DIVERSITY SPILLOVER EFFECTS IN SUPPLY CHAINS

By

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ABSTRACT

Gender diversity is a top priority and trend subject that has gained increased attention recently. This thesis addresses two novel research questions. First, it investigates the extent of gender diversity diffusion within the supply chain by exploring the relationship between the workforce gender diversity of suppliers and that of their major customers. It then examines the extent to which the gap in workforce gender diversity has economic implications by addressing its impact on corporate value. Findings show a significant spillover effect, where customer firms with strong gender diversity policies positively influence diversity among their suppliers. This shows how important customer relationships are in helping diversity grow across companies.

Keywords: Gender Diversity, Customer and Supplier

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CHAPTER 1: Introduction

Gender diversity has become an essential focus for policymakers, regulators, and business leaders due to its potential to improve companies' operations and performance (Harvie et al., 1998). This increased focus on gender diversity has led organizations to recognize its benefits beyond social responsibility. Xie et al. (2020) showed that diverse viewpoints and experiences can boost organizational effectiveness and innovation, so businesses worldwide are incorporating diversity efforts into their corporate plans.

Many organizations now make a solid effort to create workplaces that value and encourage diversity, particularly gender diversity. This focus allows them to tap into a broader range of skills, draw from larger talent pools, and benefit from varied leadership styles, all of which contribute to greater efficiency and success (Frijns et al., 2024). These socially responsible efforts align with business goals to build more vital, adaptable organizations. Movements like #MeToo have further accelerated corporate efforts by increasing awareness and accountability around gender issues. The #MeToo movement has heightened awareness of gender diversity issues, driving increased corporate efforts to address gender disparities and prompting institutional investors to prioritize board gender diversity to mitigate firm risks and promote inclusive cultures (Billings et al., 2022; Attig and Boshanna, 2023).

Dhaliwal et al. (2016) demonstrate that solid customer relationships help suppliers obtain better financial conditions by fostering dependability and trust. Suppliers can invest in expansion and maintain their competitiveness thanks to these advantages. Changes in demand or disruptions from these key clients can create operational and financial challenges, as Files and Gurun (2018) have pointed out. This dependency pressures suppliers to align with customer expectations to maintain stability.

These interconnected relationships between suppliers and customers, combined with the growing emphasis on gender diversity, raise important questions about how diversity practices are transferred within supply chains. In this study, we aim to address two central questions. First, we examine whether the gender diversity practices of major customer firms provide incentives for suppliers to adopt comparable practices. Second, we investigate how gender diversity practices between suppliers and their customers have economic implications, specifically by analyzing their impact on Tobin's Q and operating performance. These questions build on existing literature to deepen our understanding of the interplay between diversity, corporate relationships, and performance.

CHAPTER 2: Literature Review

2.1 Introduction to Gender Diversity in Corporate Structures and Corporate Performance

The 2022 Annual Global CEO Survey by PwC highlights the importance of integrating gender representation into corporate strategies. Despite the progress made in understanding the biases perpetuating gender inequality, as highlighted by Harvie et al. (1998), many companies still struggle to translate these insights into actionable goals.

The representation of women in leadership roles has improved. According to the Conference Board (2023), the percentage of female directors in the S&P 500 increased steadily from 23% in 2018 to 32% in 2023. These achievements highlight the need for focused policies and programs that promote gender diversity at all organizational levels, reflecting both progress and continued difficulties in shattering the glass ceiling for female CEOs.

As scholars show, increased female representation improves organizational outcomes in several ways, including convenience and election procedures. Agarwal et al. (2016) state that gender diversity may improve board elections. As demonstrated by Abbott et al. (2012), who look at how diverse boards are linked to a lower likelihood of financial restatements, gender diversity may also improve a company's financial integrity.

Gender-diverse boards can also affect market performance by making stock prices more informative. Gul et al. (2011) examine this relationship, pointing out that more informative pricing—which more appropriately reflects a company's genuine value—is linked to gender diversity on corporate boards. This pricing informativeness may lower investment risks by giving stakeholders a better grasp of the company's performance.

Moreover, Gender diversity has been shown to reduce the likelihood of corporate fraud, particularly in environments where diversity is less common. This effect is examined by Cumming et al. (2015), who show that gender-diverse boards can enhance fraud detection and prevention, which is essential for upholding regulatory compliance and a company's reputation.

Non-financial performance metrics are vital indicators of how well a company creates long-term value for employees, customers, and society beyond immediate financial gains. Even with the advancements, there are still obstacles to gender equality at all business levels. While highlighting the noteworthy progress made in elevating women to senior leadership positions, McKinsey (2024) also highlights the persistent inequities in co. These differences imply that achieving gender equality is still a problem at many organizational levels. More thorough methods of integrating gender diversity, a value that pervades every aspect of an organization and permeates its leadership, are required considering this persistent difficulty.

When taken as a whole, these observations show how efforts to promote gender diversity act as both a catalyst for constructive organizational transformation and a reflection of corporate responsibility. Even though the advantages of gender diversity are widely known, it is still unclear what motivates businesses to embrace and prioritize diversity in the first place. Determining the organizational, sector-specific, and strategic drivers that influence these efforts requires understanding the antecedents of gender diversity.

2.2 Customer-Supplier Relationships and Diversity Spillover Effects

Beyond just financial transactions, the characteristics of customer-supplier connections can affect different organizational behaviors and may help diversity initiatives spread throughout supply chains. Previous studies on customer-supplier interactions have focused on the financial and operational effects on suppliers. For example, Hertzel et al. (2008) investigate the impact of customer relationships on

distress costs, while Cohen and Frazzini (2008) show how these relationships can impact suppliers' stock returns. Another area impacted by customer relationships is debt contracting; Kim et al. (2015) point out that strong relationships can result in more advantageous debt arrangements for suppliers, lessening their financial burden.

Wang (2012) examines how customer-supplier dynamics impact suppliers' payout policies. According to Wang's research, customer relationships can support long-term growth, providing resources and stability that foster creativity and ease financial strain. More recently, Do et al. (2023) looked at the beneficial effects of a concentrated client base on suppliers' stock market liquidity. Because businesses with dependable client bases may see improved market performance and stability, this correlation with liquidity highlights the strategic importance of customer relationships.

Connections between suppliers and customers and operational and financial effects may also influence the alignment of diversity standards throughout supply chains. Diversity spillover is the term used to describe how suppliers are frequently encouraged to implement comparable diversity initiatives by financial interests and pressure from well-known clients. This alignment lessens possible conflicts brought on by disparate organizational values in the supply chain and helps close gaps in diversity. Strong relationships between suppliers and customers encourage providers to reflect their clients' diverse values, improving their standing and competitiveness in the marketplace.

Naturally, analyzing supply chain diversity spillover effects results in theoretical models that aid in conceptualizing this process. With a focus on the importance of strategic alignment in creating inclusive environments across organizational boundaries, the next section, Theoretical Models of Diversity Spillover in Supply Chains, explores frameworks for comprehending how and why diversity practices proliferate within interconnected business networks.

2.3 Theoretical Models of Diversity Spillover in Supply Chains

Customers' requirements and conduct can greatly influence suppliers' operational choices. According to Yin et al. (2021), there is evidence that unethical consumer conduct might hurt supplier investment decisions. This suggests that the ethical standards that customers uphold indirectly impact the behaviors and investments of their suppliers. Similarly, Li and Zhang (2023) highlight the impact of customer expectations on supplier operations and strategic decisions by showing how customer accounting data can forecast supplier behaviors.

These insights into supplier-customer relationships provide a theoretical basis for comprehending how diversity practices might permeate a supply chain. Wondering if suppliers can improve their reputation and foster a more cohesive corporate culture throughout the supply chain by implementing diversity programs that complement their clientele. The potential for diversity practices to spread throughout business networks and promote a unified and inclusive approach to corporate responsibility amongst linked companies is highlighted by this theoretical model of diversity spillover. By applying these theoretical insights, businesses can strategically use their supply chain relationships to foster diversity, enhance their brand reputation, improve employee engagement, and align with societal expectations for inclusive practices.

2.4 Data Sources and Methodologies for Analyzing Diversity

The study of corporate diversity has evolved dramatically in recent years due to the availability of novel data sources, which allow researchers to record more dynamic and detailed indicators of diversity within firms. Revelio Labs, a data provider that compiles and evaluates publicly accessible résumé-level data, is valuable in analyzing diversity across organizational structures. In addition to factors like job history, educational background, and geographic location, this dataset thoroughly explains employee demographics, including gender and race/ethnicity. Scholars have been able to perform in-depth examinations of diversity trends and patterns inside organizations thanks to the quality of this data.

Some recent studies have used Revelio Labs data to investigate different facets of organizational diversity. To create nuanced measures of gender diversity, for example, Li et al. (2022), Gu et al. (2023), Cai et al. (2024), and Baker et al. (2024) make use of this dataset. This enables a more thorough analysis of diversity-related outcomes and practices across firms. These studies have examined the effects of diversity on financial and non-financial performance measures by combining demographic data with information on company structure.

CHAPTER 3: Research Question and Hypothesis Development

At the heart of this thesis are two key questions. First, do the gender diversity (GD) practices of major customers provide some form of incentive for suppliers to adopt comparable practices? Second, to what extent does the gap in GD practices between suppliers and their customers have economic applications? These questions guide the development of the following hypotheses.

Hypothesis 1 (H1): The gender diversity practices of major customers provide incentives for suppliers to adopt comparable practices.

This hypothesis suggests that when customers prioritize gender diversity, their practices encourage suppliers to align their own workforce diversity initiatives to meet expectations. The dynamics of this relationship, often referred to as the "spillover effect," highlight how diversity practices extend through supply chain networks, influencing suppliers to adopt similar policies.

Hypothesis 2 (H2): Gender diversity gaps between suppliers and customers have economic applications, negatively impacting firm valuation and operating performance.

This hypothesis posits that misalignment in diversity practices creates gaps that can reduce firm valuation. We propose that addressing these gaps improves both financial performance and competitive positioning by fostering alignment in diversity practices across supply chains.

CHAPTER 4: Data and Methodology

4.1. Sample and Data Collection

To construct our customer-supplier relationship database, we begin with all firms included in the Compustat Customer file in the Compustat Segment Database for 2000–2023. While Revelio Labs typically begins its time series in 2008 when using individual position data, we utilized their individual-level dataset, which has no defined "start date" since users can input arbitrary start and end dates for their positions. We remove financials (SIC 6000–6999), utilities (SIC 4900–4999), and governmental and quasi-governmental entities (SIC 9000 and above). To construct our regression sample, we compile data from multiple sources. We extract board characteristics, including board independence and female representation, from BoardEx.

Additionally, we require firms in our sample to have data in the Revelio Labs dataset, which provides employee diversity metrics. To mitigate the potential influence of firm-level differences on our empirical results, we refine our final sample by including only firms with complete data on the primary regression variables. This filtering process results in a final sample of 4,776 firm-year observations.

Our analysis focuses specifically on employee gender diversity (i.e., Workforce GD), measured by the ratio of female employees to the total number of employees. We use data from Revelio Labs to measure corporate workforce diversity across our sample of US public firms. As outlined at the outset, Revelio Labs aggregates and standardizes data from millions of online profiles and résumés to construct historical workforce composition, primarily focusing on gender and racial diversity, for a large sample of US public companies. The data are sourced from various platforms, including public employment records, online professional profiles, résumés, job postings, and company websites. Recognizing that online profiles often disproportionately represent white-collar workers, Revelio Labs employs proprietary algorithms to address potential biases from the overrepresentation of white-collar workers and mitigate the

underrepresentation of lower-tier employees, ensuring a more balanced dataset. Revelio Labs adjusts for this by re-weighing profiles, thus accurately reflecting the entire employee population (Cai et al., 2024; Baker et al., 2024). Even if residual bias persists, our analysis is especially relevant to ongoing diversity debates since discussions of workforce diversity often focus on high-paid white-collar positions, making (Baker et al. 2024).

4.2. Measure

4.2.1 Dependent Variable: Workforce Gender Diversity of Suppliers (WFGD_S)

The dependent variable in our analysis is **Workforce Gender Diversity of Suppliers (WFGD_S)**, measured as the ratio of female employees to the total number of employees in a firm for a given year:

$$WFGD\_S = \frac{Number\ of\ female\ employees}{Total\ number\ of\ employees}$$

This metric quantity assesses the workforce level across the supplier firms. We source this data from **Revelio Labs**, aggregating and standardizing position data from multiple platforms, including public employment records, online professional profiles, résumés, and company websites.

To ensure that the measure of gender diversity is as representative as possible, Revelio Labs applies proprietary re-weighting algorithms that adjust for biases, particularly those arising from the overrepresentation of white-collar workers. This adjustment helps provide a more balanced view of the firm's workforce, including high-paid white-collar, lower-tier, and upper-tier. Even though some residual biases may persist, the metric remains remarkably relevant to ongoing debates about diversity, as discussions often focus on gender representation in white-collar positions.

Our analysis leverages this metric to understand how customer-side gender diversity influences supplier diversity, thus shedding light on the extent to which diversity practices propagate through supply chains.

4.2.2 Independent Variable: Workforce Gender Diversity of Customers (WFGD_C)

The primary independent variable in our analysis is the Workforce Gender Diversity of Customers (WFGD_C). This variable is the ratio of female employees to the total number of employees for each customer firm aggregated to represent the main customers of a given supplier in a particular year. The data for workforce gender diversity are obtained from Revelio Labs, which collects, aggregates, and standardizes workforce composition data from various sources, including online professional profiles, public employment records, résumés, job postings, and company websites.

The focus on WFGD_C as the independent variable is grounded in our interest in understanding whether diversity practices at the customers' level influence the workforce diversity of their suppliers. By examining this relationship, we aim to capture customers' spillover effect on customer diversity practices, reflecting both direct pressure and the broader diffusion of diversity norms along the supply chain. Including WFGD_C as a critical indicator allows us to empirically test the hypothesis that firms with more gender-diverse customers are more likely to adopt gender-diversity practices in their own workforce.

Our regression models also incorporate a range of control variables that account for firm characteristics, such as Firm Size, Leverage, and Capital Expenditure (CAPEX). The relationship between WFGD_C and WFGD_S is analyzed using fixed effects for accounting for unobserved heterogeneity across firms and industries and all year-specific shocks.

4.2.3 Control Variables:

To ensure that our analysis captures the true relationship between customer and supplier diversity, variables to account for are added to firm-level characteristics that could also affect the outcomes. These control variables are essential in isolating the effect of customer diversity on supplier diversity by accounting for other potential confounding factors that might affect workforce diversity.

First, Firm Size is one of the vital control variables in our model. Firm critical is measured using the natural logarithm of total assets. Larger firms tend to have more resources and infrastructure to support diversity initiatives and more established policies regarding inclusivity. Including firm size allows us to control for the influence that the scale of a company might have on its ability to foster a diverse workforce.

Another important control is Leverage, measured as the ratio of total debt to total assets. Leverage acts as an indicator of the financial risk a firm is taking on. Highly leveraged firms are often more constrained financially and, as a result, may deprioritize initiatives such as workforce diversity in favor of more immediate financial stability. By controlling for Leverage, we can account for how financial pressure could impact a firm's approach to diversity.

We also include Capital Expenditure (CAPEX), which is measured as the ratio of capital to total assets. Firms with significant capital expenditures generally invest heavily in their future growth. CAPEX helps us assess whether such investment behavior correlates with improved gender diversity in the workforce.

Lastly, we control for Firm Age, measured as the number of years since the firm's establishment. Older firms often have more entrenched corporate cultures, which may make it harder for them to adapt to and adopt diverse practices. Conversely, newer firms may be more flexible and more inclined towards inclusivity. Controlling for firm age allows us to understand how an organization's longevity impacts workforce diversity.

All these control variables are essential to ensure that the results of our analysis accurately reflect the relationship between customer diversity and supplier diversity

rather than being influenced by unrelated firm-level differences. Furthermore, to ensure that we capture the impact of broader industry dynamics and mitigate unobserved heterogeneity, our models include firm-fixed effects to account for characteristics unique to each firm that do not change over time and industry-year fixed effects to control for any trends or shocks that might affect all firms in the same industry or during the same year. This comprehensive approach ensures that our findings provide a clear and unbiased view of the true determinants of workforce gender diversity in supply chains.

4.3 Model Construction

We run the following model to ground the relationship between workforce GD of customers and suppliers with a more formal statistical analysis:

$$WFGD\_S_{i,t} = \alpha_0 + \alpha_1 WFGD\_C_{i,t} + FIRMCTRL_{i,t} + \varepsilon_{i,t},$$

where $WFGD\_S_{i,t}$ is workforce gender diversity of supplier I (i.e., focal firm) in year t, y the ratio of female employees to the total number of employees in year t. $WFGD\_C_{i,t}$ is workforce gender diversity of the main customers of supplier I (i.e., focal firm) in year t. $FIRM\ CTRL$ is a set of firm controls. We control for firm size (Size) measured as the ratio of total debt to total assets (Leverage), the ratio of capital expenditure to total assets (CAPEX), and institutional owners' ownership). We include firm-fixed effects (α_i) to control for time-invariant firm characteristics and industry x year fixed effects (δ_t) to control for industry-specific and year-specific factors that could influence the supplier's workforce GD (e.g., capture any shocks specific to the industry each year). We cluster the standard error at the firm level to account for potential within-firm correlation of errors over time. Results are reported in Table 2.

CHAPTER 5: Data Analysis and Empirical Results

5.1 Sample statistics

Table 1 presents the descriptive statistics for the key variables used throughout the analysis, providing foundational insights into the dataset covering the period from 2000 to 2023. The average gender diversity among suppliers (GD Supplier) is 0.243. In contrast, average customer-side diversity (GD Customer) is slightly higher at 0.282, suggesting that firms generally have a higher diversity level among their customers than their suppliers. Firm characteristics such as Firm Size, Leverage, RD, and CAPEX are also included, showing a diverse range of firm structures with significant variations in investment behaviors. Notably, Firm Size positively correlates with GD Supplier (0.157), indicating that larger firms tend to have better supplier diversity.

Similarly, institutional ownership is positively linked with GD Supplier (0.170), suggesting that external investor influence could play a role in encouraging diversity. In contrast, GD Customer correlates positively with Advertising (0.103) and R&D (0.061), which implies that firms focusing on brand image and innovation might also strive for improved customer-side gender diversity. The high variability in GD suppliers highlights the different approaches to diversity among firms, setting the stage for further analysis of the determinants and implications of gender diversity in the following sections.

TABLE 1: DESCRIPTIVE STATISTICS FOR KEY VARIABLES

Panel A: **Sample Distribution by Year**

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Freq.	307	259	269	262	268	255	245	249	212	222	215	203
Percent	6.42	5.42	5.63	5.48	5.61	5.34	5.13	5.21	4.44	4.65	4.5	4.25
Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Freq.	197	190	207	198	181	162	149	142	133	121	117	16
Percent	4.12	3.98	4.33	4.14	3.79	3.39	3.12	2.97	2.78	2.53	2.45	0.33

Panel B: **Descriptive Statistics**

	GD Supplier	GD Customer	Firm Size	Leverage	RD	CAPEX	Advertising	Sale Growth	Firm Age	Inst. Ownership
N	4779	4779	4779	4779	4779	4779	4779	4779	4779	4779
Mean	0.243	0.282	5.830	0.164	0.064	0.254	0.008	0.058	3.025	0.523
p25	0.000	0.000	4.245	0.000	0.000	0.121	0.000	-0.091	2.485	0.203
p50	0.231	0.283	5.775	0.115	0.015	0.202	0.000	0.046	3.178	0.563
p75	0.400	0.406	7.313	0.280	0.083	0.335	0.002	0.174	3.638	0.843
SD	0.247	0.220	2.075	0.175	0.119	0.191	0.031	0.609	0.784	0.348

Panel B: Correlation Matrix

	GD Supplier	GD Customer	Firm Size	Leverage	RD	CAPEX	Advertising	Sale Growth	Firm Age	Inst. Ownership
GD Supplier	1.000									
GD Customer	0.124	1.000								
Firm Size	0.157	-0.065	1.000							
Leverage	0.040	-0.062	0.434	1.000						
RD	0.094	0.061	-0.240	-0.199	1.000					
CAPEX	0.075	-0.001	-0.129	-0.216	0.143	1.000				
Advertising	0.084	0.103	0.021	-0.042	-0.022	0.105	1.000			
Sale Growth	0.073	0.061	0.056	0.015	0.081	0.017	0.065	1.000		

Firm Age	0.065	-0.004	0.322	0.086	-0.236	-0.223	-0.060	-0.030	1.000	
Inst. Ownership	0.170	-0.013	0.679	0.190	-0.085	-0.045	-0.014	0.073	0.304	1.000

Table 1 presents descriptive statistics and correlations for key variables across 4,779 observations from 2008 to 2022. Panel A includes the mean, median, and spread (p25, p50, p75, SD) of variables such as GD Supplier, GD Customer, Firm Size, and Institutional Ownership, providing insights into the distribution and variability of firm characteristics. Panel B shows the pairwise correlations among these variables, highlighting significant relationships explored further in subsequent analyses.

5.2 Empirical Results on Determinants of Supplier Workforce Gender Diversity

Table 2 presents the regression results examining the determinants of supplier workforce gender diversity (GD Supplier), focusing on the influence of customer diversity, firm characteristics, and control variables. The results highlight the critical role of GD customers, firm size, and leverage in shaping supplier workforce diversity, offering valuable insights into how diversity practices diffuse through supply chain relationships and internal firm factors.

The relationship between GD Customer and GD Supplier is positive and statistically significant across all models, with coefficients ranging from 0.080 to 0.082 ($p < 0.05$). This suggests that suppliers with customers exhibiting more robust gender diversity practices tend to adopt higher diversity in their workforces. Specifically, a 1-unit increase in customer diversity is associated with an approximately 0.08-unit increase in supplier diversity, highlighting an apparent spillover effect. These findings reinforce that customer relationships are central to promoting inclusivity within supply chains, as suppliers align their practices with customer expectations to maintain strong partnerships and reputational alignment.

Firm Size also emerges as a significant determinant of supplier diversity, with a positive coefficient of 0.021 ($p < 0.01$) in all models. This indicates that larger firms tend to have higher levels of workforce gender diversity, likely due to their more significant resources, institutional capacity, and visibility. For example, a 1-unit increase in the natural logarithm of firm size (roughly doubling the firm's size) corresponds to a 0.021-unit increase in GD Supplier. Larger firms are often better equipped to implement diversity programs and respond to external pressures from customers, investors, and regulators, reinforcing their role as leaders in fostering inclusivity.

In contrast, Leverage, measured as the ratio of total debt to total assets, shows no statistically significant effect on GD Supplier, with consistently negative coefficients of -0.018 across all models. This result suggests that a firm's financial risk or constraints do not directly influence workforce diversity. Instead, diversity initiatives may reflect strategic or cultural priorities that operate independently of financial Leverage, further underscoring the growing importance of diversity as a long-term value driver.

Beyond these key variables, other firm characteristics also provide valuable insights. R&D Intensity (RD) and CAPEX both have positive and significant effects on GD Supplier, with coefficients of 0.113 ($p < 0.05$) and 0.091 ($p < 0.01$), respectively. Conversely, Advertising Expenditures exhibit a significant negative relationship with GD Susuppliers-0.413, $p < 0.01$), possibly indicating that firms prioritizing external brand-building may allocate fewer resources to internal diversity efforts. Additionally, Firm Age shows a small but significant negative effect (-0.024, $p < 0.01$), suggesting that older firms may face cultural inertia or legacy practices that hinder progress in diversity initiatives.

In summary, Table 2 underscores the pivotal role of customer diversity and firm size in shaping workforce gender diversity among suppliers, while Leverage appears to play a less critical role. The findings demonstrate how diversity practices flow through supply chains, with customer relations as powerful drivers of change. Larger firms also play a crucial role in promoting diversity, using their resources and visibility to lead efforts toward greater inclusivity.

Meanwhile, the lack of significance for leverage highlights that diversity is not constrained by financial risk, further emphasizing its strategic importance. These results set the stage for further investigation into the broader economic implications of gender diversity practices and the dynamics of diversity gaps within supply chains.

TABLE 2: DETERMINANTS OF SUPPLIER WORKFORCE GENDER DIVERSITY

VARIABLES	(1) GD Supplier	(2) GD Supplier	(3) GD Supplier
GD Customer	0.080**	0.082**	0.082**
	(2.048)	(2.128)	(1.980)
Firm Size		0.021***	0.021***
		(6.331)	(4.268)
Leverage		-0.018	-0.018
		(-0.681)	(-0.464)
RD		0.113**	0.113
		(2.392)	(1.426)
CAPEX		0.091***	0.091***
		(4.526)	(3.023)
Advertising		-0.413***	-0.413
		(-2.921)	(-1.391)
Sale Growth		0.015**	0.015*
		(2.393)	(1.653)
Firm Age		-0.024***	-0.024
		(-3.319)	(-1.492)
Inst. Ownership		-0.000	-0.000
		(-0.028)	(-0.018)
Constant	0.225***	0.150***	0.150***
	(20.025)	(5.217)	(2.793)
Firm FE	YES	YES	YES
Industry x Year FE	YES	YES	YES
Errors Clustered by Firm	NO	No	YES
Observations	4,305	4,305	4,305
R-squared	0.676	0.686	0.686

Table 2 presents regression results examining the determinants of supplier workforce gender diversity (GD Supplier). The analysis includes firm-specific factors such as Firm Size, CAPEX, Advertising, and Firm. The models incorporate firm-fixed effects and industry-year interactions to account for unobserved heterogeneity, with standard errors clustered by the firm in the final model.

5.3 Empirical Results on the Impact of Board Diversity in Supply Chains

Table 3 analyzes the impact of board characteristics on supplier workforce gender diversity (GD Supplier). The percentage of female directors (%Female Directors) has a positive effect on diversity, with a coefficient of 0.140 (significant at $p < 0.10$), though its significance varies across specifications. In contrast, the percentage of independent

directors (%Independent Directors) consistently shows a significant positive influence on GD Supplier, with a coefficient of 0.118 ($p < 0.01$). This suggests that independent board members play a crucial role in prompting supplier diversity, likely due to their external perspective and reduced constraints from internal biases. Firm-level characteristics like Firm Size and CAPEX remain positively linked to supplier diversity, with coefficients of 0.018 ($p < 0.01$) and 0.091 ($p < 0.01$), respectively. However, Firm Age continues to show a negative impact (-0.026, $p < 0.10$), indicating that older firms may struggle more with adopting diverse supplier practices.

TABLE 3: DETERMINANTS OF SUPPLIER WORKFORCE GENDER DIVERSITY: THE IMPACT OF BOARD DIVERSITY

VARIABLES	(1) GD Supplier	(2) GD Supplier	(3) GD Supplier
GD Customer	0.082**	0.088**	0.088**
	(1.976)	(2.177)	(2.163)
%Female Directors	0.140*		0.097
	(1.676)		(1.118)
%Independent Director		0.118***	0.111***
		(3.056)	(2.780)
Firm Size	0.018***	0.017***	0.015***
	(3.629)	(3.396)	(3.051)
Leverage	-0.013	-0.009	-0.007
	(-0.350)	(-0.243)	(-0.176)
RD	0.109	0.102	0.100
	(1.374)	(1.296)	(1.267)
CAPEX	0.091***	0.095***	0.095***
	(3.013)	(3.186)	(3.164)
Advertising	-0.417	-0.417	-0.419
	(-1.401)	(-1.427)	(-1.432)
Sale Growth	0.016*	0.016*	0.016*
	(1.697)	(1.719)	(1.747)
Firm Age	-0.026	-0.027*	-0.028*
	(-1.576)	(-1.719)	(-1.761)
Inst. Ownership	-0.003	-0.019	-0.020
	(-0.113)	(-0.676)	(-0.702)
Constant	0.166***	0.127**	0.139**
	(2.986)	(2.359)	(2.456)
Firm FE	YES	YES	YES

Industry x Year FE	YES	YES	YES
Errors Clustered by Firm	YES	YES	YES
Observations	4,305	4,305	4,305
R-squared	0.687	0.689	0.689

Table 3 presents regression results examining the impact of board characteristics on supplier workforce gender diversity (GD Supplier). Key variables, such as the percentage of female and independent directors, are included to understand their influence. Firm-specific characteristics like Firm Size, CAPEX, and Advertising are also analyzed. The models incorporate firm-fixed effects, industry-year interactions, and firm-clustered standard errors to ensure robust estimation.

5.4 Valuation Effect of Gender Diversity Gaps in the Workforce Across Supply Chains

Table 4 investigates the valuation effect of gender diversity gaps (GD Gap) across supply chains by examining their impact on firm valuation metrics such as Tobin's Q and ROA. The results reveal that a more significant GD Gap is associated with a decrease in firm valuation, as indicated by the negative coefficients for Tobin's Q (ranging from -0.395 to -0.412, $p < 0.10$), suggesting that firms with greater diversity gaps tend to be valued less by the market. Interestingly, while GD Gap negatively impacts market valuation, it does not significantly affect profitability metrics such as ROA (coefficient = -0.002). Larger firms show a positive relationship with Tobin's Q, with coefficients up to 0.075 in some specifications, although the significance varies. Moreover, Institutional Ownership positively impacts firm valuation (coefficients from 0.591 to 0.627, $p < 0.05$ or $p < 0.01$), which may include diversity efforts. CAPEX also positively affects profitability, with a coefficient of 0.129 ($p < 0.01$), suggesting that strategic investments help improve financial stability and support fair diversity practices.

These findings highlight the broader financial incentives for addressing diversity gaps, particularly for improving investor perception and market valuation, while suggesting that the operational benefits may require a longer-term perspective to manifest.

TABLE 4: VALUATION EFFECT OF GENDER DIVERSITY GAPS IN THE WORKFORCE ACROSS SUPPLY CHAINS

VARIABLES	(1) Tobin's Q	(2) Tobin's Q	(3) Tobin's Q	(4) Tobin's Q	(5) ROA
GD Gap	-0.395*	-0.404*	-0.408*	-0.412*	-0.002
	(-1.750)	(-1.777)	(-1.763)	(-1.780)	(-0.093)
Firm Size	0.075*	0.061	0.069	0.057	0.024***
	(1.670)	(1.238)	(1.473)	(1.144)	(5.353)
Leverage	-0.730**	-0.709**	-0.716**	-0.700**	-0.183***
	(-2.336)	(-2.240)	(-2.285)	(-2.208)	(-6.607)
RD	-2.355***	-2.374***	-2.373***	-2.386***	-1.052***
	(-3.335)	(-3.340)	(-3.354)	(-3.355)	(-10.392)
CAPEX	1.499***	1.499***	1.507***	1.506***	0.129***
	(4.212)	(4.211)	(4.244)	(4.240)	(4.617)
Advertising	-0.549	-0.570	-0.560	-0.577	-0.425**
	(-0.469)	(-0.490)	(-0.474)	(-0.492)	(-2.102)
Sale Growth	0.213**	0.216**	0.214**	0.216**	0.007
	(2.319)	(2.354)	(2.325)	(2.355)	(0.604)
Firm Age	-0.149	-0.157*	-0.155	-0.161*	0.023**
	(-1.584)	(-1.683)	(-1.641)	(-1.718)	(2.578)
Inst. Ownership	0.627***	0.615**	0.596**	0.591**	-0.018
	(2.637)	(2.572)	(2.539)	(2.508)	(-0.850)
Female Board		0.663		0.604	0.021
		(1.119)		(1.008)	(0.427)
Board Independence			0.198	0.156	0.009
			(0.706)	(0.552)	(0.321)
Constant	0.498	0.575*	0.461	0.539	-0.161***
	(1.499)	(1.714)	(1.374)	(1.588)	(-4.762)
Firm FE	YES	YES	YES	YES	YES
Industry x Year FE	YES	YES	YES	YES	YES
Errors Clustered by Firm	YES	YES	YES	YES	YES
Observations	4,305	4,305	4,305	4,305	4,305
R-squared	0.528	0.529	0.528	0.529	0.676

Table 4 presents regression results exploring the valuation effect of gender diversity gaps (GD Gap) across firms, measured using Tobin's Q and Return on Assets (ROA). The analysis includes key variables such as Firm Size, CAPEX, Leverage, and Institutional Ownership, aiming to understand the relationship between gender diversity and firm performance. The models account for firm fixed effects and industry-year interactions, with standard errors clustered by firm.

5.5 Cross-Sectional Effects of Firm Characteristics on Gender Diversity Outcomes

Table 5 explores how firm characteristics influence gender diversity (*GD Gap*). Firms led by a female CEO show a significant reduction in *GD Gap* (-0.619, $p < 0.10$), highlighting the positive role of female leadership in enhancing diversity in response to societal movements. Similarly, firms with a critical mass of women directors exhibit a reduction in *GD Gap* (-0.469, $p < 0.05$), indicating that strong female representation on the board strengthens the firm's diversity efforts. Institutional owner's ownership plays a key role, with high owner ownership significantly reducing the *GD Gap* (-0.748, $p < 0.05$), suggesting that institutional investors push for equitable practices following social movements. Regarding *Firm Size*, larger firms demonstrate a proactive response to societal pressure, with a significant coefficient of 0.796 ($p < 0.05$).

TABLE 5: THE EFFECTS OF FIRM CHARACTERISTICS

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Dividend		Board Independence		Institutional Ownership		Product Market Fluidity	
	High	Low	High	Low	High	Low	High	Low
GD Gap	-0.619*	-0.050	-0.469**	2.062	-0.748**	-0.095	-0.233	-0.458**
	(-1.940)	(-0.142)	(-2.048)	(1.619)	(-2.465)	(-0.232)	(-0.534)	(-2.152)
Firm Size	0.011	-0.051	0.043	0.796**	0.069	0.030	0.056	0.057
	(0.153)	(-0.579)	(0.829)	(2.337)	(1.018)	(0.308)	(0.629)	(0.686)
Leverage	-0.656	-0.322	-0.696**	0.036	-0.532	-0.434	-1.176**	0.371
	(-1.529)	(-0.617)	(-2.096)	(0.029)	(-1.300)	(-0.450)	(-2.577)	(0.544)
RD	2.024	-3.402***	-2.452***	3.491	-2.386	-1.589*	-3.469***	-0.590
	(0.947)	(-3.986)	(-3.341)	(0.848)	(-1.592)	(-1.898)	(-4.016)	(-0.553)
CAPEX	0.527*	1.692***	1.528***	0.283	1.849***	1.340**	1.748***	1.481**
	(1.692)	(3.535)	(4.068)	(0.502)	(4.061)	(2.489)	(2.812)	(2.346)
Advertising	-5.545**	-0.839	-0.613	-3.089	-2.310	0.824	-2.151	-0.996
	(-2.117)	(-0.554)	(-0.499)	(-0.397)	(-1.531)	(0.376)	(-1.258)	(-0.738)
Sale Growth	0.140	0.224*	0.218**	0.015	0.278**	0.076	0.207**	0.049
	(1.156)	(1.850)	(2.368)	(0.089)	(2.299)	(0.650)	(2.383)	(0.256)
Firm Age	-0.189	-0.139	-0.142	-2.730**	-0.416**	-0.166	0.012	-0.014
	(-1.006)	(-0.965)	(-1.513)	(-2.349)	(-2.385)	(-1.162)	(0.065)	(-0.122)
Institutional Ownership	0.695**	0.895**	0.728***	0.819	0.084	-0.420	0.675*	0.308
	(2.088)	(2.509)	(3.067)	(0.492)	(0.139)	(-0.738)	(1.733)	(0.778)

Female Board	1.132**	1.750	0.505	-1.495	0.637	1.844	1.621	0.579
	(2.153)	(1.473)	(0.614)	(-1.506)	(1.108)	(1.055)	(1.117)	(1.145)
Board Independence	0.159	-0.168	0.236	5.580	0.279	0.822	-0.403	0.256
	(0.381)	(-0.339)	(0.604)	(1.504)	(0.790)	(1.091)	(-0.791)	(0.944)
Constant	0.787	1.106**	0.449	2.739	1.514**	0.587	0.706	-0.357
	(1.184)	(2.101)	(1.284)	(0.686)	(2.182)	(1.261)	(1.061)	(-0.757)
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES
Industry x Year FE	YES	YES	YES	YES	YES	YES	YES	YES
Errors Clustered by Firm	YES	YES	YES	YES	YES	YES	YES	YES
Observations	1,322	2,690	4,026	208	2,102	1,898	1,910	2,020
R-squared	0.797	0.551	0.536	0.951	0.710	0.601	0.574	0.652

Table 5 presents regression results examining how firm characteristics—such as dividend payout, board independence, institutional ownership, and product market fluidity—affect gender diversity gaps (GD Gap). The analysis explores how varying levels of these key characteristics influence diversity outcomes, using subgroup comparisons for firms with different characteristics. The models incorporate firm fixed effects and industry-year interactions to control for unobserved heterogeneity, and standard errors are clustered at the firm level to ensure robust estimation.

The findings highlight the pivotal role of customer gender diversity (GD Customer) in driving diversity among supplier firms. Across all models, GD Customer consistently demonstrates a significant positive effect on GD Supplier, underscoring how diversity expectations extend through supply chain relationships. Suppliers align their diversity efforts with those of the customers, reflecting the interconnected nature of corporate practices and the influence of external relationships on internal workforce policies.

Firm size also emerges as a key determinant of supplier diversity. Larger firms exhibit greater levels of diversity, supported by their access to resources, established infrastructures, and heightened accountability to stakeholders. These firms are better equipped to implement and sustain diversity initiatives, positioning size as a significant enabler of inclusive practices. In contrast, Leverage shows no significant relationship with GD Supplier, suggesting that financial constraints do not necessarily hinder the prioritization of gender diversity. This result highlights that diversity is often driven by strategic priorities and reputational goals rather than financial limitations.

The chapter also examined the broader economic implications of diversity gaps within supply chains. The results show that larger gaps in gender diversity between customers and suppliers negatively impact firm valuation, as indicated by Tobin's Q. This finding

emphasizes that diversity gaps are not only a social issue but also have financial consequences, affecting how firms are perceived and valued by the market. Addressing such gaps can enhance a firm's reputation, competitiveness, and stakeholder trust, reinforcing the strategic importance of aligning diversity practices across supply chains.

In conclusion, this chapter illustrates the interconnected drivers of workforce gender diversity and its significance for supply chain relationships and corporate outcomes. Customer relationships and firm size stand out as pivotal factors, shaping diversity practices and highlighting the broader influence of interconnected networks. Meanwhile, the economic consequences of diversity gaps underscore the tangible benefits of inclusivity, making it both a strategic and financial priority for firms. These findings provide a foundation for understanding how organizations can address diversity challenges and leverage inclusivity to achieve competitive advantage and long-term success.

CHAPTER 6: Conclusion, Discussion, and Limitations

This thesis has examined the factors influencing gender diversity within supply chains, focusing on how customer-supplier relationships shape diversity outcomes of suppliers. We specifically investigated whether the workforce gender diversity practices of customers create incentives for suppliers to adopt comparable initiatives and the extent to which gender diversity gaps between customers and suppliers have economic implications.

One of the most significant findings is that when customer firms exhibit stronger gender diversity practices, their suppliers are more likely to follow suit. This "spillover effect" highlights how diversity practices are not confined to individual organizations but extend through supply chain relationships, pushing other firms to align with their customers' expectations. These findings support the first hypothesis, emphasizing the central role of customer relationships in promoting diversity within supply chains.

A key part of this study also investigated the economic implications of gender diversity gaps within supply chains. The findings reveal that larger diversity gaps between customers and suppliers negatively affect firm valuation, as shown by the significant negative relationship with Tobin's Q. While this supports the second hypothesis regarding the impact on firm valuation, the results for operating performance metrics, such as ROA, were less conclusive, indicating that the economic consequences of diversity gaps may primarily manifest in market perception rather than immediate operational outcomes.

Despite these valuable insights, some limitations should be acknowledged. First, the sample size, though comprehensive in scope with 4,779 firm-year observations, is relatively modest compared to the vast diversity of global firms and industries. Second, while this thesis sheds light on the relationships between customer diversity, supplier diversity, and firm performance, it does not address potential endogeneity concerns directly. This thesis employed firm and industry-year fixed effects to mitigate these concerns, accounting for time-invariant characteristics and industry-specific trends.

Future studies could explore more direct approaches to address endogeneity and benefit from expanding the dataset to include a broader range of industries, geographies, and time periods to provide a more holistic understanding of diversity dynamics.

References

Abbott, L. J., Parker, S., & Presley, T. J. (2012). Female board presence and the likelihood of financial restatement. *Accounting Horizons*, *26*(4), 607–629. https://doi.org/10.2308/acch-50249

Agarwal, S., Qian, W., Reeb, D. M., & Sing, T. F. (2016). Playing the boys game: Golf buddies and board diversity. *American Economic Review*, *106*(5), 272–276. https://doi.org/10.1257/aer.p20161033

Attig, N., & Boshanna, A. (2023). ESG washing: When cheap talk is not cheap! https://doi.org/10.2139/ssrn.4672511

Baker, A. C., Larcker, D. F., McClure, C. G., Saraph, D., & Watts, E. M. (2024). Diversity washing. *Journal of Accounting Research*, *62*(5), 1661–1709. https://doi.org/10.1111/1475-679X.12542

Billings, M. B., Klein, A., & Shi, Y. C. (2022). Investors' response to the #MeToo movement: Does corporate culture matter? *Review of Accounting Studies*, *27*(3), 897–937. https://doi.org/10.1007/s11142-022-09695-z

Cai, W., Chen, Y., Rajgopal, S., & Azinovic-Yang, L. (2024). Diversity targets. *Review of Accounting Studies*, *29*(3), 2157–2208. https://doi.org/10.1007/s11142-024-09831-x

Cohen, L., & Frazzini, A. (2008). Economic links and predictable returns. *The Journal of Finance*, *63*(4), 1977–2011. https://doi.org/10.1111/j.1540-6261.2008.01379.x

Conference Board. (2023). How corporate director diversity can contribute to board effectiveness. Report retrieved from https://www.conference-board.org/pdfdownload.cfm?masterProductID=49284

Cumming, D., Leung, T. Y., & Rui, O. (2015). Gender diversity and securities fraud. *Academy of Management Journal*, *58*(5), 1572–1593. https://doi.org/10.5465/amj.2013.0750

Dhaliwal, D., Judd, J. S., Serfling, M., & Shaikh, S. (2016). Customer concentration risk and the cost of equity capital. *Journal of Accounting and Economics*, *61*(1), 23–48. https://doi.org/10.1016/j.jacceco.2015.03.005

Do, T. K., Huang, H. H., & Le, A.-T. (2023). Customer concentration and stock liquidity. *Journal of Banking & Finance*, *154*, 106935. https://doi.org/10.1016/j.jbankfin.2023.106935

Files, R., & Gurun, U. G. (2018). Lenders' response to peer and customer restatements. *Contemporary Accounting Research*, *35*(1), 464–493. https://doi.org/10.1111/1911-3846.12374

Frijns, B., Garel, A., & Liao, S. (2024). Employee demographic diversity and firm performance. *Financial Management,* https://doi.org/10.1111/fima.12484

Gu, F., Lev, B., & Zhu, C. (2023). All losses are not alike: Real versus accounting-driven reported losses. *Review of Accounting Studies*, *28*(3), 1141–1189. https://doi.org/10.1007/s11142-023-09799-0

Gul, F. A., Srinidhi, B., & Ng, A. C. (2011). Does board gender diversity improve the informativeness of stock prices? *Journal of Accounting and Economics*, *51*(3), 314–338. https://doi.org/10.1016/j.jacceco.2011.01.005

Harvie, K., Marshall-Mcaskey, J., & Johnston, L. (1998). Gender-based biases in occupational hiring decisions. *Journal of Applied Social Psychology*, *28*(18), 1698–1711. https://doi.org/10.1111/j.1559-1816.1998.tb01341.x

Hertzel, M., Li, Z., Officer, M., & Rodgers, K. (2008). Inter-firm linkages and the wealth effects of financial distress along the supply chain☆. *Journal of Financial Economics*, *87*(2), 374–387. https://doi.org/10.1016/j.jfineco.2007.01.005

Kim, J.-B., Song, B. Y., & Zhang, Y. (2015). Earnings performance of major customers and bank loan contracting with suppliers. *Journal of Banking & Finance*, *59*, 384–398. https://doi.org/10.1016/j.jbankfin.2015.06.020

Li, C., Li, N., & Zhang, F. (2021). Using economic links between firms to detect accounting fraud. https://doi.org/10.2139/ssrn.3780047

Li, Q., Lourie, B., Nekrasov, A., & Shevlin, T. (2022). Employee turnover and firm performance: Large-sample archival evidence. *Management Science*, *68*(8), 5667–5683. https://doi.org/10.1287/mnsc.2021.4199

McKinsey. (2024). Women in the workplace 2024: The 10th-anniversary report. (September 17, 2024). https://www.mckinsey.com/featured-insights/diversity-and-inclusion/women-in-the-workplace

PwC. (2022). PwC's 25th Annual Global CEO Survey: Reimagining the outcomes that matter. https://www.pwc.com/gx/en/ceo-survey/2022/main/content/downloads/25th_CEO_Survey.pdf

Wang, J. (2012). Do firms' relationships with principal customers/suppliers affect shareholders' income? https://doi.org/10.2139/ssrn.1630983

Xie, L., Zhou, J., Zong, Q., & Lu, Q. (2020). Gender diversity in R&D teams and innovation efficiency: Role of the innovation context. *Research Policy*, *49*(1), 103885. https://doi.org/10.1016/j.respol.2019.103885

Yin, C., Cheng, X., Yang, Y., & Palmon, D. (2021). Do corporate frauds distort suppliers' investment decisions? *Journal of Business Ethics*, *172*(1), 115–132. https://doi.org/10.1007/s10551-019-04369-4

Appendix

In preparing this thesis, AI tools such as ChatGPT and Grammarly were employed solely for grammar checks, adjustments, and refining the clarity of the text. I originally wrote all thesis sections. AI generated no part of the thesis directly, ensuring the content reflects the author's original research, analysis, and writing.