaches to alleviate the inference problem. For this analysis, I use the Newey–West (1987) procedure to compute robust standard errors, mitigating serial correlation and heteroskedasticity.

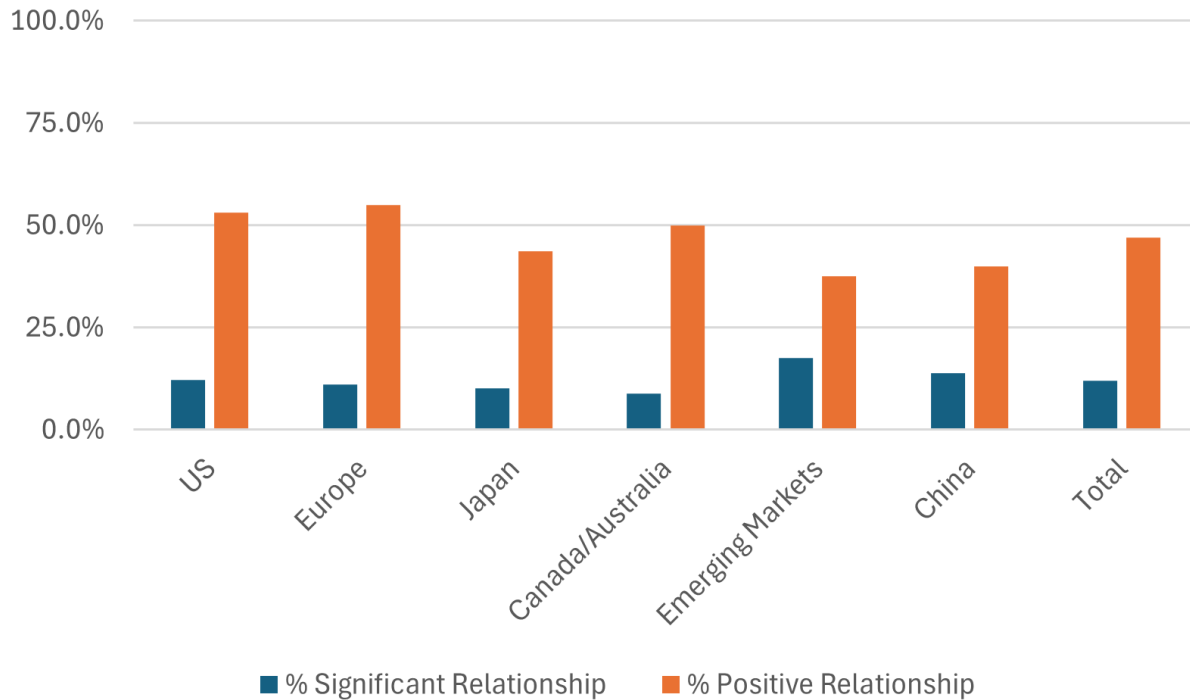
### 4.1 Does Diversity Lead to Firm Value Creation?

Among the 928 estimated regressions, 133 (or 14.4%) are statistically significant at the 10% p value. Of these significant results, a slight majority (77 cases, or 57.9%) indicate a positive association between diversity and future firm performance.

This suggests that, although not universal, there is a notable tendency for diversity to be positively linked to firm value across different regions, metrics, and time horizons. While my research confirms prior literature that diversity itself is not necessarily highly correlated to (or statistically “cause”) future performance improvement, on balance, diversity certainly does not hinder performance. On the contrary, there is modest yet meaningful evidence that, under certain conditions, greater diversity is associated with enhanced innovation, improved profitability, lower financial risk, and stronger accounting quality.

As shown in Figure 5, the empirical findings are particularly encouraging in Europe, the US, and Japan, where over 50% of statistically significant relationships are positive—suggesting that better diversity is indeed linked to strong future performance. For instance, Table 1 reports the estimated equation for diversity sentiment (based on earnings calls)

Figure 5: Diversity and Future Firm Performance



against next quarter's earnings growth among US firms.

The positive relationship between diversity and future performance is particularly strong in the following occasions:

- Diversity measured by executive tenure: Firms with more diverse management teams (i.e., less entrenched executives with varying lengths of service) are more likely to experience improved future performance. This finding suggests that a mix of perspectives shaped by different levels of experience and institutional memory may contribute to more dynamic and adaptive decision-making at the top.
- Diversity measured by FactSet Truvalue Labs: Firms with more inclusive culture (Insight score) and those with rising Momentum (change in Insight score) tend to outperform their peers. This underscores the potential value of diversity metrics produced by ESG rating agencies, which may reflect not only internal policies, but also how the public perceives and responds to a firm's DEI efforts.
- Diversity measured by keywords and sentiment from earnings calls: Firms that frequently discuss diversity-related topics during earnings calls—and do so with a positive tone—tend to exhibit stronger performance. This suggests that the way a com-

Dependent Variable	Next Quarter's Earnings Growth
Method	Panel Regression, Firm + Period Fixed Effect
Period	Q2/2010-Q1/2025
Cross-sections (Firms)	830
Total Observations	17634
Variable	Coefficient
Intercept	-2.88***
<b>Diversity Sentiment, Earnings Call</b>	<b>0.04*</b>
Size (Log Market Cap)	0.27***
Operating Margin	-0.14***
Book-to-Market	-0.21***
Momentum	0.18***
Asset Growth	-0.05***
Debt/Equity Ratio	-0.05**
R-squared	0.13
Adjusted R-squared	0.09
Note: * p value < 0.10; ** p value < 0.05; *** p value < 0.01	

Table 1: Panel Regression Example

pany's leadership communicates about diversity can serve as a forward-looking indicator, reflecting both internal commitment and alignment with stakeholder expectations.

- Performance improvement is reflected across a range of firm outcomes—profitability, valuation, accounting quality, stock returns, growth, and innovation (patents and citations). These consistent results across multiple performance domains suggest that on certain contexts, diversity could be a meaningful contributor to firm value.

## 4.2 Circular Relationship between Diversity and Performance

While the previous section highlights the positive empirical association between diversity and future firm value, the relationship is far from straightforward. In fact, the share of

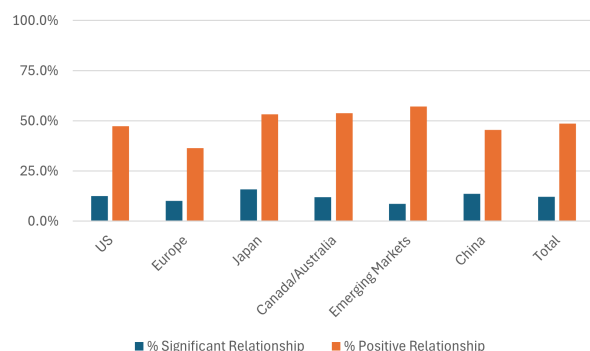


statistically significant results in the contemporaneous (Figure 6a) and the lagged (i.e., performance versus future diversity measures, Figure 6b) models is comparable to that of the lead model (see Figure 5).

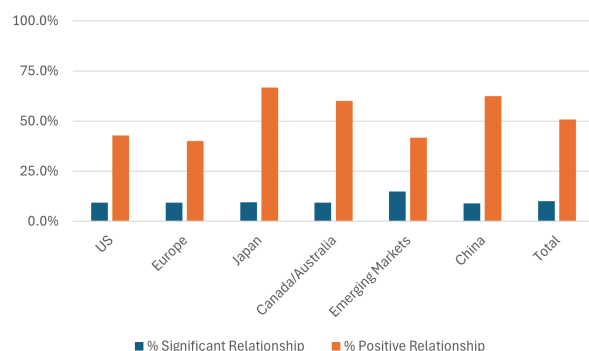
For instance, diversity—as measured by keyword frequency and sentiment in earnings calls—exhibits a consistent positive correlation with profitability across all three temporal directions: lead, contemporaneous, and lag. This pattern suggests a potential self-reinforcing dynamic. Greater diversity may enhance firm performance; in turn, stronger financial outcomes may enable or incentivize firms to further invest in diversity. Such a feedback mechanism underscores the possibility of a virtuous cycle, wherein diversity and performance form a circular loop.

Figure 6: Contemporaneous and Lag Relationship, Diversity vs Performance

(a) Percentage of Significant Contemporaneous Relationship



(b) Percentage of Significant Lag Relationship



### 4.3 Nonlinear Patterns

Furthermore, the linear functional form<sup>15</sup> offers, at best, a simplified approximation of the potentially complex relationship between diversity and firm performance. Several scholars have argued that this relationship may in fact be nonlinear. For example, Richard and Murthi (2004) proposed a curvilinear association, though the literature remains divided on the exact shape of the curve. Chao and Kumar (2010) found a concave (inverse U-shaped) relationship—implying that moderate levels of diversity yield the highest performance, while Miller, Lavie, and Delios (2011) reported a convex (i.e., U-shaped) pattern, suggesting that performance is better at the low and high levels of diversity. Miller, Lavie, and Delios (2011) attributed the nonlinear relationship to other confounding factors, while Roberson, Holmes,

15. Linear regression and linear panel data regressions remain the dominant empirical research tools in social sciences, due to their interpretability and tractability.

and Perry (2017) proposed an alternative theory based on dynamic capabilities. In light of these perspectives, I extend the empirical framework by incorporating a quadratic term in the model, as follows:

$$p_{i,t+\tau} = \beta_0 + \beta_1 d_{i,t} + \beta_2 d_{i,t}^2 + \sum_{k=1}^6 \beta_{c,k} x_{i,t} c_{i,t}^k + \lambda_i + \delta_t + \varepsilon_{i,t}$$

Where,  $\beta_2$  is the coefficient of primary interest, capturing the estimated *nonlinear* (quadratic) effect of diversity on future performance, and  $d_{i,t}^2$  is the quadratic term of diversity metric for firm  $i$  at time  $t$ .

This extension allows us to detect diminishing or accelerating returns to diversity and to empirically test competing hypotheses about the shape of the diversity–performance curve. Based on the above specification, the sign and significance of the second-order term, i.e.,  $\beta_2$ , determine the nature of the relationship between diversity and firm performance. A positive coefficient indicates a convex (U-shape curve) relationship, while a negative  $\beta_2$  suggests a concave (inverse U-shape) structure.

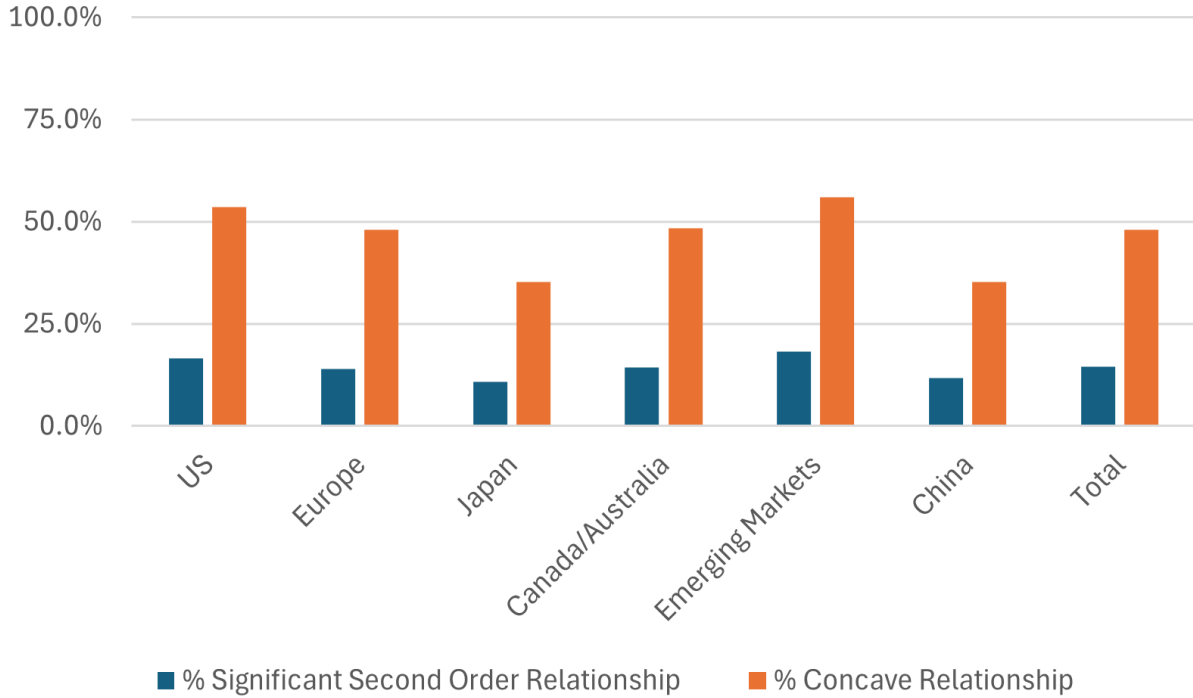
Empirically, approximately 14.3% of all examined regressions exhibit statistically significant nonlinear effects (see Figure 7). Among these, there is a modest tendency toward a convex pattern. About 53.3% of statistically significant coefficients are positive.

To illustrate this point, Table 2 shows the estimated quadratic equation between diversity sentiment extracted from annual reports and future profitability, as measured by average ROE over the subsequent three years. In this case, the linear coefficient is slightly positive (albeit insignificant), while the second-order term is strongly significant. The estimated coefficient for the quadratic term is 1.80, which supports a convex/U-shaped relationship between diversity sentiment and future ROE. Furthermore, the simple linear specification yields a marginally significant negative coefficient. This shift in the estimated relationship highlights the importance of accommodating potential nonlinearity in the diversity–performance nexus.

## 5 Counter Arguments and Limitations

While the overall empirical evidence on the relationship between diversity and future firm performance is only mildly positive, the broader value of a diverse workforce extends well beyond quarterly earnings. Diverse teams bring a wider array of perspectives and life experiences to the table, fostering robust workplace environment and resilience. Moreover, a firm that embraces diversity is more likely to enhance its reputation with customers, investors, and employees alike. This social capital translates into improved employee engagement, reduced turnover, and greater customer loyalty—intangible assets that support a sustain-

Figure 7: Percentage of Significant Second Order Relationships



able competitive advantage. At the societal level, promoting diversity within a wide range of companies helps break down systemic barriers, broadening economic opportunity and driving social cohesion. In this way, even if the direct effect of diversity on firm-specific performance is subtle, its indirect dividends in fostering a culture of openness, trust, and shared purpose could yield meaningful gains across the broader community—a topic I would like to explore in my future research.

I would also like to stress that there are several limitations with my research and existing literature. First, both diversity and firm value/performance are subject to measurement errors. While this study employs a wide array of metrics to capture age, tenure, gender, and ethnic diversity, other important dimensions—such as socioeconomic background, disability status, sexual orientation, or cognitive diversity—remain unaddressed.

Second, from a statistical perspective, it is important to recognize that failure to reject the Null hypothesis does not constitute evidence in favor of the Null.<sup>16</sup> In other words, “No evidence of an effect” is not the same as “evidence of no effect.” This could be due to many reasons, such as inefficient data, excess noise, inadequate statistical power, or a mis-specified model. For instance, we have already shown that the linearity assumption is

16. The Null hypothesis tested here posits no relationship between diversity and future firm value.

Dependent Variable	Next Year's ROE
Method	Panel Regression, Firm + Period Fixed Effect
Period	Q1/2008-Q1/2025
Cross-sections (Firms)	574
Total Observations	7521
Variable	Coefficient
Intercept	2.48
<b>Diversity Sentiment, 10K</b>	<b>0.72</b>
<b>Diversity<sup>2</sup></b>	<b>1.80***</b>
Size (Log Market Cap)	-0.24
Operating Margin	-0.97***
Book-to-Market	0.16
Momentum	0.10***
Asset Growth	-0.17***
Debt/Equity Ratio	0.17
R-squared	0.47
Adjusted R-squared	0.42
Note: * p value < 0.10; ** p value < 0.05; *** p value < 0.01	

Table 2: Nonlinear Relationship — An Example

likely to be overly restrictive, masking more complex, non-monotonic relationships between diversity and performance.

Finally, this study focuses exclusively on the domain of public corporations. Yet the societal implications of diversity reach far beyond capital markets. Future research should extend the analysis to other vital institutions, including schools, nonprofit organizations, and government agencies, to better understand the broader systemic value of fostering diverse and inclusive environments.

## 6 Conclusion

In summary, both prior academic research and the empirical findings presented in this study suggest that diversity, in and of itself, is not a panacea for improving firm value and performance. The relationship between diversity and economic outcomes is nuanced, context-dependent, and shaped by a host of confounding factors. Nevertheless, there is little evidence to support the notion that diversity is detrimental to firm value. On the contrary, the data point to a modest yet meaningful link between greater diversity and future improvements in several aspects of firm performance—including profitability, accounting quality, innovation, and stock returns—particularly in regions such as the US, Europe, and Japan.

One of the key insights emerging from this analysis is the likely presence of a bidirectional relationship between diversity and performance (see also Green and Hand (2024) for related discussions). On the one hand, firms that embrace diversity may benefit from more dynamic decision-making, improved employee morale, and stronger reputational capital—all of which can enhance long-term performance. On the other hand, firms with superior performance may have greater capacity and motivation to implement diversity initiatives, creating a feedback loop that reinforces each other. In some cases, this can lead to virtuous cycles in which performance gains and diversity investments strengthen each other over time. This possibility underscores the importance of moving beyond simple causal narratives and recognizing the complexity inherent in organizational and social systems.

These findings have important implications for policymakers, investors, and business leaders. First, efforts to improve diversity should not be motivated solely by a desire for short-term financial gain; rather, they should be viewed as part of a broader strategy to strengthen organizational resilience, adaptability, and stakeholder trust. Second, policymakers and researchers must exercise caution in interpreting empirical results, particularly in the presence of potential endogeneity, measurement error, and nonlinear effects. Claims that diversity automatically leads to performance boost risk disappointment and social backlash.

Finally, while this study offers a comprehensive analysis of diversity and firm value across geographies, time periods, and dimensions of diversity, it remains an initial step. Much work remains to be done in refining measurement, improving causal identification, and expanding the scope of inquiry to include other institutions beyond publicly traded companies. A richer understanding of how diversity functions within complex organizations—and how it interacts with leadership, culture, governance, and external forces—is essential for effective public policy and business practices.

Diversity is better achieved organically in the longer run, rather than forcefully as a

compliance target. Firms can invest in the communities, workforce, and leadership pipelines with training and mentoring opportunities, equipping under-represented talent with the skills and social capital needed to contribute meaningfully. Governments can play an enabling role by offering educational fundings, re-skilling initiatives, and incentive-based measures—such as preferential access to public procurement, training grants, or tax credits—rather than blanket quotas. Similar to emission trading, economic incentives are more likely to achieve policy objectives while minimizing enforcement costs and social resistance.

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