Three Essays on Managerial Traits in Corporate Outcomes

by

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ABSTRACT

Understanding the role of leadership in shaping organizational outcomes is an important question in finance and management. As firms navigate increasingly complex and dynamic environments, the personal attributes, values, and identities of top executives have become important drivers of strategic behavior and firm performance. This dissertation explores how leadership identity and traits—particularly in the context of family involvement and CEO humility—affect corporate outcomes including firm performance, innovation, and financing costs. The three essays use a behavioral and information-based perspective to examine how non-financial dimensions of leadership affect organizational and market outcomes, thereby contributing to the debates in corporate finance, organizational behavior, and strategic management.

The first essay examines the concept of family firm identity, defined as the magnitude of alignment and integration between family values and business objectives. Drawing on agency theory, this study investigates how family firm identity affects firm performance and the information environment. Using textual analysis to construct a novel measure of family firm identity, the essay finds that a stronger identity is associated with lower firm performance, an effect driven by reduced analyst coverage and increased forecast dispersion. These results suggest that identity-based characteristics can amplify Type II agency problems and impair the flow of information between the firm and external stakeholders.

The second essay studies the individual level by analyzing the role of CEO teachability, an important dimension of humility, in promoting corporate innovation. Using a difference-in-differences (DID) method around CEO transitions, this essay provides causal evidence that teachable CEOs—those are open to feedback and new ideas—significantly improve both the quality and quantity of innovation outputs. The findings show that teachability enhances

organizational mechanisms such as teamwork and inventor inflow, demonstrating how executive personality traits can shape a firm's innovation culture and long-term competitiveness.

The third essay extends the analysis of CEO humility to external financial outcomes, specifically the cost of debt. While humility has been shown to foster positive internal dynamics, this study reveals a potential external cost: firms led by humble CEOs tend to incur higher borrowing costs. This effect is mediated by analyst expectations, suggesting that humility may be perceived as a sign of caution or lack of assertiveness, thereby lowering market expectations and increasing lenders' perceptions of risk. These findings highlight the tension between the internal benefits and external interpretations of leadership traits, particularly in capital markets shaped by implicit leadership theories and stereotypes.

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CHAPTER 1: GENERAL INTRODUCTION

The personal qualities and identities of top executives are increasingly recognized as important factors affecting firm behavior and market outcomes (Zellweger, Eddleston, and Kellermanns, 2010; Zhang, Ou, Tsui, and Wang; 2017; Petrenko, Aime, Recendes, and Chandler, 2019; Kraft, Dickler, and Withers, 2025). While traditional corporate finance has emphasized structural and financial determinants (i.e., ownership, governance, and capital structure) as the primary drivers of firm performance (Han and Suk, 1998; Bhagat and Bolton, 2008), a large body of interdisciplinary research emphasizes that leadership characteristics and perceptions of executives play an equally significant role (Ho, Huang, Lin and Yen, 2016; Kim and Anderson, 2024). Executives do not only act as agents of shareholders; they also shape the firm's identity, guide its strategic direction, and affect how stakeholders interpret and evaluate its actions.

This dissertation comprises three empirical essays that collectively examine how leadership identity and personality traits influence corporate outcomes. Each essay addresses a distinct research question, employs rigorous empirical methods, and contributes to a unified theme: how behavioral and perceptual aspects of leadership shape firm performance, innovation, and financial constraints. While existing research on family firms often emphasizes governance structure and succession planning, this dissertation focuses on family firm identity and its impact on the firm's information environment and market value. Similarly, while CEO personality research has often emphasized traits such as overconfidence or narcissism, this work pivots toward humility, exploring its dual effects: fostering internal innovation and inadvertently raising the cost of external financing. This behavioral lens is not only theoretically relevant but practically urgent,

as firms navigate increasingly stakeholder-driven markets, where image, perception, and leadership signaling play key roles in shaping access to resources and long-term sustainability.

This dissertation makes several important contributions. Theoretically, it extends agency theory (Jensen and Meckling, 1976), upper echelons theory (Hambrick, 2007), and implicit leadership theory (Lord et al., 1984; Engle and Lord, 1997) by demonstrating how identity and personality traits interact with firm-specific and market-based contingencies. The dissertation is motivated by two interrelated themes: the identity of the firm as shaped by its founding family, and the personality traits of top executives, with a particular focus on CEO humility. Both themes reflect non-financial, behavioral dimensions that influence firm values, stakeholder perceptions, and financial outcomes.

Drawing on agency theory, essay 1 examines how family firm identity influences firm performance through its impact on the information environment. Using data from 132 U.S. family firms in the S&P 500 from 2005 to 2021, this paper finds that strong family identity is negatively related to firm performance, suggesting that Type II agency problems (conflicts between controlling and minority shareholders) outweigh Type I problems (owner–manager conflicts). Analyst coverage and forecast dispersion partially mediate this relationship, indicating that family identity shapes performance by influencing the firm's information environment. This effect is further moderated by the firm's historical performance relative to its aspirations, offering new insight into the contingent effects of family identity.

Essay 2 extends upper echelons theory by focusing on a key dimension of humility, teachability, to examine whether humble CEOs foster innovation. Using earnings call transcripts from listed U.S. firms between 2010 and 2020, the study finds that teachable CEOs significantly enhance both the volume and quality of innovation, as measured by citations and patents. The

positive effect is especially pronounced in large, mature firms, where managing complex innovation systems is critical. Mechanism analyses show that teachable CEOs foster a collaborative culture and attract inventive talent, emphasizing the organizational value of humility in promoting sustained innovation.

Based on implicit leadership theory, essay 3 explores the external financial consequences of CEO humility by investigating its effect on the cost of debt. Using textual analysis to measure humility and controlling for financial and structural firm characteristics, this paper finds a positive relationship between CEO humility and debt costs, mediated by analysts' lower performance expectations. The results demonstrate that humble CEOs may conflict with dominant leadership stereotypes, leading lenders to demand a premium. This effect is stronger in older firms, where humility may be interpreted as a signal of reduced assertiveness. The essay contributes to the cost of debt literature by identifying CEO personality as a novel explanatory factor and highlights the signaling challenges faced by humble leaders in financial markets.

Methodologically, this dissertation advances textual analysis as a scalable and robust alternative to traditional approaches—such as surveys, lab experiments, and third-party ratings—for measuring abstract constructs like identity and humility. Prior research has typically relied on these conventional methods to capture theoretical constructs such as family firm identity or CEO humility (Berrone, Cruz, Gomez-Mejia, and Larraza-Kintana, 2012; Eddleston and Mulki, 2021). In contrast, this dissertation demonstrates the effectiveness of textual analysis in extracting these constructs from naturally occurring firm disclosures, offering a less obtrusive, recall-bias-free, and highly replicable measurement strategy.

The findings across the three essays offer valuable practical implications for family firms, organizational leaders, and capital market participants. First, the research underscores the

importance of strategic identity and leadership traits in shaping firm outcomes. Family firms, in particular, should carefully manage how family identity is expressed in governance and operations. While a strong identity can promote long-term commitment and stability, overemphasis may deter external stakeholders, reduce analyst engagement, and impair firm valuation. Balancing family values with professional management and transparent communication can enhance both performance and investor confidence. Second, CEO humility emerges as a key driver of innovation and financing outcomes. Organizations should prioritize the selection and development of humble, teachable leaders who foster collaboration, enhance knowledge flow, and support sustained innovation. At the same time, these leaders must be mindful of external perceptions—clearly signaling competence and strategic vision to mitigate potential concerns among lenders and investors. Finally, the studies highlight the need to align leadership, culture, and stakeholder engagement with long-term strategic goals. Firms seeking to maintain competitive advantage and market access must not only invest in innovation and internal cohesion but also manage external perceptions, especially when identity or leadership style may be misunderstood. A holistic approach that integrates leadership development, communication strategy, and performance management can help firms navigate complex environments and improve both innovation and financial outcomes.

CHAPTER 2: ESSAY 1

Family Firm Identity and Firm Performance: A Textual Analysis

Abstract

While the significance of family firm identity (FFI) has been widely acknowledged in the literature, it remains unclear whether, and through which mechanisms, FFI influences firm performance. In this paper, we use textual analysis to address these issues. We find that FFI has a negative relationship with Tobin's Q, partially mediated by analyst coverage and forecast dispersion. Furthermore, we show that the firm's performance relative to its aspiration negatively moderates the relationship between FFI and firm performance. Specifically, when the performance of a firm relative to its aspiration is high, the negative impact of FFI diminishes. This study highlights the impact and mechanisms of FFI on firm performance, providing practical insights to support the development and growth of family-owned firms.

***Keywords**:* Family firm identity; Firm performance; Analyst coverage; Analyst forecast dispersion

2. 1 Introduction

Family firm is a common organizational structure worldwide (La Porta et al., 1999). Two important questions dominate research in this area: whether family firms outperform their non-family counterparts, and why do some family firms outperform others? This paper studies the latter question. Existing literature explains the variation in family firm performance through factors such as ownership, control, and management (Claessens et al., 2002; Cronqvist & Nilsson, 2003; Villalonga & Amit, 2008). Although these factors influence firm performance, the direction of their impact is mixed, partly due to the interconnections between ownership, control, and management. For instance, Holderness and Sheehan (1988) report a negative link between ownership concentration and Tobin's Q, whereas Anderson and Reeb (2003) report a positive effect among large U.S. firms. Beyond ownership, control, and management, family firms' beliefs and goals also significantly affect its value (Zellweger, Eddleston, and Kellermanns, 2010). To address these issues, this paper explores how family firm identity (FFI) influences performance and further investigates mechanisms and boundary conditions that shape this effect.

FFI is the combined identity of both owning the family and the business, with a certain degree of integration. The greater the alignment between the family's values and goals with those of the business, the more significant the overlap (Astrachan, Botero, Astrachan and Prügl, 2018). It reflects the extent to which a business is recognized—by its owners, employees, customers, and other stakeholders—as a family business rather than a conventional corporation. FFI is affected by several factors, including family involvement and control, emotional attachment and legacy, reputation and public perception, long-term orientation, and the firm's values and culture. It reflects how the family's traditions, influence, and strategic vision shape the firm's operations, reputation, and decision-making. Understanding how this identity influences performance provides valuable insights into the diversity and variation in outcomes among family businesses.

Following agency theory, two types of agency conflicts can affect firms (Jensen & Meckling, 1976). The first is the principal-agent conflict (Type I), and the second is the conflict between controlling shareholders and minority investors (Type II). Family firms are often thought to experience fewer Type I issues because the interests between principal (the family) and agent (often family members themselves) tend to be aligned. However, family firms can be more vulnerable to Type II problems, as controlling family shareholders might leverage their power to seek private benefits at the expense of minority shareholders. In many family-controlled companies, this entrenched control by the family can make Type II agency costs more severe than Type I, potentially undermining firm value. While the reduction in Agency Problem I can enhance firm value, the risks associated with Agency Problem II may negatively affect it.

These agency dynamics further shape how family firms manage disclosure, which in turn affects the quality of their information environment. The alignment between principals and managers in family firms often promotes more voluntary disclosures and higher quality financial reporting (Chen et al., 2008; Cascino et al., 2010), as family shareholders are incentivized to monitor managers or have aligned interests. However, the entrenchment effect associated with Agency Problem II suggests the opposite, favoring greater opacity (Fan and Wong, 2002). Consequently, the overall impact of family firm identify on a firm's information environment depends on a tradeoff between the alignment effect and entrenchment effect. The quality of a firm's information environment directly influences analyst activity, which in turn affects firm performance, since analysts act as information intermediaries (Diether et al., 2002; Johnson, 2004; Lang et al., 2004). Therefore, we propose that analyst activities, such as analyst following and forecasting, may serve as channels linking FFI to firm performance.

We conduct an empirical investigation using a sample of 132 family-owned firms listed on the S&P 500 from 2005 to 2021. Our findings indicate that stronger FFI is related to lower firm valuation, which is measured by Tobin's Q. Employing the mediation framework proposed by Baron and Kenny (1986), we show that analyst coverage and forecast dispersion partially explain this relationship. Specifically, a pronounced family identity reduces analyst coverage and increases forecast uncertainty, which in turn negatively affects firm performance. Additionally, we find that this negative association is moderated by the firm's historical performance relative to aspirational targets—underperformance mitigates the detrimental effects of family identity.

This paper makes three contributions. First, we introduce a novel methodological approach to quantify FFI using computer-aided textual analysis. In prior studies, FFI has typically been treated as a theoretical construct measured via surveys, experiments, or case studies (Berrone et al., 2012; Eddleston & Mulki, 2021). To our knowledge, content analysis has not yet been applied to operationalize this construct. We are the first to develop a text-based measure of FFI, calculating the ratio of the frequency of "family" words to "firm" words in CEO communications (earnings call transcripts). This deductive, theory-driven measure captures the extent of family emphasis in the firm's discourse—the higher the relative frequency of family-related terms, the stronger the family identity (Zellweger et al., 2010). Our approach offers a reliable, unobtrusive, and replicable way to gauge FFI at scale, opening new avenues for future research on family businesses.

Second, our findings enrich family business literature by demonstrating that FFI can, on balance, diminish firm value through adverse effects on the information environment and analyst behavior. In line with agency theory arguments for family firms, we find a negative relationship between FFI and firm performance, indicating that the costs stemming from Type II agency problems outweigh the benefits from reduced Type I problems, resulting in a net negative effect

on firm value. Our results also reveal that FFI decreases analyst coverage while increasing forecast dispersion, indicating that a strong family identity may create an information environment less conducive to analyst engagement and consensus.

Lastly, we identify a boundary condition that tempers the adverse impact of family identity: performance relative to aspirations. We find that a firm's past performance relative to its aspiration level moderates this relationship. Specifically, when past performance falls significantly below aspiration levels, the negative effect of FFI on firm performance is lessened. This finding suggests that underperformance relative to goals may prompt family firms to prioritize financial objectives over non-financial, socioemotional ones. This result aligns with the view that family firms typically emphasize social emotional wealth (SEW) over financial gains but may adjust their focus when faced with performance pressures (Berrone et al., 2010; Cennamo et al., 2012).

The practical implications of these findings are noteworthy. First, family firms should carefully manage the influence of family identity on firm values. While a strong family identity can reinforce values and long-term goals, excessive focus on family influence may inadvertently harm firm performance, as indicated by a lower Tobin's Q. Family leaders could benefit from adopting a more balanced approach, integrating professional management practices that prioritize performance while preserving key family values.

Second, given that FFI is negatively associated with analyst coverage and positively related to forecast dispersion, family firms might consider enhancing their transparency and communication with external stakeholders. Increased disclosure and consistent engagement with analysts can improve the firm's information environment, potentially leading to more analyst coverage and better forecasts, which could help mitigate the negative valuation effects of a strong family identity.

Third, the moderation effect of past performance relative to aspiration suggests that family firms should carefully evaluate their historical performance when setting future goals. For firms that have previously underperformed, strategic adjustments to boost innovation, efficiency, or market engagement may help improve perceptions and align performance more closely with market expectations.

Lastly, investors considering family firms should be aware of the potential influences of FFI on performance and information environment. A strong family identity can signal stability and long-term orientation, but it might also exhibit lower market responsiveness. Investors might therefore factor in family identity when assessing the risk and growth potential of family-owned companies. By leveraging these insights, family firms can better manage the complexities associated with family identity and improve their overall market performance and attractiveness to external stakeholders.

This paper is organized as follows. Section 2.2 reviews related literature and presents the hypotheses. Section 2.3 outlines the data and variable construction. Section 2.4 describes the methodology and reports the empirical results. Section 2.5 concludes.

2.2. Literature Review and Hypotheses Development

This section reviews the existing literature on family firm identity (FFI), analyst forecasts, CEO family status, and firm aspirations. We use this foundation to develop a conceptual framework that links FFI to performance outcomes, identifying key mediators and moderators in the relationship.

2.2.1 Family firm identity and firm performance

Astrachan, Botero, Astrachan, and Prügl (2018) define *family firm identity* as the integration of the identities of the owning family and the business, where a stronger alignment

between family and business values and goals leads to a greater overlap. This concept highlights the interconnectedness of two distinct social categories, “family” and “firm”, and positions family businesses as *hybrid identity organizations* that merge both family and corporate social forms (Whetten et al., 2014). The extent of identity integration varies across family firms, ranging from minimal overlap, where family influence is limited, to a combination with high level, where the business is deeply intertwined with family values, traditions, and governance. Highly integrated family firms exhibit shared goals, beliefs, and norms, which strengthen their organizational identity and differentiate them from non-family firms.

FFI reflects the extent to which a business is recognized by its owners, employees, customers, and other stakeholders as a family business rather than a conventional corporation. It emerges when family members perceive that the family—including its management, control, values, and goals—has a meaningful influence on the firm, shaping its management and operations (Zellweger et al., 2010). Family members then imprint these family influences and characteristics on employees, customers, investors, and other stakeholders to reinforce and spread the FFI.

Several key elements shape this identity. First, the level of family participation in management and governance (Villalonga & Amit, 2006). Second, the degree to which the firm reflects family’s history, traditions, and long-term aspirations, including intergenerational continuity (Zellweger et al., 2010). Third, external recognition of the firm as a family business (Sageder et al., 2018). Fourth, the firm’s emphasis on stewardship, sustainability, and intergenerational succession rather than short-term profits (Miller & Le Breton-Miller, 2006; Lumpkin & Brigham, 2011). Lastly, the influence of family values on the firm’s mission, ethics, and internal culture (Dyer, 1988; Berrone et al., 2012).

The performance implications of FFI are complex. On the positive side, FFI can enhance financial performance by leveraging competitive advantages from intangible resources (Zellweger et al., 2010). Internally, it fosters a sense of belonging among employees, which promotes emotional ties and aligns employees with the firm's common goals (Sudaramurthy and Kreiner, 2008). This sense of belonging also encourages cohesion and collectivism, helping to overcome identity conflicts and improving overall firm performance (Voss et al., 2006; Calabrò et al., 2017). Additionally, the alignment of interests between principals and managers incentivizes large shareholders to act as monitors, which improves decision-making in the best interests of shareholders and enhances earnings quality (Wang, 2006). Externally, a strong family brand strategy can attract consumers, further boosting firm performance (Kashmiri and Mahajan, 2010; Astrachan et al., 2018).

Conversely, strong family identity can generate inefficiencies. The entrenchment effect associated with Agency Problem II suggests that large shareholders may prioritize personal benefits, increasing agency costs and potentially diminishing firm value (Cronqvist and Nilsson, 2003; Fan and Wong, 2002). Furthermore, FFI often promotes goals related to maintaining family control and preserving family values, which may lead to hiring less qualified family members over skilled non-family professionals, thereby negatively affecting financial performance (Brundin, 2014; Firfiray et al., 2018). Given these opposite effects, we propose the following hypotheses:

H1a: Family firm identity positively influences firm's performance.

H1b: Family firm identity negatively influences firm's performance.

2.2.2 Family firm identity and analyst activities

In this paper, "analyst" refers to information intermediaries who assess firms' prospects, forecast earnings, and translate these into equity forecasts, stock prices, and buy-sell-hold recommendations (Lang et al., 2004). To perform these tasks, analysts combine strong economic expertise with close relationships with the companies' management teams (Yu, 2008). For instance, analysts attend company release conferences and ask questions to gain deeper insights. Analysts contribute to market efficiency by reducing information asymmetry and enhancing corporate governance (Lobo et al., 2012; Frankel et al., 2006). Analyst coverage, as discussed in this paper, consists of analysts following public companies to provide stock price forecasts and buy-sell recommendations. Each company is followed by multiple analysts, and each analyst tracks multiple companies.

Family ownership can influence the quality of information available to analysts through two opposing mechanisms: alignment and entrenchment (Claessens et al., 2002). The alignment effect occurs when the interests of major shareholders and managers coincide, encouraging oversight and leading to higher earnings quality and voluntary disclosures (Wang, 2006; Chen et al., 2008; Cascino et al., 2010). In contrast, the entrenchment effect suggests that dominant family shareholders may restrict transparency to protect private benefits, resulting in poorer disclosure and a less informative environment (Fan & Wong, 2002).

Given this analysis, family involvement may have mixed effects on a firm's information environment, which directly influences analyst activities, such as coverage, forecast accuracy, and forecast dispersion. Higher analyst coverage increases a firm's visibility in the market. When more analysts follow a firm, there is greater information availability and transparency, which can attract a larger pool of investors and increase market confidence. Lang and Lundholm (1996) demonstrate

that firms with broad analyst coverage often experience higher trading volumes and reduced stock price volatility, as increased information leads to more informed trading. This heightened market confidence can result in higher firm valuations and improved performance, as firms with steady investor interest and liquidity find it easier to raise capital for growth initiatives.

Analysts' forecasts mitigate information asymmetry between external investors and the firm by providing independent assessments and translating complex financial data into actionable insights. Firms with extensive analyst coverage tend to experience lower capital costs due to the reduction in perceived risk and information gaps (Bhushan, 1989). When investors are better informed, they are less likely to demand higher returns to compensate for risk, thus enhancing the firm's performance through a lower cost of debt and equity. Lang, Lins and Miller (2003) relate forecast accuracy and the number of analyst followers to firm value and find that both variables are positively related to Tobin's Q. However, Diether et al. (2002) and Johnson (2004) document a negative relationship between forecast dispersion and stock returns. Based on these studies, we propose the hypotheses as follows:

H2: Analyst activities including coverage, forecast accuracy and forecast dispersion, mediate the relationship between family firm identity and firm performance.

2.2.3 Moderating effect of CEO's family status

A firm's identity is shaped by the core values and beliefs that top leaders establish to guide and drive organizational behavior (Voss et al., 2006). According to the upper echelon theory, executives' experiences, values, and personalities shape how they interpret the situations they face, which in turn influences their strategic decisions and firm performance (Hambrick, 2007). In

family firms, when the CEO is also a family member, their personal identity often aligns closely with that of the firm. This overlap amplifies the expression of family values within the organization and reinforces the family identity. We argue that the CEO's familial connection may influence the strength and outcomes of the relationship between identity and performance. Hence, we propose:

H3: CEO's family status positively moderates the role of family firm identity on firm performance.

2.2.4 Moderating role of performance aspiration

The performance of a firm is affected by both internal and external factors. The Behavioral Theory of the Firm (BTOF) demonstrates that a firm's strategic adaptation, risk-taking, and organizational search activities are shaped by its behaviors (Cyert and March, 1963; Miller and Chen, 2004). Performance relative to aspiration is a key driver of these behaviors (Park, 2007), meaning that past performance relative to aspiration levels may influence a firm's future performance by encouraging either risk-taking or strategic adjustments.

FFI also influences behaviors and strategies that align with non-financial goals. For example, family firms are often risk-averse, with strategies reflecting this caution (Belenzon et al., 2016). Belenzon et al. (2016) argue that the strong integration of family within the business fosters identification and commitment to the firm, resulting in conservative behaviors such as slower investment, greater cash holdings, and reduced reliance on external debt. However, when a firm's performance deviates significantly from aspiration, either above or below it, the influence of FFI on behaviors may shift. For instance, family firms may engage in riskier behaviors to enhance performance when previous outcomes fall short of aspiration levels. Therefore, we hypothesize:

H4: Firm's performance relative to aspiration negatively moderates the relationship between family firm identity and firm performance.

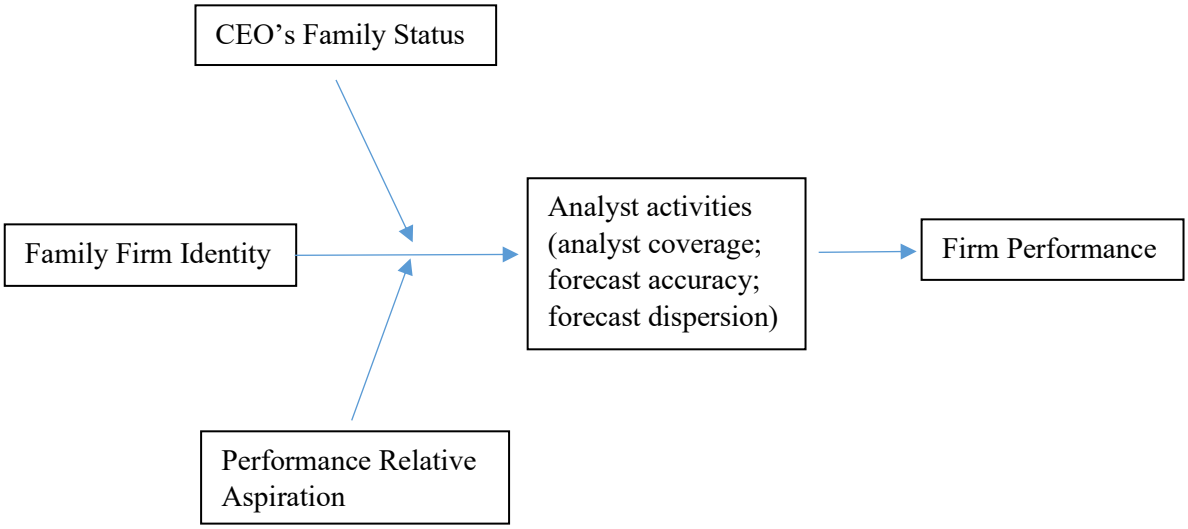

Figure 2.1 Framework of the Effect of Family Firm Identity on Firm Performance

Based on these hypotheses, we develop a conceptual framework (Figure 2.1) in which FFI impacts firm performance through analyst-related mechanisms such as coverage and forecast quality. CEO family status and aspiration-relative performance serve as contextual moderators.

2.3. Data and Variables

2.3.1 Data

Our samples begin with 132 U.S. family firms from S&P 500 companies ranging from 2005 to 2021. S&P 500 is a popular sample frame that is used to examine firm strategy and performance. Because samples are publicly traded firms, they also provide publicly available files that state their firm values, beliefs and strategic intentions. We therefore take this advantage to extract our interested information from these documents. We follow the definition of family firms established by La Porta et al. (1999), identifying a firm as family-controlled when an individual or family group holds at least 20% of the voting rights. Information on ownership and CEO familial ties is collected from corporate proxy statements. Financial and accounting data are collected from the Compustat database, while analyst forecast and coverage data are obtained from the I/B/E/S. The FFI is measured by calculated scores from the transcripts of earnings conference call by text analysis software DICTION. We exclude firms classified under SIC codes 4900–4999 (utilities) and 6000–6999 (financials) due to regulator concerns. We also eliminated firms lacking complete financial data in Compustat. The final sample includes 132 firms and a total of 5,809 firm-quarter observations.

2.3.2 Variables

2.3.2.1 Dependent variable: firm performance

Firm performance is proxied by Tobin's Q, a widely adopted indicator of firm valuation (Demsetz & Lehn, 1985; Bebchuk et al., 2011; Hau & Lai, 2013; Peters & Taylor, 2017). We compute Tobin's Q as the ratio of total liabilities (item LTQ) plus the market value of equity (i.e., the product of shares outstanding (item CSHOQ) and end-of-quarter share price (item PRCCQ)) to total assets (Core and Guay, 2001; Laeven and Levine, 2009).

2.3.2.2 Independent variable: family firm identity

We use a text analysis approach to extract information on FFI (Humphreys and Wang, 2018). Specifically, we manually downloaded quarterly earnings conference call transcripts from the Seeking Alpha platform, covering the period from 2005 to 2021. This process yielded a total of 5,809 transcript documents from 132 family firms. We then conducted a deductive text analysis, where theory guided the development of our coding scheme (Potter and Levine-Donnerstein, 1999).

New word lists for both "family" and "firm" were created and applied within DICTION software to calculate the frequency of "family" and "firm" words in each firm's earnings call documents. We started with a broad word list from *The Synonym Finder* (Rodale, 1978) for "family" and "firm" terms and refined these lists through validation by three expert raters. Words approved by at least two raters are retained, as shown in Table 2.1. Using the final "family" and "firm" word frequencies for each document, we measured the FFI construct through the following calculation:

$$Family\ Firm\ Identity = \frac{\text{Frequency score of "family"}}{\text{Frequency score of "firm"}} \times 100\% \ . \qquad (1)$$

Table 2.1 Word List

Panel A: "family" word list
acquaintance, acquaintances, affiliation, agnate, ainga, ally, ancestors, aunt, being, biological relationship, blood, blood brother, blood relations, blood relationship, blood relative, blood relatives, blood sister, blood ties, breed, brethren, bro, brood, brother, brother in law, brother or sister, brothers and sisters, brothers or sisters, bunch, caste, chum, clansman, clansperson, class, clique, close ones, close relative, closest family member, closest relation, closest relative, cognate, common ancestry, common lineage, companion, comrade, comrade-in-arms, connections, consanguinean, consanguinity, contact, cousin, descendant, descendent, dynasty, faction, fam, fam-bam, fambo, family, family connections, family member, family ties, father, father in law, fellow, fellow clansman, fellow tribesman, female sibling, flesh, flesh and -blood, folk, folkman, folks, forebears, generations, genetic relationship, gens, genus, grandparents, great grandparents, hapu, heir, herd, homefolk, horde, household, ilk, in-laws, issue, iwi, kids, kin, kindred, kinfolk, kinfolks, kinsfolk, kinship, kinsman, kinsmen, kinsperson, kinswoman, kinswomen, kith, kith and kin, lineage, loved one, mate, menage, mother, mother in law, ménage, near relative, nearest and dearest people, nearest blood relation, nearest blood relative, nephew, niece, nuclear-family, offspring, ohana, one's flesh and blood, one's own flesh and blood, pal, parent, parentage, parents, pedigree, progenitors, progeny, propinquity, related, relatedness, relation, relative, relatives, rellie, rellies, scion, sib, sibling, sis, sister, sister in law, skin and blister, solidarity, sponsor, spouse, stepbrother, stepparent, stepsister, tie, ties, ties-of-blood, togetherness, twin, uncle, uterine kin
Panel B: "firm" word list
Agent, agency, alliance, association, board, branch, bunch, bureau, business, cartel, chain, clan, combine, coalition, combination, commission, company, concern, confederacy, confederation, conglomerate, conglomeration, consortium, cooperative, corporation, crew, crowd, dealer, department, division, empire, emporium, enterprise, entity, establishment, factory, federation, franchise, foundation, gang, group, house, industry, institute, institution, manufactory, manufacturer, megacorp, microenterprise, mill, monopoly, office, organization, operation, outfit, partnership, party, plant, practice, service, set-up, setup, startup, station, subdivision, syndicate, trust, undertaking, union, unit, unity, venture

Note: In this table, panel A reports the "family" word list used for calculating FFI, while panel B reports the "firm" word list used for calculating FFI.

Following Zellweger et al. (2010), we assume that the greater the integration of "family" within "firm," the stronger the FFI. Thus, a high ratio of "family" word frequency to "firm" word frequency indicates a strong FFI.

2.3.2.3 Mediators

We examine three mediators related to analyst forecasts: coverage, forecast accuracy, and forecast dispersion. These variables are obtained from the I/B/E/S database. Analyst coverage is defined as the number of analysts providing quarterly earnings estimates for a firm in a given month (Diether et al., 2002). Forecast dispersion is measure as follows:

$$Dispersion_{i,t} = \frac{SD_{i,t}}{|MEPS_{i,t}|}, \quad (2)$$

where $SD_{i,t}$ is the standard deviation of analysts' monthly earnings per share forecasts and $MEPS_{i,t}$ is the mean earning per share (EPS) forecast.

Following Dong et al. (2021), forecast accuracy is defined as the negative of the normalized forecast error, calculated as:

$$Accuracy_{i,t} = -\frac{\left|MEPS_{i,t} - AEPS_{i,t}\right|}{\left|AEPS_{i,t}\right|} \quad , \quad (3)$$

where $MEPS_{i,t}$ is the mean EPS forecast and $AEPS_{i,t,j}$ is the actual EPS for firm *i* in month *t.* Forecast data are extracted from the final month of each fiscal quarter to construct quarterly measures.

2.3.2.4 Moderators

CEO family status is represented as a dummy variable which equals 1 if the CEO is a family member and 0 otherwise. Performance relative to aspiration is measured as the difference between the firm's actual performance and its aspiration level. Following Cyert and March (1963) and Park (2007), the aspiration level is defined as a weighted combination of the firm's past performance and the industry's average performance.

$$RP_{i,t} = ROA_{i,t} - Aspiration_{i,t} \,, \tag{4}$$

$$Aspiration_{i,t} = \mathrm{I}(ROA_{i,t} < SA_{i,t}) * SA_{i,t} \; + \; \mathrm{I}(ROA_{i,t} > SA_{i,t}) * 1.05 * HA_{i,t} \;\; , \tag{5}$$

where $RP_{i,t}$ denotes the relative performance of firm *i* in quarter *t*; $ROA_{i,t}$ represents return on asset of firm *i* in quarter *t*; $SA_{i,t}$ is social aspiration, defined as industry average *ROA* in quarter *t*; $HA_{i,t}$ denotes historical aspiration of firm *i* in time *t-1*.

2.3.2.5 Control variables

We include a set of standard controls commonly used in firm performance and analyst forecast research (Bebchuk, Cremers and Peyer, 2011; Petrenko, Aime, Recendes and Chandler, 2019). These include firm age, firm size, ROA, leverage ratio, and cash flow. When analyzing the relationship between FFI and analyst coverage, we also control for industry-level determinants such as the median number of analysts and market leverage ratio within each industry, following Chang et al. (2006). To address time and industry heterogeneity, our regressions include quarter-year and industry fixed effects. Table 2.2 summarizes the definitions of all variables.

Table 2.2 Variables Definition and Data Source

Variable	*Definition*	*Data source*
Tobin's Q	(market value of equity + book value of liability) divided by book value of total assets	Compustat
FFI	Family firm identity, which is calculated from DICTION software and equation 1.	SeekingAlpha
Coverage	Log of the number of analysts issuing annual EPS forecasts for the firm in the year preceding the earnings announcement date	IBES
Dispersion	The standard deviation of each analyst's most recent annual EPS forecast, scaled by the share price at the beginning of the year	IBES
Accuracy	The absolute difference between the mean forecasted EPS and the actual EPS, scaled by the share price at the beginning of the year	IBES
CEO_fstatus	CEO's family status. An indicator if CEO is a family member in family firm.	Proxy Statement
Perf-aspiration	Performance relative to aspiration level, Roa-aspiration level, in which aspiration level=I(performance<social aspiration)*social aspiration + I(performance>social aspiration)*1.05*historical aspiration, where social aspiration = industry average performance, historical aspiration=L.performance	Compustat
Size	Natural logarithm of the total market value (Ln(itemATQ))	Compustat
Age	Current year minus first appearing year in compustATQ plus 1as age	Compustat
Fleverage	Ratio of Long-term debt plus debt in current liabilities (item DLTTQ+itemDLCQ) to total assets (item ATQ)	Compustat
Cashflow	income before extraordinary items (item IBQ) plus depreciation and amortization (item DPQ) to total assets (item ATQ)	Compustat
ROA	Operating income Before Depreciation (item oibdpq) divided by total assets (item ATQ)	Compustat

2.4. Methodology and Empirical Analysis

2.4.1 Methodology

Given the panel structure of our data—with firm-level observations repeated across quarters and years—we adopt a panel data approach consistent with best practices in finance and accounting research (Barton and Simko, 2002; Kasznik and McNichols, 2002). Following Hausman test, we employ a fixed-effect regression model (Certo and Semadeni, 2006), which controls for all time-invariant factors that may impact firm performance. We regress firm performance on lagged FFI and relevant control variables. The analysis segments firms into ten industry groups, adapted from the twelve-industry classification in Kenneth R. French's data library, excluding utilities and financials. The regression formulation is as follows:

$$performance/analystforecast_{i,t} = \alpha_i + FFI_{i,t-1} + controls_{i,t} + \varepsilon_{i,t} \ , \qquad (6)$$

where performance is Tobin's Q for firm i in quarter t; analyst forecast includes analyst coverage, forecast accuracy, and forecast dispersion for firm i in quarter t; $FFI_{i,t-1}$ represents family firm identity for firm i in the previous year, t-1. To address the endogeneity of FFI, which may be influenced by factors related to firm value, we use lagged FFI as the independent variable and include firm fixed effects (Bebchuk et al., 2011).

2.4.2 Descriptive statistics

Table 2.3 provides the summary statistics for all variables. FFI has a mean value of 0.583, with the 25th percentile, median, and 75th percentile values at 0.109, 0.243, and 0.535, respectively. FFI exhibits outliers, as its maximum value significantly exceeds the 99th percentile[1], and it is right skewed since the median is lower than the mean. Accuracy is left-skewed due to

[1] All continuous variables are winsorized at the 1st and 99th percentiles.

using the negative value of forecast error. Dispersion also shows outliers, with its maximum value well above the 99th percentile. Observations for CEO family status drop substantially, as data is available only from 2005 to 2014. The statistics for other variables align closely with previous literature.

Table 2.4 presents the correlation coefficients among the main variables. FFI is positively but non-significantly correlated with Tobin's Q. It has a positive correlation with analyst coverage and dispersion, while it has a negative correlation with accuracy. The correlation between FFI and Tobin's Q differs from our regression results, suggesting the presence of unobservable time-invariant factors influencing Tobin's Q. The correlations between analyst forecast variables and Tobin's Q align with existing literature: analyst coverage and accuracy are positively correlated with Tobin's Q, whereas dispersion is negatively correlated.

2.4.3 Family firm identity and firm performance

To assess the influence of FFI on firm value, we estimate the fixed-effects model specified above, using Tobin's Q as the dependent variable and one-quarter lagged FFI as the main explanatory variable. We control firm size, firm age, financial leverage, cash flow, and ROA. Additionally, we include fixed effects for industry and time. Table 2.5 presents the regression results.

Column (1) shows the effect of FFI on Tobin's Q without any controls. Here, the coefficient of FFI is significantly negative, indicating that FFI reduces firm performance. Column (2) includes industry and quarter effects, and the coefficient of FFI remains negative and significant. We control firm size, firm age, ROA, leverage ratio, cash flow, as well as industry and quarter effects in

column (3). The FFI coefficient is -0.019 and significant at the 1% level, further supporting the finding that FFI is associated with decreased firm performance.

Table 2.3 Descriptive Statistics

variable	count	mean	sd	min	p25	p50	p75	max
ffi	5809	0.583	1.832	0	0.109	0.243	0.535	72.82
tobinq	5781	2.242	1.359	0.648	1.382	1.865	2.652	14.48
Ln_coverage	5250	2.797	0.503	0.693	2.565	2.890	3.135	3.912
accuracy	5253	-0.236	1.221	-51	-0.160	-0.0665	-0.0256	0
dispersion	5234	0.162	0.774	0	0.0222	0.0385	0.0870	31
firmsize	5805	9.485	1.191	6.647	8.651	9.293	10.31	12.92
firmage	5809	9.433	0.385	7.980	9.178	9.505	9.751	9.986
fleverage	5563	0.276	0.193	0	0.143	0.246	0.384	1.558
cashflow	5695	0.0264	0.0341	-0.572	0.0163	0.0267	0.0380	0.869
roa	5696	0.0392	0.0305	-0.496	0.0245	0.0367	0.0501	0.476
aspiration	5658	0.0405	0.0123	-0.0935	0.0353	0.0398	0.0450	0.118
perf asp	5564	-0.00184	0.0289	-0.483	-0.0148	-0.00413	0.00821	0.434
ceoasafamily	3046	0.171	0.377	0	0	0	0	1

Note: This table provides descriptive statistics for all variables employed in the analysis. Detailed definitions of each variable can be found in Table 2.1.

Table 2.4 Correlation Coefficient Matrix of Variables

	ffi	tobinq	lncoverage	accuracy	dispersion	firmsize	firmage	fleverage	Cashflow	roa	Aspiration	perf asp
ffi	1											
tobinq	0.0152	1										
lncoverage	0.0484*	0.2539*	1									
accuracy	-0.00420	0.0788*	0.0707*	1								
dispersion	0.00240	-0.1064*	-0.0783*	-0.1037*	1							
firmsize	0.0334*	-0.1234*	0.4825*	0.00280	-0.0261	1						
firmage	-0.0238	-0.0935*	-0.1440*	-0.0441*	0.0565*	0.1854*	1					
fleverage	-0.0277*	-0.0503*	-0.1204*	-0.0614*	0.0985*	0.0685*	0.2383*	1				
cashflow	0.0128	0.3450*	0.1656*	0.0659*	-0.1395*	-0.00170	-0.0229	-0.1072*	1			
roa	0.00700	0.4085*	0.1542*	0.0545*	-0.1532*	-0.0862*	-0.0273*	-0.0659*	0.6868*	1		
aspiration	0.00160	0.1535*	0.0768*	0.0781*	-0.1758*	-0.0699*	-0.1065*	-0.1345*	0.2241*	0.3238*	1	
perf asp	0.00590	0.3616*	0.1366*	0.0441*	-0.0895*	-0.0496*	0.0247	-0.00970	0.6237*	0.9147*	-0.0862*	1

Note: This table presents the Pearson correlation coefficients for all variables used in the study. ***, ** and * denote statistical significance at the 1%, 5%, and 10%, respectively.

Table 2.5 Relationship between FFI and Firm Performance

VARIABLES	(1) Tobin's Q	(2) Tobin's Q	(3) Tobin's Q
L.ffi	-0.013*	-0.019***	-0.017***
	(-1.96)	(-3.01)	(-2.77)
firmsize			-0.335***
			(-9.83)
firmage			1.292***
			(5.45)
fleverage			0.079
			(0.68)
cashflow			3.221***
			(6.35)
roa			3.968***
			(6.97)
Constant	2.246***	3.293***	-5.950***
	(174.14)	(13.37)	(-2.73)
Observations	5,477	5,477	5,162
Adjusted R-squared	-0.024	0.102	0.176
Industry FE	No	YES	YES
Quarter FE	No	YES	YES
Number of id	130	130	128

Note: This table reports the effect of FFI on firm performance. The dependent variable, firm performance, is proxied by Tobin's Q. The independent variable, FFI, is lagged by one quarter. t-statistics are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5%, and 10%, respectively (two-tailed tests).

Table 2.6 The Effect of FFI on Firm Performance

	(1)	(2)	(3)
VARIABLES	TobinQ	TobinQ	TobinQ
ffi(iv)	-0.214*	-0.328**	-0.311*
	(-1.66)	(-2.06)	(-1.69)
firmsize			-0.340***
			(-8.04)
firmage			1.104***
			(3.12)
fleverage			0.015
			(0.11)
cashflow			3.012***
			(4.86)
roa			4.260***
			(5.20)
Constant	2.360***	3.541***	-3.698
	(31.64)	(11.19)	(-1.10)
Industry FE	No	Yes	Yes
Quarter FE	No	Yes	Yes
Observations	5,215	5,215	4,923
Number of id	125	125	125

Note: This table presents the results of instrumental variable regressions examining the effect of FFI on firm performance. The dependent variable, firm performance, is measured using Tobin's Q. Instead of using the one-quarter lagged FFI, the second-order lag of FFI is employed as an instrument. t-statistics are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5%, and 10%, respectively (two-tailed tests).

To address endogeneity concerns related to causality, we use a two-stage least squares approach, with the second-order lag of FFI serving as an instrumental variable. Column (1) reports the effect of FFI on Tobin's Q without any control variables. Column (2) introduces controls for industry and quarter effects, while Column (3) further accounts for control variables. Results, shown in Table 2.6, remain consistent. In the fully specified model (column 3), the coefficient on FFI is -0.311 and significant at the 10% level, supporting the robustness of our findings.

2.4.4 Mediating effect of analyst activities

To examine the mediating role of analyst forecasts, we employ a step-by-step approach, introducing the three analyst forecast variables, coverage, accuracy, and dispersion, into our regression model (Baron and Kenny, 1986; Zhao, Lynch and Chen, 2010; Mai and Hamid, 2021). First, we analyze the effect of FFI on analyst coverage, forecast accuracy, and forecast dispersion. Next, we assess whether each of these variables significantly predicts firm performance. Finally, we include both FFI and the mediator in the same regression to identify whether the effect of FFI on Tobin's Q diminishes, indicating partial or full mediation.

Results in Table 2.7 indicate that FFI negatively affects analyst coverage (coefficient = -0.003, significant at the 10% level) and positively affects forecast dispersion (coefficient = 0.014, significant at the 5% level). The relationship with forecast accuracy is not statistically significant.

Table 2.8 demonstrates that analyst coverage and forecast accuracy positively influence Tobin's Q (coefficients = 0.561 and 0.022, respectively), while forecast dispersion has a negative effect (coefficient = -0.056), all statistically significant.

Table 2.7 Relationship between FFI and Analyst Activities

VARIABLES	(1) Coverage	(2) Coverage	(3) Accuracy	(4) Accuracy	(5) Dispersion	(6) Dispersion
L.ffi	-0.004**	-0.003*	-0.004	-0.002	0.014**	0.014**
	(-2.49)	(-1.70)	(-0.43)	(-0.22)	(2.51)	(2.16)
firmsize		0.131***		0.006		-0.163***
		(12.85)		(0.11)		(-4.15)
firmage		-0.160**		0.312		-0.149
		(-2.36)		(0.96)		(-0.57)
fleverage		-0.014		-0.499***		0.470***
		(-0.42)		(-3.06)		(3.59)
cashflow		0.271*		0.217		-0.287
		(1.88)		(0.31)		(-0.52)
roa		0.189		1.291*		-2.847***
		(1.20)		(1.71)		(-4.71)
Constant	2.807***	3.099***	-0.232***	-3.136	0.155***	2.972
	(869.22)	(4.97)	(-13.17)	(-1.05)	(13.76)	(1.25)
Observations	4,985	4,675	4,990	4,680	4,971	4,661
Number of id	130	128	130	128	130	128
Adjusted R-squared	-0.025	0.126	-0.027	-0.008	-0.026	0.016
Industry FE	No	YES	No	YES	No	YES
Quarter FE	No	YES	No	YES	No	YES

Note: This table presents the impact of FFI on analyst forecasts, estimated using a fixed effects regression model. The dependent variables include analyst coverage, forecast accuracy, and forecast dispersion. The independent variable, FFI, is lagged by one quarter. t-statistics are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5%, and 10%, respectively.

Table 2.8 Relationship between Analyst Activities and Firm Performance

VARIABLES	(1) Tobin's Q	(2) Tobin's Q	(3) Tobin's Q	(4) Tobin's Q	(5) Tobin's Q	(6) Tobin's Q
L.ln_coverage	0.611***	0.561***				
	(10.36)	(10.19)				
L.accuracy			0.031***	0.022**		
			(2.77)	(2.37)		
L.dispersion					-0.049***	-0.056***
					(-2.85)	(-3.83)
firmsize		-0.482***		-0.413***		-0.415***
		(-12.53)		(-10.82)		(-10.86)
firmage		1.826***		1.737***		1.715***
		(7.26)		(6.86)		(6.77)
fleverage		-0.315**		-0.303**		-0.273**
		(-2.48)		(-2.36)		(-2.12)
cashflow		3.484***		3.626***		3.992***
		(6.38)		(6.60)		(6.98)
roa		2.945***		3.150***		2.769***
		(4.96)		(5.25)		(4.52)
Constant	0.564***	-11.017***	2.283***	-9.212***	2.287***	-8.968***
	(3.40)	(-4.75)	(173.30)	(-3.95)	(172.43)	(-3.84)
Observations	5,035	4,729	5,039	4,733	5,020	4,715
Number of id	130	128	130	128	130	128
Adjusted R-squared	-0.005	0.196	-0.025	0.181	-0.025	0.181
Industry FE	No	YES	No	YES	No	YES
Quarter FE	No	YES	No	YES	No	YES

Note: This table examines the effect of analyst forecasts on firm performance using a fixed effects regression model. The dependent variable, firm performance, is measured by Tobin's Q. Independent variables include analyst coverage, forecast accuracy, and forecast dispersion, each lagged by one quarter. t-statistics are shown in parentheses. ***, ** and * denote statistical significance at the 1%, 5%, and 10%, respectively.

Table 2.9 confirms partial mediation for coverage and dispersion. Including analyst coverage in the model reduces the significance of the FFI coefficient, while coverage remains significant (coefficient = 0.558). Similarly, adding dispersion also reduces the significance of FFI, while the dispersion coefficient is significant and negative (-0.056). No mediation is found for forecast accuracy, as FFI does not significantly affect accuracy.[2]

2.4.5 Moderating effect of CEO's family status

To explore whether the CEO's familial relationship moderates the FFI–performance link, we include an interaction term between FFI and CEO family status, lagged by one quarter. Table 2.10 displays these results. Column (2), which includes full controls, shows that CEO family status negatively affects Tobin's Q (coefficient = -0.140, significant at the 5% level). However, the interaction term between FFI and CEO status is not statistically significant, suggesting that CEO family ties do not significantly alter the relationship between identity and performance. This lack of moderation may be due to the reduced number of observations for CEO family status, and as such, Hypothesis 3 is not supported.

[2] We conduct a correlation analysis between analyst forecast accuracy and dispersion. There is a moderate negative correlation of 10.37%. A variance inflation factor (VIF) test ensures that multicollinearity does not significantly affect my regression results. The VIF of forecast accuracy is 1.03, VIF of forecast a dispersion is 1.05. The mean VIF for all independent variables is 1.46. When VIF<5, it is considered as low or no multicollinearity and the estimation of results will not be affected significantly.

Table 2.9 Mediating Effect of Analyst Activities

VARIABLES	(1) Tobin's Q	(2) Tobin's Q	(3) Tobin's Q	(4) Tobin's Q	(5) Tobin's Q	(6) Tobin's Q
L.ffi	-0.010	-0.014**	-0.012*	-0.016**	-0.012*	-0.016**
	(-1.43)	(-2.28)	(-1.75)	(-2.50)	(-1.77)	(-2.55)
L.ln_coverage	0.608***	0.558***				
	(10.31)	(10.13)				
L.accuracy			0.031***	0.022**		
			(2.76)	(2.35)		
L.dispersion					-0.049***	-0.056***
					(-2.84)	(-3.83)
firmsize		-0.480***		-0.412***		-0.414***
		(-12.49)		(-10.80)		(-10.83)
firmage		1.812***		1.723***		1.700***
		(7.21)		(6.81)		(6.71)
fleverage		-0.318**		-0.305**		-0.276**
		(-2.50)		(-2.38)		(-2.14)
cashflow		3.486***		3.627***		3.996***
		(6.39)		(6.60)		(6.99)
roa		2.915***		3.117***		2.733***
		(4.91)		(5.20)		(4.47)
Constant	0.578***	-10.882***	2.290***	-9.072***	2.295***	-8.829***
	(3.48)	(-4.69)	(166.01)	(-3.89)	(165.21)	(-3.78)
Observations	5,035	4,729	5,039	4,733	5,020	4,715
Number of id	130	128	130	128	130	128
Adjusted R-squared	-0.004	0.197	-0.024	0.182	-0.024	0.182
Industry FE	No	YES	No	YES	No	YES
Quarter FE	No	YES	No	YES	No	YES

Note: This table presents the mediating role of analyst forecasts in the relationship between FFI and firm performance, estimated using a fixed effects regression model. The dependent variable, firm performance, is proxied by Tobin's Q. The independent variables include FFI and analyst forecast measures—namely, analyst coverage, forecast accuracy, and forecast dispersion—all lagged by one quarter. t-statistics are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5%, and 10%, respectively.

Table 2.10 Moderating Effect of CEO Family Status

VARIABLES	(1) Tobin's Q	(2) Tobin's Q
L.ffi	0.001	-0.006
	(0.26)	(-1.43)
L.ceoasafamily	0.087	-0.140**
	(1.09)	(-1.99)
L.ceoasafamily#L.ffi	0.016	-0.012
	(0.72)	(-0.64)
firmsize		-0.790***
		(-18.38)
firmage		-1.655***
		(-6.25)
fleverage		0.588***
		(4.53)
cashflow		1.717***
		(4.14)
roa		2.398***
		(4.95)
Constant	2.064***	25.054***
	(119.27)	(10.24)
Observations	2,908	2,693
Number of id	116	115
Adjusted R-squared	-0.041	0.299
Industry FE	No	YES
Quarter FE	No	YES

Note: This table investigates the moderating effect of the CEO's family affiliation on the relationship between FFI and firm performance, using a fixed effects regression model. The dependent variable, firm performance, is measured by Tobin's Q. The independent variables include FFI, CEO family status, and their interaction term. All independent variables are lagged by one quarter. t-statistics are presented in parentheses. ***, ** and * denote statistical significance at the 1%, 5%, and 10%, respectively.

2.4.6 Moderating effect of performance aspiration

We next examine whether the effect of family firm identity on performance depends on the firm's performance relative to its aspiration level. Table 2.11 reports results from regressions including interaction terms between FFI and relative performance. The coefficient on relative aspiration is positive and highly significant (5.839, at the 1% level), indicating that firms exceeding aspirational benchmarks tend to have higher Tobin's Q. FFI again shows a significant negative effect on performance. Importantly, the interaction term between FFI and aspiration is negative and significant, suggesting that the negative effect of family firm identity on firm performance is less pronounced for firms that are underperforming relative to their goals. This supports Hypothesis 4.

2.5. Discussion

The results of our empirical analysis reveal a consistent negative association between FFI and firm performance, largely mediated by reduced analyst coverage and increased forecast dispersion. These outcomes align with agency theory, which suggests that type II agency problems, conflicts between controlling family shareholders and minority shareholders, are particularly pronounced in family firms. In such settings, dominant family shareholders may prioritize private benefits over the interests of smaller shareholders, leveraging their control power to influence corporate decisions that reduce information transparency. This reduced transparency discourages analyst coverage and increases forecast dispersion, as analysts face greater difficulty in accurately predicting firm performance due to limited access to reliable information. Consequently, these dynamics negatively affect the firm's market valuation by increasing uncertainty and reducing investor confidence.

Table 2.11 Moderating Effect of Performance Aspiration

VARIABLES	(1) Tobin's Q	(2) Tobin's Q
L.ffi	-0.015**	-0.019***
	(-1.99)	(-3.07)
L.perf_asp	7.447***	5.839***
	(13.71)	(12.51)
L.ffi#L.perf_asp	-0.942**	-0.943***
	(-2.55)	(-2.99)
firmsize		-0.300***
		(-8.78)
firmage		1.398***
		(5.84)
fleverage		0.156
		(1.34)
cashflow		2.883***
		(5.74)
roa		4.140***
		(7.35)
Constant	2.254***	-7.488***
	(173.36)	(-3.38)
Observations	5,266	5,035
Number of id	127	127
Adjusted R-squared	0.014	0.201
Industry FE	No	YES
Quarter FE	No	YES

Note: This table examines whether firm aspiration moderates the relationship between FFI and firm performance, using a fixed effects regression model. The dependent variable, firm performance, is measured by Tobin's Q. Independent variables include FFI, firm aspiration, and their interaction term, all lagged by one quarter. t-statistics are reported in parentheses. ***, ** and * denote statistical significance at the 1%, 5%, and 10%, respectively.

Beyond these primary effects, our results also uncover an important moderating factor: the firm's performance relative to its aspiration level. When firms underperform relative to their benchmarks, they appear more willing to shift from non-financial, family-centered objectives to value-maximizing strategies. In such cases, family firms tend to prioritize transparency and accountability, thereby mitigating the negative consequences typically associated with a strong family identity. This finding suggests that the impact of FFI on performance is dynamic rather than static, with firm-level conditions—such as perceived survival threats—shaping strategic responses.

Our findings contribute both theoretically and practically. On the theoretical front, they extend the application of agency theory by illustrating that Type II conflicts are contingent on contextual factors, such as financial underperformance. Practically, our results highlight the role of governance and external monitoring in mitigating the adverse effects of entrenched family control. Investors, regulators, and policymakers may wish to promote enhanced disclosure practices and consider mechanisms that incentivize greater transparency in high-identity family firms. These insights are particularly relevant for stakeholders aiming to balance the socioemotional goals of family ownership with market-driven performance expectations.

We employed several strategies to address endogeneity and strengthen the validity of our empirical analysis. First, we use a lagged independent variable framework, measuring FFI one quarter before firm performance. By introducing this temporal separation, we mitigate simultaneity bias, reducing the risk that firm performance influences the classification of family firms rather than the other way around. This approach ensures that the independent variable precedes the dependent variable, reinforcing the direction of causality. Second, we implement firm fixed effects to account for unobservable, time-invariant heterogeneity across firms. Firm-specific characteristics, such as corporate culture, governance structure, or long-term strategic orientation,

may influence both FFI and firm performance. By incorporating firm fixed effects, we effectively control these persistent factors, isolating the within-firm variation over time and enhancing the reliability of our estimates. Third, we applied an instrumental variable approach, using the second-order lag of FFI to isolate exogenous variation, thereby further mitigating reverse causality and omitted variable bias. These methodological steps enhance the credibility and interpretability of our findings.

However, this research has several limitations that should be acknowledged. First, our text data is sourced from Seeking Alpha, which provides data only from 2005 onward and contains notable gaps in the early years. These data limitations may introduce biases or restrict the generalizability of our findings. Future research could benefit from incorporating alternative data sources, such as Capital IQ, which offer more comprehensive textual datasets. Expanding the dataset could improve the robustness of our analysis and provide a more complete historical perspective. Second, our methodology relies on a predefined word list to measure FFI, and we note that the "family" word list is disproportionately larger than the "firm" word list. This imbalance may lead to an overestimation of the absolute value of FFI, potentially skewing the results. Future research could refine the lexicon-based approach by developing a more balanced or context-sensitive word classification method, incorporating machine learning techniques or natural language processing (NLP) models to improve the accuracy of textual analysis. Third, while our study focuses on the content of CEO statements from earnings conference calls, we acknowledge that other qualitative aspects, such as sentiment and tone, also play a crucial role in shaping investor perceptions and firm performance. The linguistic style and emotional delivery of CEOs can provide additional insights into corporate communication and strategic intent. Future research could extend this analysis by incorporating sentiment analysis techniques, speech pattern

recognition, or deep learning models to assess CEO emotions. Additionally, measuring non-verbal cues, such as facial expressions or voice inflections, could offer a more comprehensive understanding of how CEOs convey their messages and how these factors influence market reactions. Despite these limitations, our study provides a novel perspective on FFI and its impact on firm performance. Future research could build upon our findings by addressing these challenges and exploring alternative methodologies to further enhance the robustness and depth of analysis.

Future research could explore additional contingencies that shape the relationship between family control and firm performance. For instance, industry dynamics, governance structures, or even cultural factors may influence the extent to which family firms prioritize private benefits over firm value creation. Additionally, further studies could investigate the role of institutional investors and their potential to mitigate the negative effects of FFI by exerting pressure for improved transparency and accountability.

2.6. Conclusion

This study provides valuable contributions to family firm literature by shedding light on the mechanisms through which FFI affects firm performance and by establishing the importance of firm aspirations in moderating these effects. Methodologically, our approach to constructing FFI contributes to more precise measurement, while our examination of analyst coverage and forecast dispersion elucidates a significant pathway through which FFI influences market perceptions and, consequently, firm value.

In practical terms, our findings suggest that family firms can enhance firm value by promoting transparency in information for analysts and investors. By creating an environment that encourages analyst coverage and increases forecast quality, family firms may mitigate the negative effects associated with FFI, especially during periods of underperformance relative to aspirations.

This study, therefore, provides both theoretical insights and actionable recommendations for family-controlled firms seeking to improve market valuation.

CHAPTER 3: ESSAY 2

Does CEO's Trait Teachability Matter? Investigating the Role of CEO Characteristics on Corporate Innovation

Abstract

"Teachability" —defined as openness to feedback— is one of core characteristics in humble CEOs. According to Upper Echelon Theory, leaders' personalities, characteristics and values significantly influence organizational decisions and strategies. This paper examines the impact of CEOs' characteristics of teachability on firm-level innovation output. Using a difference-in-differences (DID) approach around CEO transitions, we analyze how humble CEO's teachability affects various innovation metrics, including patent counts, citations, and related indicators. We further explore potential channels, such as enhanced team collaboration and increased knowledge inflow, which may underlie this relationship. The results show a strong positive link between CEO teachability and innovation outcomes, particularly within larger, more mature firms.

***Keywords*:** Teachability, Humility, CEO, Corporate Innovation, Difference-in-Differences Model

3.1 Introduction

Corporate innovation reflects an organization's capacity to embrace novel ideas and experiment with new approaches to operations and practices (Calantone, Cavusgil, & Zhao, 2002). This adaptability fosters competitiveness and strengthens both financial and non-financial outcomes (Lam, 2005). As a result, numerous studies have sought to uncover the mechanisms that promote innovation within organizations (Khalili, 2016). Among these factors, leadership plays a crucial role, as CEOs shape the strategic direction and innovation culture of their firms.

One leadership characteristic that has received increasing scholarly attention is humility. Humility has historically been perceived as a weakness in leadership, often associated with passivity, lack of ambition, or low confidence (Morris et al., 2005). As a result, research on CEO humility remained limited for many years. However, in light of corporate scandals involving hubris, entitlement, and excessive self-regard among top executives (Zona, Minoja, & Coda, 2013), humility has increasingly been recognized as a strength rather than a flaw. Scholars such as Vera and Rodriguez-Lopez (2004) highlight humility as a valuable asset for both leaders and the organizations they serve.

Humility is multifaceted, encompassing qualities such as accurate self-assessment, acknowledgment of others' strengths, recognition of personal limitations, and openness to feedback—often referred to as *teachability* (Nielsen et al., 2010; Owens & Hekman, 2012; Owens, Johnson, & Mitchell, 2013). Teachability refers to a leader's receptiveness to feedback, openness to new perspectives, and capacity to integrate external knowledge into strategic thinking.

According to Upper Echelons Theory, executive traits—including values, experiences, and personalities—shape how leaders perceive their environment and make decisions, ultimately influencing firm outcomes (Hambrick, 2007; Gupta, Nadkarni and Mariam, 2019). As the primary leader of a firm, the CEO's personality likely plays a crucial role in shaping firm strategies and

performance. Given that openness to feedback is a known facilitator of innovation (Hargadon & Sutton, 2000; Wooten & Ulrich, 2017), we propose that CEOs characterized by teachability positively influence firm innovation. This paper seeks to explore the impact of CEO's trait of teachability on corporate innovation, and to reveal the mechanisms through which teachability fosters innovation and contributes to firm success.

Our findings indicate that CEOs with high levels of teachability significantly enhance both the quantity and quality of innovation, as evidenced by increased patent filings and higher citation rates. This effect is particularly pronounced in large and established firms, where integrating new ideas into existing frameworks and managing complex R&D initiatives is crucial for maintaining competitiveness. Such firms gain added benefits from leaders who embrace diverse perspectives, learn from feedback, and encourage continuous organizational innovation.

Furthermore, our analysis identifies several key mechanisms through which teachable CEOs drive innovation. These CEOs not only directly affect innovation outcomes but also strengthen mechanisms that support sustained innovation, such as corporate culture of teamwork and inventor inflow. Through openness to new ideas, teachable CEOs foster a collaborative corporate culture and attract inventive talent that enhances the organization's innovation capacity.

This study contributes to three streams of literature. First, it extends upper echelon theory by providing robust empirical evidence that the teachability trait of CEOs plays a significant role in influencing corporate innovation output. Specifically, teachable CEOs with an open mind toward new ideas and feedback are more inclined to explore new opportunities, embrace change, and cultivate a culture of creativity and experimentation within the organization. This insight reinforces the idea that a leader's personal characteristics can shape strategic outcomes, demonstrating how a CEO's teachability fosters innovation as a key component of a firm's competitive strategy.

Second, this study contributes to personality research by offering a focused analysis on single dimension of humility, which has often been understudied in leadership and organizational contexts. We identify teachability as a core element within the broader construct of humility. Our findings highlight that teachability serves as a critical driver through which humble CEOs positively affect innovation, suggesting that leaders who exhibit open mind are better equipped to promote new initiatives and cultivate innovative practices.

Lastly, we contribute to innovation literature by identifying teachability as a previously overlooked driver of innovation. CEOs who actively seek feedback and remain open to new perspectives create an environment where innovation can thrive. These leaders facilitate organizational learning, encourage cross-functional collaboration, and promote knowledge sharing, which are essential for generating new ideas and maintaining long-term innovation. Our findings broaden the understanding of leadership's role in driving innovation, indicating that behavioral traits such as teachability of CEOs are integral to fostering an innovation-oriented culture. This paper bridges leadership, personality, and innovation literature by demonstrating that CEOs with high levels of teachability have a meaningful influence on corporate innovation. It emphasizes the importance of selecting and developing leaders with these traits, thereby offering practical guidance for firms aiming to maintain a competitive edge through continuous innovation.

The rest of this paper is organized as follows: Section 3.2 reviews related literature and develops the hypothesis. Section 3.3 describes the data and outlines the empirical methodology. Section 3.4 presents the main findings. Section 3.5 concludes with a discussion of implications.

3.2 Literature Review and Hypotheses Development

3.2.1 CEO personality and corporate innovation

Gordon Allport defines personality as a dynamic, open system within human psychology that continuously interacts with the external environment (Allport, 1960). Personality is shaped by a combination of genetic factors, environmental influences, and situational contexts and serves to describe the stable characteristics underlying consistent behaviors. As such, different personalities are linked to distinct behavioral tendencies and actions. In the context of corporate leadership, Upper Echelons Theory suggests that executives' personalities and values significantly shape their perceptions and, subsequently, their strategic choices and firm outcomes (Hambrick, 2007; Gupta, Nadkarni and Mariam, 2019).

Empirical studies show that CEOs with different personalities demonstrate varied behaviors, impacting firm performance and strategic innovation in unique ways. For example, hubristic CEOs have been shown to overpay for acquisitions, often to the detriment of firm value (Hayward & Hambrick, 1997). Overconfident managers tend to overinvest when internal funds are available, reflecting their inflated expectations of project success (Malmendier & Tate, 2005). More recently, Zhang et al. (2017) demonstrate how interactions between CEO humility and narcissism shape innovation culture and outcomes. These studies underscore how CEO personalities shape behaviors, influence decision-making, and impact a firm's strategic innovation.

3.2.2 CEO's humility

Humility is an essential personality trait. The word "humility" originates from the Latin terms *humilitas* and *humus*, meaning "the earth beneath us" (Argandona, 2015), and is often regarded as a foundational virtue. Historically, humility has been underrepresented in leadership research due

to its association with perceived weaknesses such as passivity or low ambition (Morris et al., 2005). Interest in humility as a valuable leadership trait began to grow when scholars observed that corporate scandals often stemmed from unchecked ego, hubris, entitlement, and self-importance among corporate executives (Carson, 2003). As organizations have become increasingly complex and unpredictable, the limitations of top-down leadership approaches have become more apparent, sparking interest in humble leadership as a bottom-up approach.

In recent years, researchers and psychologists have reframed humility as a strength rather than a weakness, highlighting its role in fostering social cohesion, creating trust (Argandona, 2015), and promoting altruistic or prosocial behaviors (Mallen et al., 2019; Jia, Feng, Deng, Lin and Ning, 2024). This shift emphasizes the importance of humility in effective leadership, particularly in facilitating cooperation and adaptability within complex organizational environments.

The concept of humility is multidimensional, as reflected in various scholarly definitions. For instance, Nielsen et al. (2010, p. 34) characterize humility as an admirable trait that includes self-awareness of one's identities, strengths, and limitations. Owens, Johnson, and Mitchell (2013) further define it as a relational attribute manifesting in social settings, comprising three elements: accurate self-assessment, recognition of others' contributions, and teachability, referring to openness to feedback and willingness to learn.

The mainstream of humility research has primarily focused on examining its impact on firm performance across different organizational levels. Studies have analyzed humility's influence at the individual level (Owens et al., 2013), the team level (Ou, Tsui, Kinicki, Waldman, Xiao and Song, 2014; Owens and Hekman, 2016; Rego et al., 2019), and the firm level (Ou, Waldman, and Peterson, 2018; Petrenko, Aime, Recendes and Chandler, 2019). However, only a limited number of studies have specifically explored the relationship between CEO humility and firm innovation.

Hu et al. (2018) demonstrate that humble leaders, characterized by their willingness to admit weaknesses, appreciate others' strengths, and remain open to suggestions, help alleviate employees' psychological burdens related to innovation failure. This approach fosters a sense of psychological freedom, which encourages idea generation and innovative behaviors. Zhou and Wu (2018) report that a leader's humility enhances employee innovation through core self-evaluation (CSE). By acknowledging their limitations and signaling a non-perfectionist stance, humble leaders create a safe environment for employees to make bold decisions, generate creative ideas, and pursue innovative actions.

Liu, Mao, and Chen (2017) identify a positive relationship between leader humility and team-level innovation, mediated by the development of a team voice climate in which members feel free to speak up. This climate encourages the open exchange of new ideas, thereby fostering team-level innovation. Mallen et al. (2019) confirm that leader humility correlates with higher innovation at the firm level, emphasizing the mediating role of altruism. Humble leaders, with their openness to feedback and commitment to self-improvement, promote inclusive, collaborative, and flexible decision-making processes, supported by strong self-awareness. These qualities enable leaders to create a communication-friendly environment where employees feel encouraged to propose creative ideas, ultimately enhancing firm innovation.

Collectively, these studies highlight multiple pathways through which humble leadership promotes innovation, suggesting that humility in leadership is a powerful driver of creative behaviors, team collaboration, and firm-level innovation.

3.2.3 Impact of Teachability on corporate innovation

The definition of humility encompasses several dimensions, including self-awareness, self-improvement, low self-focus, appreciation of others' strengths, acknowledgment of one's limitations, and teachability/openness to feedback. Previous studies have generally examined these characteristics collectively as a single construct of humility. However, a closer examination of how humility influences innovation reveals that certain dimensions such as teachability may have distinct and independent effects on innovation outcomes.

Firstly, teachability/openness to feedback enable leaders to evaluate company strategies more comprehensively, leading to informed and accurate decision-making. Humble leaders, characterized by openness to feedback and a commitment to self-improvement, promote inclusive, collaborative, and flexible decision-making processes, grounded in strong self-awareness. This approach creates a communication-friendly environment where employees feel empowered to propose innovative ideas, ultimately enhancing firm-wide innovation.

Secondly, teachability/openness to feedback may foster a learning-oriented climate that actively supports corporate innovation. When leaders and employees embrace feedback—whether it comes from internal sources, such as colleagues and team members, or external stakeholders, such as customers and partners, it creates an environment where continuous learning and improvement are encouraged. This openness allows organizations to recognize shortcomings, identify growth opportunities, and make adjustments that fuel innovative thinking and processes. A learning-oriented climate built on feedback promotes the exchange of knowledge across departments and hierarchical levels, breaking down silos that can stifle innovation. Employees feel empowered to share ideas, challenge assumptions, and propose creative solutions without fear of criticism or failure. This psychological safety encourages risk-taking and experimentation, both of

which are essential components of innovation. In such an environment, failures are not viewed as setbacks but as valuable opportunities for learning and growth, further driving innovation efforts.

Finally, CEOs who demonstrate openness to feedback contribute to organizational agility and adaptability in the face of evolving market conditions. By engaging with external stakeholders—including customers, suppliers, and industry collaborators—firms can better detect emerging trends, uncover unmet needs, and identify strategic opportunities. This continuous exchange of information enables firms to align their innovation initiatives with external expectations, thereby increasing the relevance and effectiveness of new offerings. Based on the preceding analysis, we propose the following hypotheses:

H1: CEO's teachability increases corporate innovation.

3.2.4 Mediating Effect of Teamwork

When CEOs actively seek feedback from employees, customers, and partners, they model a behavior that demonstrates the importance of listening, learning, and evolving. This openness sets a positive tone across the organization, promoting collaborative behaviors and ensuring that employees feel valued and empowered to contribute their ideas. Teachable CEOs who are open to feedback reduce hierarchical barriers and promote open dialogue across all levels of the organization. This inclusiveness makes it easier for employees to exchange ideas, share insights, and work together toward common goals. Employees who observe their leaders incorporating feedback into decision-making processes are more likely to adopt the same approach, creating a feedback-driven, collaborative environment where teamwork thrives.

Openness to feedback also creates psychological safety, a key factor in effective teamwork. When employees see that their input is welcomed, respected, and used to improve processes and outcomes, they feel more comfortable expressing their thoughts and proposing creative ideas. It also reduces the fear of making mistakes, enabling employees to experiment and take risks without the fear of judgment, which is essential for innovation through teamwork. In modern organizations, effective teamwork often requires the integration of diverse skills and expertise. When leaders actively encourage feedback across functional boundaries, they break down silos and ensure that teams with different perspectives can collaborate seamlessly. This results in more innovative solutions, as employees from different departments are exposed to new ideas and diverse ways of thinking. Therefore, we have the following hypotheses:

H2: CEO's teachability increases corporate innovation through fostering a culture of teamwork.

3.2.5 Mediating Effect of Inventor's Inflow

When CEOs actively seek and welcome external and internal feedback, they create an environment that attracts top-tier inventors by signaling that the company values innovation and fresh ideas. Inventors are often drawn to workplaces where their skills and creativity will be appreciated, and a feedback-driven leadership approach provides exactly an inclusive environment where inventors feel empowered to explore new concepts and propose bold solutions.

The openness to diverse perspectives allows CEOs to align their hiring strategies with innovation goals, actively seeking inventors from varied backgrounds and industries who can introduce new ways of thinking. By showing a willingness to learn from feedback, CEOs can shape

an organizational culture that appeals to talented inventors, ensuring that the company remains competitive in attracting individuals with innovative potential.

Once onboard, inventors thrive in environments where their ideas are welcomed and cultivated. A CEO's openness to feedback fosters psychological safety, making inventors feel comfortable sharing experimental concepts without fear of rejection. This encourages them to push the boundaries of creativity, knowing their ideas will be fairly evaluated. Additionally, feedback-friendly leadership enhances collaboration between inventors and other teams, promoting cross-disciplinary work that is often critical for innovative breakthroughs. For example, inventors in R&D may collaborate with marketing teams to align product development with consumer needs, facilitated by open communication channels encouraged by the CEO.

Finally, CEOs who welcome feedback ensure that inventor retention rates remain high by creating an engaging and fulfilling work environment. Inventors are more likely to remain with companies where their input is respected, their efforts are recognized, and their innovations are implemented. This retention of innovative talent strengthens the company's long-term innovation pipeline, ensuring a sustainable flow of ideas and continuous improvement. Following the analysis above, we present the following hypotheses:

H3: CEO's teachability increases corporate innovation through inventor's intake.

3.2.6 Moderating Role of Firm Size

Large organizations have complex hierarchies and multiple layers of decision-making systems. CEOs and top executives who are receptive to feedback create an environment where employees at all levels feel encouraged to share insights, voice concerns, and propose creative solutions,

fostering a culture of continuous improvement and innovation despite the organizational complexity. In large firms, the size and diversity of departments requires cross-functional collaboration, where openness to feedback becomes a key enabler of communication across teams. Teachable CEOs can break silos between departments, allowing innovation to emerge from interdisciplinary efforts. Moreover, large firms typically interact with a broader network of external stakeholders, including suppliers, research institutions, and customers. CEOs with an openness to external feedback are more effective at leveraging these partnerships to foster open innovation. They integrate external insights into internal innovation efforts, ensuring that the company remains agile and responsive to market changes and technological advancements.

Another reason openness to feedback is more impactful in large firms is the availability of greater resources—such as capital, talent, and technology—which can be optimally allocated through feedback mechanisms. CEOs who welcome feedback are better able to align resources with innovation priorities, ensuring that promising ideas receive adequate funding and support.

On the contrary, small size firms have relatively simple structure and it is easy to communicate between leaders and employees or among employees. The decision-making system is also simple and effective. These characters of small size firms are easier for new idea frosting and therefore weaken the effect of openness to feedback in CEOs. From the above analysis, we have the following hypotheses:

H4: The effect of teachability on corporate innovation is significant in bigger firms.

3.2.7 Moderating Role of Firm Age

As firms grow older, they often develop rigid structures, deeply ingrained routines, and traditional mindsets, which can inhibit creativity and make innovation more difficult. Leaders who embrace feedback play a crucial role in breaking through this inertia by introducing new perspectives, questioning outdated practices, and fostering a culture of continuous learning.

Older firms may rely too heavily on historical successes, making them resistant to change. A CEO or leadership team that welcomes feedback ensures that the organization remains responsive to new trends, customer demands, and technological advancements. This adaptability is essential for innovation, as it allows older firms to update their products, services, and processes to remain relevant in a competitive market.

Additionally, R&D and innovation investments in older firms are often constrained by the need to maintain legacy systems and existing operations. Leaders who embrace feedback can better align innovation investments with evolving priorities by incorporating input from multiple sources. For example, feedback from internal teams may highlight inefficiencies in current operations that could benefit from innovative solutions, while customer feedback might indicate demand for new product features. This alignment ensures that innovation efforts are targeted and effective, allowing older firms to innovate despite resource constraints.

Openness to feedback mitigates the risks associated with complacency, which can develop in older firms that have enjoyed long-term success. By continuously seeking input and encouraging constructive criticism, leaders ensure that the company remains vigilant and proactive in identifying new opportunities and addressing emerging challenges. This proactive approach is essential for preventing stagnation and driving sustainable innovation over time.

On the contrary, many young firms start with new ideas. They welcome an innovative environment. Many CEOs in young firms are also entrepreneurs. They need an open mind to collect feedback when developing new products. Therefore, the effect of openness to feedback in CEOs may not be significant as older firms that need open CEO to break the rigid thinking and inspire creativities. Thus, we hypothesize that:

H5: The effect of teachability on corporate innovation is significant in older firms.

3.3 Data and Methodology

3.3.1 Data and source

Our sample consists of CEOs from publicly traded U.S. firms listed in the Capital IQ transcripts database, covering the period from 2010 to 2020. Leveraging the publicly available transcripts, we extract information related to CEO teachability through calculated scores obtained from the earnings conference call transcripts using the text analysis software *DICTION*. CEO's teachability is quantified based on these scores. Accounting and financial information is sourced from Compustat, with financial and utility firms excluded due to regulatory concerns, specifically for firms with SIC codes ranging from 4900 to 4999 and 6000 to 6999.

Patent-level data including the number of patents, citations, and estimated patent value, are obtained from the database developed by Kogan et al. (2017), which includes patent grants and citations through 2023. Information on patent technology classes and inventors is obtained from PatentsView. CEO demographic information is sourced from ExecuComp. The data are annual, resulting in a total of 11,231 observations available for analysis after excluding those with missing

values for firm financial information or executives' demographic variables. To address the influence of extreme values, all continuous variables are winsorized at the 1st and 99th percentiles.

3.3.2 Variables

3.3.2.1 Dependent variable: corporate innovation

Corporate innovation is measured using two key indicators to capture both the quantity and impact of a firm's innovation activities (Rong et al., 2017, Weng et al., 2024). *Patent Count* represents the total number of patents a firm applies for and ultimately receives within a given year. Patent count serves as a measure of the volume of innovative output, reflecting the firm's commitment to developing and protecting new technologies, products, and processes. *Citation Count* is a measure which reflects the total number of raw citation counts received by patents applied for each year. Citations serve as an indicator of the influence and significance of the firm's innovations, as frequently cited patents are often those that contribute valuable advancements or are foundational within their field. Higher citation counts generally indicate that the firm's patents are recognized and utilized by other researchers and companies, underscoring the quality and impact of the firm's innovation. If a firm-year is absent from the patent data, both the Patent count and Citation count are assigned a value of zero.

3.3.2.2 Independent variable: CEO's teachability

Based on the definition provided by Ou et al. (2014) and inspired by text analysis methods for measuring CEO personalities (Ridge and Ingram, 2017; Humphreys and Wang, 2018; Harrison, Thurgood, Boivie and Pfarrer, 2019), we develop a measure of CEO teachability using *DICTION* software to analyze earnings conference call transcripts. We collect all earnings call transcripts for

each CEO within each firm and calculate a teachability score for each CEO. Prior to merging with the company-year sample, each CEO is assigned a single, consolidated teachability score.

Earnings conference calls, held quarterly, involve participants such as the CEO, CFO, vice presidents, other top management team members, analysts, and institutional investors, discussing business and management-related topics. Compared to other language sources, such as IPO prospectuses or annual shareholder letters, earnings conference calls provide a unique context for assessing CEO personality. This is primarily due to the structure of these calls, which includes both a prepared presentation segment and a question-and-answer session. The Q&A portion captures CEOs' spontaneous responses, which are more likely to reflect their own thoughts and personality (Matsumoto, Pronk and Roelofsen, 2011). Therefore, the transcripts from these sessions offer valuable material for assessing the CEO's true humility traits.

For this analysis, we use *DICTION 7.2*, a software frequently employed in organizational research to derive constructs from linguistic and content-related data (Short and Palmer, 2008; Ridge and Ingram, 2017). This approach follows a top-down method in text analysis, relying on predefined word lists based on theoretical frameworks or prior studies to measure specific constructs (Humphreys and Wang, 2018).

Specifically, we begin by referencing survey items previously used to capture humility dimensions (Ou et al., 2014), from which we extract keywords relevant to teachability/openness to feedback. To refine this work list, we begin with a broad set of synonyms from *The Synonym Finder* (Rodale, 1978) and narrow them down through validation by three expert raters (Chandler et al., 2019). Words agreed upon by at least two raters are included in the final word lists. Table 3.1 lists all the words used to capture teachability.

First, we compile the speech content of a CEO's quarterly conference call transcript. Using *DICTION 7.2*, we apply "open to feedback" word list to calculate the counts of "open to feedback" for a firm' each CEO, capturing the expression of teachability in CEOs' speech. A CEO's teachability is measured by counts of the word list, scaled by the total word count of the file.

$$\text{Teachability} = \frac{\text{The wordcount of open to feedbacks}}{\text{total wordcount}}. \quad (1)$$

3.3.2.3 Mediator and Moderator

We assess each firm's *teamwork* culture using the teamwork cultural score constructed by Li et al. (2021).[3] This score is based on the occurrences of a set of words that relate to the meaning of "teamwork" in a firm's earnings call transcripts with a word embedding model. To generate *inventor inflow*, we turn to patents' inventor names. One inventor is defined as new to a firm-year if the name appears for the first time among patents that the firm applies for in a given year. We then count the number of new inventors to generate *inventor inflow*. This measure, to some extent, captures a firm's tendency to hire new researchers. Firm size is measured by natural logarithm of total book assets. Firm age is the natural logarithm of the number of years the firm is listed with a non-missing stock price in Compustat.

3.3.2.4 Control variables

We control for potential confounding factors at the individual, firm, and industry levels, as well as for time trends. At *individual level,* we first control CEO's age. Corporate innovation may vary based on a leader's age. Age has been shown to negatively impact risk-taking behavior, subsequently affecting firm performance (Stewart et al., 1999; Kellermanns et al., 2008; Yim,

[3] We thank Kai Li for sharing the corporate culture score dataset with us.

2013). Therefore, we control the CEO age in our regressions. We also control *CEO's tenure*, as longer tenure provides CEOs with more experience, knowledge, and networks, leading them to make less risky decisions, which can influence firm strategy and performance (Kellermanns et al., 2008). *CEO ownership* is included as a control due to its potential impact on decision-making. Increased managerial ownership aligns management interests more closely with those of shareholders, reducing principal-agent costs as suggested by agency theory (Jensen and Meckling, 1976; Mehran, 1995; Fabisik et al., 2021).

At *firm-level,* we include firm size, firm age, Tobin's Q, leverage ratio, and asset tangibility as standard controls for firm characteristics, following established literature (Bebchuk, Cremers and Peyer, 2011; Petrenko, Aime, Recendes and Chandler, 2019). For example, larger and older firms typically exhibit lower performance and reduced risk-taking (Keim, 1983; Ouimet and Zarutskie, 2014; Kieschnick and Moussawi, 2018). Tangibility affects a firm's ability to secure external financing for investments (Almeida and Campello, 2007).

We include industry fixed effects to account for all time-invariant factors that could influence the entire industry. Additionally, we incorporate year dummies to control temporal effects that may influence all firms within the industry simultaneously. Table 3.2 details the measurements for all variables.

Table 3.1 Word List for Teachability in Humble CEOs

Learn: Absorb, Acquire a knowledge of , Acquire skill in, Acquire, Apply oneself to, Apprentice, Assimilate, Attain, Be taught, Be trained, Become competent in, Become expert in, Become proficient in, Become skilled at, Become versed, Brush up on, Burn midnight oil, Calculate, Comprehend, Crack the books, Cram, Digest, Drink in, Gain an understanding of, Gain, Get across, Get clued up about, Get the point of, Get, Glean, Grasp, Grind, Have lessons in, Hit the books, Imbibe, Improved mind, Know backwards, Know inside out, Major in, Master, Minor in, Mug up, Note, Peruse, Pore over, Pursue, Read up on, Receive, Review, Soak up, Take course, Take in, Train in, Understand, Wade through, Work at, 2.Open: Agape, Ajar, Clear, Cleared, Flared, Free, Gaping, Not closed, Not shut, Open, Open wide, Opened, Unbarred, Unbolted, Unclosed, Unfastened, Unlatched, Unlocked, Unsealed, Unsecured, Wide open, Wide, Yawning, 3.Idea: Concept, Conception, Conceptualization, Creation, Design, Discovery, Doctrine, Image, Imagination, Innovation, Inspiration, Invention, Origination, Planning, Proposal, Proposition, Thinking 4.Advice: Advisement, Advising, Advocacy, Constructive criticism, Consultation, Counsel, Counseling, Direction, Directions, Enlightenment, Exhortation, Guidance, Guidelines, Help, Hints, Ideas, Inside story, Instruction, Lessons, Opinions, Persuasions, Pointers, Prescriptions, Proposals, Propositions, Recommendations, Rede, Suggestions, Teachings, Telltales, Tidings, Tips, Views,

Table 3.2 Variable Definitions

Variable	Definition
Patent	Natural logarithm of one plus the total number of patents filed by the firm in a given year, including those eventually granted.
Citation	Aggregate count of citations received by all patents the firm applied for within a specific year.
Ncitation	Yearly sum of normalized patent citations, calculated by dividing each patent's citations by the average number of citations for patents in the same technology class and application year.
NPL patents	Number of granted patents in a given year that include at least one citation to non-patent literature (NPL).
Radical 1%/5%/10%	Count of patents in the top 1%/5%/10% of the citation distribution, benchmarked by 3-digit technology class and year of application.
CEO-teach	Proportion of "teachability" or "receptiveness to feedback" terms in CEO speech, calculated as the frequency of such terms divided by the total number of words in the transcript.
Teamwork score	Corporate teamwork cultural score from Li et al. (2021).
Inventor inflow	The number of move-in inventors in a year.
Size	Natural logarithm of the firm's total book assets.
Leverage	Financial leverage measured as the sum of long-term debt and current liabilities divided by total assets.
Tobin Q	Market valuation metric calculated as the firm's total assets minus the book value of equity plus the market value of equity, divided by book assets.
Ln(firm age)	Natural logarithm of the number of years the firm has been listed on Compustat with a valid stock price record.
Tangibility	Proportion of tangible assets, computed as net property, plant, and equipment divided by total book assets.
Ln(CEO age)	Natural logarithm of the CEO's age in years during the firm's fiscal year.
CEO ownership	Fraction of the firm's outstanding shares held by the CEO.
Ln(1+CEO Tenure)	Natural logarithm of one plus the number of years the CEO has served at the firm.

3.3.3 Methodology

To estimate the effect of CEO humility on firm innovation, we use a Tobit regression model. As noted by Cohn et al. (2022), OLS models that apply a log transformation to count data (e.g., log(1 + y)) may produce biased estimates, particularly when the outcome variable contains a substantial number of zeros. Given that our dependent variables—patent and citation counts—are non-negative integers with frequent zero observations, the Tobit model is an appropriate choice to handle the resulting lower censoring. The model is specified as follows:

$$Innovation_{i,t} = \alpha_0 + \alpha_1 * Teachability_{i,t} + \alpha_2 * Controls_{i,t-1} + Year_dum + Ind_dum + \varepsilon_{i,t}, \quad (2)$$

where $Innovation_{i,t}$ represents the innovation output of the company i at time t, $Teachability_{i,t}$ is the humility score of the CEO, $Controls_{i,t}$ denotes a series of control variables. We include year dummies ($Year_dum$) and industry dummies ($Year_dum$) to control for fixed effects for year and industry. Standard errors are clustered by firms.

3.4 Empirical Analysis

In this section, we first present the empirical results, outlining key findings and their statistical significance. Second, we conduct a heterogeneity analysis to explore variations across different subgroups or conditions, providing insight into factors that may alter the impact of CEO teachability. Third, we delve into the mechanisms underlying the role of CEO's teachability, examining how these characteristic influences corporate innovation outcomes. Finally, we conduct a series of robustness tests to confirm the reliability of our findings under various specifications and assumptions.

3.4.1 Empirical results

Table 3.3 provides the summary statistics for all variables used in the study. The sample includes 11,231 firm-year observations. On average, firms generate roughly one patent and citation annually, with many firms reporting zero in both categories. Given the large number of zero observations, we use Tobit regressions to evaluate the link between CEO teachability and innovation outcomes. CEO teachability is quantified by calculating the ratio of relevant word frequencies to total word count, yielding a low mean value (approximately 0.003). For ease of interpretation, we amplify this score by a factor of 1,000 in subsequent regressions. The statistics for control variables fall within expected ranges based on the literature.

Table 3.4 presents the results of the impact of CEO teachability on firm innovation. Columns 1 to 3 show the effect on the number of patents, while Columns 4 to 6 report the effect on the number of citations. Columns 1 and 4 provide baseline regressions without any control variables. Columns 2 and 5 include firm-level controls but do not control CEO demographic characteristics. Full models, shown in Columns 3 and 6, incorporate both firm and CEO characteristics, along with year and industry fixed effects. The coefficient of CEO teachability in Column 3 is 0.194 and statistically significant at the 1% level, indicating a positive influence on patent output. Similarly, Column 6 reveals a coefficient of 0.233 for citation counts, also significant at the 1% level. These findings support Hypothesis 1, suggesting that the CEO's teachability positively influences corporate innovation.

Table 3.3 Summary Statistics

Variables	Count	Mean	S.D.	Min.	P25	Med.	P75	Max.
Patent	11231	1.072	1.716	0.000	0.000	0.000	1.792	9.162
Citation	11231	1.071	1.887	0.000	0.000	0.000	1.609	11.290
CEO_teach	11231	0.003	0.001	0.000	0.002	0.002	0.003	0.031
Size	11231	7.606	1.665	3.808	6.455	7.540	8.676	12.628
Leverage	11231	0.247	0.209	0.000	0.070	0.223	0.367	0.968
Tobin Q	11231	2.103	1.326	0.727	1.251	1.680	2.458	8.092
Ln(firm age)	11231	3.015	0.870	0.000	2.639	3.135	3.689	4.234
Tangibility	11231	0.247	0.226	0.000	0.079	0.165	0.352	0.894
Ln(CEO age)	11231	4.024	0.128	3.296	3.951	4.025	4.111	4.489
CEO ownership	11231	2.057	4.351	0.000	0.153	0.576	1.677	26.285
Ln(1+CEO Tenure)	11231	1.576	0.813	0.000	1.099	1.609	2.197	3.332

Note: This table reports descriptive statistics for the variables used in the analysis. Patent-related metrics and CEO teachability are measured over the 2010–2019 period, whereas the remaining variables cover the years 2009 to 2018. Comprehensive variable definitions are listed in Table 3.2.

Table 3.4 Effect of CEO Teachability on Firm Innovation: Tobit Estimation

	(1)	(2)	(3)	(4)	(5)	(6)
Explained variables	*Patent*	*Patent*	*Patent*	*Citation*	*Citation*	*Citation*
CEO-teach	0.518***	0.209***	0.194***	0.630***	0.253***	0.233***
	(0.000)	(0.001)	(0.003)	(0.000)	(0.002)	(0.004)
Size		0.875***	0.895***		1.083***	1.108***
		(0.000)	(0.000)		(0.000)	(0.000)
Leverage		-1.186***	-1.100***		-1.614***	-1.482***
		(0.000)	(0.000)		(0.000)	(0.000)
Tobin Q		0.352***	0.351***		0.498***	0.495***
		(0.000)	(0.000)		(0.000)	(0.000)
Ln(firm age)		0.476***	0.519***		0.454***	0.513***
		(0.000)	(0.000)		(0.000)	(0.000)
Tangibility		-0.559	-0.611		-0.573	-0.669
		(0.312)	(0.269)		(0.418)	(0.345)
Ln(CEO age)			-1.460***			-1.880***
			(0.008)			(0.006)
CEO ownership			0.032*			0.044**
			(0.063)			(0.043)
Ln(1+CEO Tenure)			0.017			0.019
			(0.778)			(0.799)
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	11231	11231	11231	11231	11231	11231
Adjusted R^2	0.201	0.283	0.285	0.194	0.270	0.272

Note: This table presents the Tobit regression results assessing the impact of CEO teachability on corporate innovation. Robust standard errors are shown in parentheses. Statistical significance is indicated by *, **, and *** representing the 10%, 5%, and 1% levels, respectively.

Next, we investigate the relative impact of varying levels of CEO teachability. To do so, we divide CEOs' teachability scores into four quartiles: 100-75%, 50-74%, 25-49%, and 0-24%. Group 1 represents the top 25% of scores, Group 2 covers the 50-74% range, Group 3 includes the 25-49% range, and Group 4 comprises the bottom 0-24%. If a score falls within the top quartile (Group 1), the teachability indicator (CEO-teach_g1) is set to 1; otherwise, it is set to 0. The same method is applied to create indicators CEO-teach_g2, CEO-teach_g3, and CEO-teach_g4.

We then analyze the effect of CEO teachability on corporate innovation across these quartiles. Table 3.5 shows that, compared to Group 4 (0-24%), CEOs in Group 1 (75-100%) have a significant positive effect on both patents and citations at the 1% significance level. Group 2 (50-74%) also has a significant positive effect but at the 5% level, while Group 3 (25-49%) has no significant effect on patents or citations. These findings support the hypothesis that corporate innovation increases as CEO teachability increases.

Table 3.5 Effect of CEO Teachability on Firm Innovation: Subsamples

	(1)	(2)
Explained variables	*Patent*	*Citation*
CEO-teach_g1	0.606***	0.729***
	(0.001)	(0.002)
CEO-teach_g2	0.366**	0.555**
	(0.047)	(0.020)
CEO-teach_g3	0.125	0.200
	(0.474)	(0.370)
Size	0.891***	1.102***
	(0.000)	(0.000)
Leverage	-1.092***	-1.482***
	(0.001)	(0.000)
Tobin Q	0.349***	0.492***
	(0.000)	(0.000)
Ln(firm age)	0.530***	0.532***
	(0.000)	(0.000)
Tangibility	-0.558	-0.580
	(0.315)	(0.413)
Ln(CEO age)	-1.410***	-1.807***
	(0.010)	(0.007)
CEO ownership	0.032*	0.045**
	(0.059)	(0.040)
Ln(1+CEO Tenure)	0.012	0.014
	(0.838)	(0.852)
Industry FE	Yes	Yes
Year FE	Yes	Yes
Observations	11231	11231
Adjusted R^2	0.286	0.273

Note: This table reports the estimated effects of CEO teachability on firm innovation across four subsamples. Robust standard errors are provided in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

3.4.2 Endogeneity issue

To mitigate endogeneity concerns, we apply a difference-in-differences (DID) approach to identify the causal effect of CEO teachability on corporate innovation, isolating the CEO turnover as the only varying condition. The model is specified as follows:

$$Innovation_{i,t} = \beta_0 + \beta_1 * Post_{i,t} * Treat + \beta_2 * Post_{i,t} + \beta_3 * Controls_{i,t-1} + Year_dum + Firm_dum + \gamma_{i,t}, \quad (3)$$

where $Innovation_{i,t}$ represents the innovation output of the company *i* at time *t*. $Post_{i,t}$ is a dummy variable that equals 1 for years following a CEO turnover. $Treat_{i,t}$ is a dummy variable that equals 1 if a firm's former CEO has low teachability (0-24%, Group 4) and its current CEO has high teachability (75-100%, Group 1); If both the former and current CEOs have the same level of teachability, it is defined as control group and equals zero. Our main variable is the interaction between *Treat* and *Post*. $Controls_{i,t}$ denotes a series of control variables. Additionally, we control for year and firm fixed effects and standard errors are clustered by firms.

Columns 1 and 2 of Table 3.6 report the DID results, with the treatment group defined as CEOs moving from the lowest teachability score group to the highest. The control groups remain as previously described. In Column 1, we find that when CEO teachability shifts from low to high following a CEO turnover, the citation count of patents shows a significant effect, with a coefficient of 0.361. The effect on the number of patents remains positive, as shown in Column 2.

To address concerns about reverse causality, we examine the innovation dynamics surrounding changes in CEO teachability. If reverse causality were driving our main results (e.g., a firm hiring a CEO with high teachability to fulfill the demands of an innovative company), an increase in innovation would be observable even prior to the CEO turnover year. To test this, we generate nine dummy variables: Reform t-5 through Reform ≥ t+4, which represent the years

relative to the CEO turnover year (t). To create a cleaner experimental setting, we include only observations from event firms within five years before or after the CEO turnover year. As a baseline, observations from the year immediately preceding the turnover serve as the default group.

We then re-estimate the regressions from Table 3.6, replacing the Post variable with these nine dummy variables. The results, presented in Table 3.7, indicate that the effect of CEO teachability on corporate innovation is not significant in the five years leading up to the turnover. However, this effect becomes significant in the turnover year, the third year, and the fourth year following turnover, with no significant effect observed in the second-year post-turnover.

To further investigate whether a decrease in CEO teachability has the opposite impact on corporate innovation, we conducted an analysis where CEO teachability shifts from the highest to the lowest group, while retaining the same control groups. The results, presented in columns 3 and 4 of Table 3.6, indicate that a reduction in CEO teachability negatively affects corporate innovation. Column 3 shows that the coefficient on firm patents is -0.337, which is negative and significant at the 10% level, while Column 4 shows a negative but non-significant effect on citations. These findings reinforce a causal relationship, suggesting that increases in CEO teachability during turnover positively impact corporate innovation, whereas decreases in teachability lead to declines in innovation. We also perform a dynamic analysis to rule out the possibility that corporate innovation was already on a downward trajectory prior to the turnover of a CEO with low teachability. Columns 3 and 4 of Table 3.7 reveal that the effect of a decrease in CEO teachability on corporate innovation is not significant within the five years preceding the turnover. However, the effect on patents becomes significant only in the turnover year and the fifth year after turnover, potentially due to the reduced number of observations.

Table 3.6 Effect of CEO Teachability on Firm Innovation: DID Analysis

	(1)	(2)	(3)	(4)
Sample	Increase		Decrease	
Explained variables	*Patent*	*Citation*	*Patent*	*Citation*
*Post *Treat*	0.140	0.361*	-0.337*	-0.243
	(0.276)	(0.052)	(0.081)	(0.211)
Post	-0.031	-0.064	-0.022	-0.063
	(0.407)	(0.307)	(0.552)	(0.285)
Size	0.051	0.034	0.040	0.008
	(0.261)	(0.590)	(0.361)	(0.893)
Leverage	-0.175	-0.014	-0.187	-0.008
	(0.204)	(0.961)	(0.165)	(0.976)
Tobin Q	0.048***	0.057*	0.058***	0.058*
	(0.008)	(0.086)	(0.002)	(0.078)
Ln(firm age)	0.068	0.113	0.106	0.157
	(0.544)	(0.320)	(0.354)	(0.167)
Tangibility	-0.080	-0.025	-0.062	0.160
	(0.873)	(0.959)	(0.904)	(0.741)
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	1800	1800	1703	1703
Adjusted R^2	0.945	0.895	0.946	0.903

Note: This table presents the estimated impact of CEO teachability on firm innovation using a DID framework. The variable "Increase" refers to firms transitioning from a CEO with low teachability (0–24%, Group 4) to one with high teachability (75–100%, Group 1), while "Decrease" captures the reverse transition. Robust standard errors are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 3.7 Effect of CEO Teachability on Firm Innovation: Dynamics

	(1)	(2)	(3)	(4)
Sample	Increase		Decrease	
Explained variables	Patent	Citation	Patent	Citation
*Reform t-5 *treat*	0.037	0.104	0.385	0.106
	(0.137)	(0.297)	(0.432)	(0.497)
*Reform t-4 *treat*	0.104	0.184	0.326	-0.015
	(0.146)	(0.264)	(0.376)	(0.347)
*Reform t-3 *treat*	0.179*	0.238*	0.194	-0.155
	(0.096)	(0.135)	(0.249)	(0.316)
*Reform t-2 *treat*	-0.048	-0.120	0.027	-0.300
	(0.120)	(0.155)	(0.185)	(0.279)
*Reform t *treat*	0.179*	0.323*	-0.332*	-0.274
	(0.095)	(0.167)	(0.191)	(0.238)
*Reform t+1 *treat*	0.092	0.336	-0.108	-0.379
	(0.184)	(0.232)	(0.155)	(0.316)
*Reform t+2 *treat*	0.263	0.700**	-0.122	-0.333
	(0.269)	(0.323)	(0.169)	(0.309)
*Reform t+3 *treat*	0.173	0.633*	-0.122	-0.161
	(0.200)	(0.375)	(0.146)	(0.302)
*Reform>=t+4 *treat*	0.200	0.134	-0.398	-0.762**
	(0.279)	(0.303)	(0.275)	(0.378)
Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	1800	1800	1703	1703
Adjusted R^2	0.945	0.895	0.946	0.903

Note: This table examines the dynamic impact of CEO teachability on firm innovation using an event-study framework. The variable Reform t-5, Reform t-4, Reform t-3, Reform t-2, Reform t, Reform t+1, Reform t+2, Reform t+3, and Reform ≥ t+4, which represent the years relative to the CEO turnover year (t). "Increase" refers to a leadership change from a low-teachability CEO (0–24%, Group 4) to a high-teachability CEO (75–100%, Group 1), while "Decrease" indicates the reverse. Robust standard errors are reported in parentheses. *, **, and *** represent significance at the 10%, 5%, and 1% levels, respectively.

3.4.3 Mechanism

Panel A of Table 3.8 examines the potential mechanism of teamwork in the relationship between CEO teachability and corporate innovation. Columns 1 and 2 confirm Hypothesis 1. Column 3 shows that CEO teachability positively affects the teamwork score, with a coefficient of 0.122, significant at the 1% level. Columns 4 and 5 reveal that teamwork enhances firm patents and citations, with coefficients of 0.098 (1% significance) and 0.092 (5% significance), respectively. When both teamwork and CEO teachability are included in the regression, the significance level of CEO teachability decreases from 1% to 5%, suggesting that teamwork partially mediates this relationship. These findings confirm Hypothesis 2, suggesting that CEO teachability promotes a culture of teamwork, which in turn enhances corporate innovation.

Panel B of Table 3.8 investigates the potential mechanism of inventor inflow. Columns 1 and 2 confirm Hypothesis 1. Column 3 shows that CEO teachability positively affects inventor inflow, with a coefficient of 0.167, significant at the 1% level. Columns 4 and 5 indicate that inventor inflow significantly increases patent count and citation count, with coefficients of 1.431 and 1.691, respectively, both at the 1% significance level. When both inventor inflow and CEO teachability are included in the regression, the effect of CEO teachability on patents and citations is no longer significant. These results suggest a complete mediation role of inventor inflow in the relationship between CEO teachability and corporate innovation. These findings support Hypothesis 3, indicating that CEO teachability enhances inventor inflow into the firm, which in turn drives corporate innovation.

Table 3.8 Effect of CEO Teachability on Firm innovation: Mechanism Analysis

Panel A. Teamwork					
	(1)	(2)	(3)	(4)	(5)
Explained variables	*Patent*	*Citation*	*Teamwork score*	*Patent*	*Citation*
CEO-teach	0.105***	0.101***	0.122***	0.098***	0.092**
	(0.001)	(0.005)	(0.000)	(0.003)	(0.011)
Teamwork score				0.056**	0.074***
				(0.022)	(0.005)
Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	10266	10266	10266	10266	10266
Adjusted R^2	0.575	0.535	0.419	0.576	0.536
Panel B. Inventor inflow					
	(1)	(2)	(3)	(4)	(5)
Explained variables	*Patent*	*Citation*	*Inflow*	*Patent*	*Citation*
CEO-teach	0.194***	0.233***	0.167***	0.025	0.027
	(0.003)	(0.004)	(0.001)	(0.253)	(0.502)
Inventor_inflow				1.431***	1.691***
				(0.000)	(0.000)
Controls	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	11231	11231	11231	11231	11231
Adjusted R^2	0.285	0.272	0.315	0.547	0.444

Note: This table investigates four potential mechanisms through which CEO teachability influences firm innovation. Robust standard errors are shown in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

3.4.4 Heterogeneity analysis

Table 3.9 presents the heterogeneity analysis of the impact of CEO teachability on corporate innovation. First, we divide the samples into two subgroups based on firm size, large firms and small firms. In Panel A, Columns 1 and 2 report results for large firms, while Columns 3 and 4 focus on small firms. The results in Columns 1 and 2 indicate that CEO teachability has a significant positive effect on both patents and citations in large firms, with coefficients significant at the 1% level. In contrast, Columns 3 and 4 show that the effect of CEO teachability on innovation outcomes is not significant in small firms. These findings suggest that firm size acts as a moderating factor influencing the effect of CEO teachability on corporate innovation.

We further analyze heterogeneity by splitting the samples based on firm age, creating two subgroups: older firms and younger firms. In Panel B, Columns 1 and 2 report results for older firms, while Columns 3 and 4 present findings for younger firms. The results in Columns 1 and 2 indicate that CEO teachability has a significant positive effect on patents and citations in older firms, with coefficients significant at the 10% and 5% levels, respectively. In contrast, Columns 3 and 4 show that the impact of CEO teachability is not significant in younger firms. These findings suggest that firm age also moderates the relationship between CEO teachability and corporate innovation, with older firms benefiting more from a teachable CEO's influence on innovation.

Table 3.9 Effect of CEO Teachability on Firm Innovation: Heterogenous Effects

Panel A. Firm size				
	(1)	(2)	(3)	(4)
Subsample	Big firms		Small firms	
Explained variables	*Patent*	*Citation*	*Patent*	*Citation*
CEO-teach	0.302***	0.340***	-0.018	-0.052
	(0.000)	(0.000)	(0.815)	(0.646)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	5613	5613	5618	5618
Adjusted R^2	0.326	0.320	0.304	0.268
Panel B. Firm age				
	(1)	(2)	(3)	(4)
Subsample	Old firms		Young firms	
Explained variables	*Patent*	*Citation*	*Patent*	*Citation*
CEO-teach	0.168*	0.222**	0.131	0.111
	(0.058)	(0.039)	(0.173)	(0.403)
Controls	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	5370	5370	5861	5861
Adjusted R^2	0.335	0.321	0.301	0.284

Note: This table examines how firm size and firm age moderate the relationship between CEO teachability and corporate innovation. Robust standard errors are reported in parentheses. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

3.4.5 Robustness tests

First, we test alternative regression models. In Column 1 of Table 3.10, we replace log (1+patent) with the inverse sine transformation (following Weng et al., 2024) while retaining the Tobit regression model. Column 2 uses an OLS model instead. Both approaches yield significant positive coefficients for CEO teachability on innovation indicators at the 1% level, reaffirming the main results.

Table 3.11 incorporates industry-year fixed effects to control for sector-specific time-varying shocks. Using a Tobit model, CEO teachability continues to show a positive and significant impact on both patents (0.204) and citations (0.252), with significant at the 1% level.

Table 3.12 reports the findings using alternative indicators to assess corporate innovation. The first metric, *Ncitation*, is computed by rescaling each patent's citation count—dividing it by the average citation count of patents within the same technology category and year—and summing these adjusted values for all patents filed by the firm in a given year. The *Non-Patent Literature (NPL)* measure captures the annual number of patents that reference at least one piece of non-patent literature. *Radical 1%/5%/10%* denotes the count of a firm's patents that fall within the top 1%/5%/10% of the citation distribution for patents in the same three-digit technology class and application year. The results confirm that CEO teachability positively influences all these innovation measures, with statistical significance consistently at the 1% level.

Table 3.13 explores the robustness of the findings by employing alternative constructs for CEO teachability. In Columns 1 and 2, teachability is measured using the natural logarithm of one plus the frequency of the phrase "open to feedback," while Columns 3 and 4 rely on the raw score for "communication" using a similar transformation. Across both definitions, CEO teachability

remains a significant predictor of innovation outcomes, with positive coefficients on patents and citations that are statistically significant at the 1% level.

To further ensure the validity of the results, Table 3.14 examines subsamples that exclude the CEO's first year in office and any year marked by CEO turnover. This approach accounts for the potential delay in the observable influence of personality traits. The analysis shows that even after these exclusions, CEO teachability continues to exert a strong positive influence on innovation, as measured by patents and citations, with significance maintained at the 1% level.

Table 3.15 extends the baseline model by incorporating R&D expenditure as a control for innovation input. Columns 1 and 2 show that even after adjusting for R&D intensity, CEO teachability remains significantly associated with higher patent and citation outputs, with coefficients of 0.060 and 0.058, respectively, both statistically significant at the 5% level. These findings underscore the independent role of CEO teachability in driving corporate innovation.

Table 3.10 Robustness Checks: Model Specification

	(1)	(2)	(3)	(4)
	HIS transformation		*OLS specification*	
Explained variable	*Patent*	*Citation*	*Patent*	*Citation*
CEO-teach	0.221***	0.263***	0.090***	0.088***
	(0.003)	(0.005)	(0.002)	(0.005)
Size	1.000***	1.234***	0.502***	0.539***
	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-1.256***	-1.666***	-0.505***	-0.604***
	(0.001)	(0.001)	(0.000)	(0.000)
Tobin Q	0.402***	0.560***	0.165***	0.196***
	(0.000)	(0.000)	(0.000)	(0.000)
Ln(firm age)	0.609***	0.596***	0.146***	0.112***
	(0.000)	(0.000)	(0.000)	(0.007)
Tangibility	-0.739	-0.799	-0.082	0.064
	(0.249)	(0.325)	(0.720)	(0.787)
Ln(CEO age)	-1.672***	-2.116***	-0.634**	-0.735**
	(0.009)	(0.007)	(0.018)	(0.012)
CEO ownership	0.035*	0.049*	0.011	0.015*
	(0.074)	(0.051)	(0.167)	(0.097)
Ln(1+CEO Tenure)	0.020	0.019	-0.005	0.010
	(0.770)	(0.826)	(0.855)	(0.759)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	11231	11231	11228	11228
Adjusted R^2	0.271	0.260	0.551	0.511

Note: This table replicates the regressions from Table 3.4 using the hyperbolic inverse sine (HIS) transformation and an OLS specification. Robust standard errors are presented in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3.11 Robustness Checks: Alternative Fixed Effects

	(1)	(2)
Explained variable	*Patent*	*Citation*
CEO-teach	0.204***	0.252***
	(0.002)	(0.004)
Size	0.911***	1.126***
	(0.000)	(0.000)
Leverage	-1.128***	-1.475***
	(0.001)	(0.001)
Tobin Q	0.371***	0.527***
	(0.000)	(0.000)
Ln(firm age)	0.506***	0.485***
	(0.000)	(0.000)
Tangibility	-0.611	-0.659
	(0.283)	(0.369)
Ln(CEO age)	-1.555***	-1.973***
	(0.007)	(0.005)
CEO ownership	0.034*	0.049**
	(0.051)	(0.032)
Ln(1+CEO Tenure)	-0.007	0.004
	(0.923)	(0.962)
Industry-year FE	Yes	Yes
Observations	11231	11231
Adjusted R^2	0.317	0.309

Note: This table re-estimates the regressions from Table 3.4 with the inclusion of industry-year fixed effects. Robust standard errors are shown in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3.12 Robustness Checks: Alternative Measures of Firm Innovation

	(1)	(2)	(3)	(4)	(5)
Explained variable	*Ncitation*	*NPL patents*	*Radical 1%*	*Radical 5%*	*Radical 10%*
CEO-teach	0.206***	0.202***	0.143***	0.167***	0.168***
	(0.006)	(0.001)	(0.009)	(0.004)	(0.004)
Size	1.020***	0.887***	0.791***	0.834***	0.835***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-1.378***	-1.068***	-1.375***	-1.088***	-1.097***
	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)
Tobin Q	0.453***	0.352***	0.353***	0.373***	0.371***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Ln(firm age)	0.477***	0.472***	0.133*	0.217***	0.282***
	(0.000)	(0.000)	(0.091)	(0.005)	(0.000)
Tangibility	-0.535	-0.558	-0.199	-0.218	-0.332
	(0.408)	(0.327)	(0.696)	(0.685)	(0.514)
Ln(CEO age)	-1.690***	-1.335**	-0.855*	-1.256***	-1.050**
	(0.006)	(0.015)	(0.081)	(0.006)	(0.024)
CEO ownership	0.041**	0.021	0.026	0.035**	0.032**
	(0.036)	(0.207)	(0.127)	(0.023)	(0.038)
Ln(1+CEO Tenure)	0.001	0.017	0.029	0.037	0.006
	(0.993)	(0.780)	(0.608)	(0.495)	(0.911)
Industry FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes
Observations	11231	11231	11231	11231	11231
Adjusted R^2	0.280	0.290	0.372	0.343	0.326

Note: This table replicates the regressions from Table 3.4 using alternative indicators of firm innovation. Robust standard errors are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3.13 Robustness Checks: Alternative Measures of CEO Teachability

	(1)	(2)	(1)	(2)
Independent variable	*Ln(1+CEO openness)*		*Ln(1+CEO communication)*	
Explained variable	*Patent*	*Citation*	*Patent*	*Citation*
CEO-teach	0.269***	0.336***	0.244***	0.310***
	(0.000)	(0.000)	(0.000)	(0.000)
Size	0.864***	1.070***	0.879***	1.088***
	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-1.133***	-1.522***	-1.158***	-1.552***
	(0.000)	(0.000)	(0.000)	(0.000)
Tobin Q	0.332***	0.471***	0.340***	0.480***
	(0.000)	(0.000)	(0.000)	(0.000)
Ln(firm age)	0.548***	0.548***	0.540***	0.538***
	(0.000)	(0.000)	(0.000)	(0.000)
Tangibility	-0.543	-0.575	-0.612	-0.659
	(0.323)	(0.414)	(0.265)	(0.348)
Ln(CEO age)	-1.012*	-1.316*	-1.189**	-1.535**
	(0.079)	(0.065)	(0.036)	(0.027)
CEO ownership	0.037**	0.051**	0.037**	0.052**
	(0.034)	(0.022)	(0.031)	(0.021)
Ln(1+CEO Tenure)	-0.063	-0.079	-0.061	-0.077
	(0.287)	(0.303)	(0.309)	(0.313)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	11231	11231	11231	11231
Adjusted R^2	0.287	0.274	0.287	0.273

Note: This table re-estimates the regressions from Table 3.4 using alternative proxies for CEO teachability. Robust standard errors are shown in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3.14 Robustness Checks: Alternative Samples

	(1)	(2)	(1)	(2)
	drop CEO first year		*drop turnover year*	
Explained variable	Patent	Citation	Patent	Citation
CEO-teach	0.212***	0.256***	0.204***	0.243***
	(0.002)	(0.004)	(0.003)	(0.005)
Size	0.904***	1.125***	0.886***	1.098***
	(0.000)	(0.000)	(0.000)	(0.000)
Leverage	-1.146***	-1.544***	-0.994***	-1.350***
	(0.000)	(0.000)	(0.002)	(0.001)
Tobin Q	0.354***	0.500***	0.353***	0.494***
	(0.000)	(0.000)	(0.000)	(0.000)
Ln(firm age)	0.532***	0.521***	0.533***	0.531***
	(0.000)	(0.000)	(0.000)	(0.000)
Tangibility	-0.524	-0.516	-0.646	-0.637
	(0.345)	(0.470)	(0.247)	(0.373)
Ln(CEO age)	-1.518***	-1.924***	-1.495***	-1.922***
	(0.009)	(0.007)	(0.009)	(0.006)
CEO ownership	0.033*	0.046**	0.035**	0.048**
	(0.054)	(0.037)	(0.041)	(0.027)
Ln(1+CEO Tenure)	-0.003	-0.022	-0.018	-0.048
	(0.976)	(0.844)	(0.816)	(0.621)
Industry FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Observations	9993	9993	10455	10455
Adjusted R^2	0.287	0.275	0.285	0.271

Note: This table replicates the regressions from Table 3.4 using subsamples that exclude either the CEO's first year in office or the year of CEO turnover. Robust standard errors are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively.

Table 3.15 Robustness Checks: Additional Control Variables

Explained variables	(1) *Patent*	(2) *Citation*
CEO-teach	0.060**	0.058**
	(0.012)	(0.032)
R&D	0.418***	0.426***
	(0.000)	(0.000)
Controls	Yes	Yes
Industry FE	Yes	Yes
Year FE	Yes	Yes
Observations	11228	11228
Adjusted R^2	0.635	0.584

Note: This table re-estimates the regressions from Table 3.4 by including R&D investment as a measure of innovation input in the model. Robust standard errors are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

3.5 Discussion

This paper investigates the relationship between CEO personality traits and corporate innovation. Our findings reveal that one prominent characteristic of humble CEOs—teachability—has a significant impact on corporate innovation. CEO's teachability greatly increases a firm's patents and citations, representing both the quantity and quality of the company's innovation output. Unlike previous studies on CEO humility and corporate innovation, which have largely overlooked endogeneity concerns, this study addresses causality problem and the potential influence of unobserved factors that might affect humility's impact on innovation. To address endogeneity concerns and establish causality, we adopt a DID framework. Our treatment group consists of firms experiencing exogenous CEO turnover, while the control group includes firms with stable CEO leadership. The DID estimator compares the pre-post differences in innovation outcomes between these groups, under the assumption that, absent CEO turnover, their trends would have evolved similarly. We validate this assumption by showing comparable pre-treatment trends in innovation outcomes (Table 3.7). Additionally, we include firm and year fixed effects, along with time-varying controls, to further mitigate confounding from observable factors. This approach allows us to attribute the observed changes in innovation to CEO leadership rather than unobserved heterogeneity or common shocks.

While most previous studies on humility have measured CEO humility through surveys, survey data can introduce bias, as humble CEOs may undervalue their contributions or performance. Some researchers have adopted a videometric approach to study CEO humility (Petrenko et al., 2019), asking third parties to rate CEOs' humility based on video observations. Although this method reduces subjective bias, it is costly and lacks reproducibility; when third-party raters change, the humility ratings may also vary. In this study, we use text analysis to

measure humility, addressing the limitations of both surveys and videometric methods. This approach is objective, reproducible, and easily measures individual dimensions of humility.

Previous studies have tended to treat humility as a composite of multiple dimensions, considering these dimensions collectively. However, our study examines individual components of humility and finds that teachability alone significantly influences corporate innovation, while other dimensions or humility do not. This insight highlights a potential new direction for personality studies, suggesting that breaking down personality traits into individual characteristics and studying them separately could yield insightful results. Since each trait may have distinct strengths or impacts in specific contexts, examining individual dimensions may reveal unique findings that would otherwise remain hidden in aggregated analysis.

This paper offers valuable practical implications for organizations striving to maintain competitive advantages through continuous innovation. First, our findings demonstrate a significant relationship between the teachability of CEOs—characterized by openness to new ideas and feedback—and corporate innovation. A teachable, open-minded CEO creates an environment where unconventional ideas are embraced, fostering a culture of experimentation and continuous learning. This highlights the importance of hiring leaders with openness as a strategy for maintaining innovation. Companies seeking long-term success in dynamic markets should focus not only on technical expertise or experience but also on selecting CEOs who exhibit openness, flexibility, and a willingness to learn from others, including employees, partners, and stakeholders.

Second, our mechanism analysis reveals that teamwork and the inflow of inventors serve as key channels through which teachability impacts innovation outcomes. These findings suggest that fostering a team-oriented corporate culture with integrity and respect plays a pivotal role in enhancing innovation. Leaders should actively encourage cross-functional teamwork and ensure

that employees feel psychologically safe to express ideas and take creative risks. Promoting inclusive communication and reducing hierarchical barriers will allow ideas to flow freely within the organization, boosting creative problem-solving.

Lastly, the inflow of talented inventors contributes to sustaining innovation. Firms should prioritize recruiting skilled inventors and R&D personnel to bring in fresh perspectives and expertise. This can be achieved by developing talent pipelines through partnerships with universities or research institutions, providing attractive career development opportunities, and creating a dynamic, innovative-friendly work environment that draws in top talent. To enhance corporate innovation, firms need to go beyond mere technological investments. They must strategically align leadership selection, collaboration efforts, and organizational culture with innovation goals. By hiring open-minded CEOs, cultivating teamwork-driven environments, and continuously attracting inventive talent, companies can create a sustainable framework for driving innovation and maintain competitive advantage in rapidly evolving markets.

Despite these contributions, this paper has certain limitations. First, the application of the DID method requires carefully selected samples for each group that meet specific criteria. The selection that leads to sample reduction in regression may influence the effect's statistical significance; with a larger sample size, the results would be more robust. Second, in our mechanism analysis, we find that inventor inflow fully mediates the relationship between CEO teachability and corporate innovation. This finding was unexpected, as other mechanisms—such as corporate culture and R&D investment—also play roles in supporting innovation. Further research is needed to clarify these mechanisms and fully understand how CEO teachability drives corporate innovation.

3.6 Conclusion

This paper provides strong empirical evidence confirming the positive impact of humble CEOs with an open mind toward feedback on corporate innovation. The findings contribute significantly to the literature on innovation, personality psychology, and upper echelon theory, highlighting how the personal characteristics of CEOs shape organizational outcomes. Specifically, the results show that a CEO's teachability/openness to new ideas play a crucial role in fostering an environment conducive to continuous innovation, which is essential for companies to maintain competitive advantages and ensure long-term survival in dynamic markets. CEOs with a high degree of teachability are instrumental in building collaborative, innovative, and resilient organizations. Their leadership style encourages knowledge-sharing, employee empowerment, and strategic investment in innovation, all of which are key drivers of corporate success. Future research could explore how firms can effectively develop and nurture these traits in their leaders to maximize innovation outcomes. For companies striving to sustain growth and competitive advantage, selecting or cultivating CEOs with openness to feedback is a powerful strategy to drive long-term innovation and success.

CHAPTER 4: ESSAY 3

How Does Humble CEO Affect the Cost of Debt? A Mediating Role of Analyst Expectation

Abstract

This study investigates how CEO humility influences firms' cost of debt, with a focus on the mediating role of analysts' earnings per share (EPS) forecasts and the moderating effect of firm age. Drawing on implicit leadership theory, we argue that humble CEOs may signal lower assertiveness or ambition, potentially leading to lower performance expectations from financial analysts and, in turn, higher debt costs due to perceived risks. Using a panel data approach and textual analysis on CEO's characteristics, our findings reveal that CEO humility is positively associated with the cost of debt. This relationship is partially mediated by analysts' EPS expectations, as firms led by humble CEOs often receive lower performance forecasts, which influences lender's behavior. Additionally, we find that firm age moderates this effect: in older firms, the positive relationship between CEO humility and debt cost is amplified, possibly due to the rigid structure concerns as firms mature. These findings extend the literature on executive traits and corporate financing by highlighting the broader implications of leadership characteristics for market evaluations and capital access.

***Keywords*:** CEO's humility, Cost of debt, Implicit Leadership Theories (ILTs), Financial Analysts, EPS expectations

4.1 Introduction

In recent years, leadership traits have attracted significant attention in organizational and finance research, as studies increasingly recognize how CEOs' personal characteristics can influence firm outcomes (Malmendier and Tate, 2005; Li and Tang, 2010; Petrenko, Aime, Ridge, and Hill, 2016; Zhang, Ou, Tsui and Wang, 2017). Among these traits, humility stands out as an intriguing and complex quality. Humility in leadership has often been historically perceived as a weakness, commonly associated with passivity, a lack of ambition, or low self-confidence (Morris et al., 2005). Consequently, research on CEO humility remained limited for many years. However, the rise of corporate scandals attributed to excessive ego, hubris, entitlement, and self-importance among executives (Zona, Minoja, and Coda, 2013) has prompted scholars to reevaluate its significance. Rather than a sign of weakness, humility is now recognized as a vital leadership strength (Vera and Rodriguez-Lopez, 2004).

Humility has been defined as desirable personal quality that involves understanding oneself through awareness of personal identities, strengths, and limitations (Nielsen et al., 2010). Unlike traditional perceptions of leadership that prioritize confidence, assertiveness, and even charisma (Lord and Maher, 2002; Epitropaki and Martin, 2005), humility introduces different dimensions: self-awareness, openness to feedback, appreciate other's contributions and a focus on collective rather than individual success (Owens et al., 2013; Ou et al., 2014). Humility has been associated with positive internal organizational outcomes, such as improved team efficiency, top management team integrity, and innovation (Ou, Waldman and Peterson, 2018; Zhou and Wu, 2018; Rego et al., 2019). However, its impact on external financial metrics, particularly the cost of debt, remains less understood (Petrenko, Aime, Recendes and Chandler, 2019). This paper aims to explore the following research questions: What impact do humble CEOs have on the cost of debt? What mechanisms drive the effects of CEO humility?

Debt financing is a crucial financial instrument for firms, providing essential capital for growth, expansion, and strategic initiatives. However, debt carries interest obligations, and lenders assess various factors, such as a firm's profitability, loan term, associated risks, and broader market conditions when setting interest rates and establishing covenants, all of which influence the overall cost of debt (Qiu and Yu, 2009). Moreover, agency conflicts between shareholders and bondholders (Jensen & Meckling, 1976) can raise debt costs. Shareholders may pursue high-risk projects to maximize their returns, potentially shifting risk onto bondholders if these ventures fail. While shareholders stand to gain if such projects succeed, bondholders bear the costs and risks of failure (Fama and Miller, 1972). Shareholders can also benefit at bondholders' expense by exploiting call options when the asset value exceeds the debt claim. To protect against these risks, bondholders often employ covenants and monitoring mechanisms, which may include demanding higher premiums, restricting additional financing, limiting dividend payouts, and regulating leasing activities, all of which can further elevate the firm's cost of debt.

The cost of debt is an important determinant of a firm's financing strategy, profitability, and market valuation. According to Implicit Leadership Theories (ILTs) (Lord etal., 1984; Engle and Lord, 1997), stakeholders have preconceived notions about effective leadership, typically associating it with qualities like assertiveness and ambition. Consequently, CEOs who display humility may unintentionally signal lower confidence or ambition (Morris, Brotheridge and Urbanski, 2005) potentially affect how analysts and lenders perceive the firm's potential and risk profile. This study aims to bridge the gap between the internal organizational benefits of CEO humility and its potential drawbacks in external financial perceptions, specifically investigating how CEO humility influences the cost of debt through its impact on analysts' earnings per share (EPS) expectations.

Using a textual analysis to quantify CEO humility, this research finds a positive association between humility and debt costs: firms led by more humble CEOs face higher borrowing rates. This outcome aligns with stereotype-driven interpretations that view humility as indicative of weakness or insufficient leadership acumen (Weiss & Knight, 1980; Emmons, 1998; Tangney, 2000). Such stereotypes may prompt lenders to demand a risk premium, resulting in higher financing costs—what may be termed an "expectation discount" (Exline & Geyer, 2004).

This paper also reveals that the positive relationship between CEO humility and cost of debt is mediated by third-party expectations regarding market performance. Financial analysts often have lower performance expectations for firms led by humble CEOs, perceiving such leadership as more cautious or conservative. These diminished expectations can lead to a higher cost of debt, as lenders adjust interest rates or bond yields to account for anticipated slower growth or returns. Furthermore, this study finds that firm age positively moderates the effect of CEO's humility on debt costs. As firms grow older, they tend to establish a stronger market presence, reputation, and track record, which generally contributes to a lower cost of debt. However, aging firms may also develop more rigid structures and processes, making it harder to respond swiftly to changing market conditions. In these situations, stakeholders and investors may prefer a CEO who can cut through bureaucratic barriers and drive innovation. When the stereotypical view of humble CEOs aligns with the characteristics of an old firm, expectations for the firm's performance may decline further, potentially leading to an increased cost of debt.

This paper makes several contributions to existing literature. First, it extends the implicit leadership theory (Lord et al. 1984; Engle and Lord, 1997) and the research on perceived leadership attributes (Waldman et al., 2001; Lord and Maher, 2002; Epitropaki and Martin, 2005). These streams of research emphasize that individuals form cognitive prototypes of effective

leaders, which shape their judgments through implicit expectations and social cues (Lord et al., 1984; Hollander & Offermann, 1990). As the leader of a firm, the CEO conveys signals directly to external stakeholders, such as investors, analysts, creditors, and journalists. External reactions to a CEO's personal traits, like humility, can shape perceptions of the firm, potentially influencing stakeholders' behaviors and thereby impacting the firm's market performance (Petrenko, Aime, Recendes and Chandler, 2019). This paper demonstrates that a CEO's personal traits, specifically humility, can leave a lasting impression on external investors and influence their behaviors. Due to stereotypical perceptions of humble CEOs, financial analysts have lower expectations for the firm's performance, while debt lenders respond by setting higher interest rates, reflecting a higher cost of debt.

Second, this paper contributes to the literature on cost of debt by identifying a new driver that influences debt costs. Traditional factors affecting the cost of debt include firm size, profitability, asset tangibility, growth opportunities, and leverage (Rajan and Zingales, 1995). Additionally, previous research has highlighted that information asymmetries between firms and lenders affect the cost of debt, with greater asymmetry often resulting in higher debt costs due to perceived risks (Anderson, Mansi and Reeb, 2003; Ferrer et al., 2019). However, the influence of CEO personality traits on the cost of debt has received limited attention in this field. While there is an established understanding of how financial metrics and structural characteristics affect debt costs, research examining how the personal attributes of top executives influence lenders' perceptions and risk assessments is scarce (Kim and Anderson, 2024). This paper addresses this gap by identifying CEO humility as a personality trait that can positively influence the cost of debt. Specifically, it suggests that humility in CEOs may signal to lenders a reduced market performance, thereby increasing the risk associated with lending to the firm. Our finding expands the cost of

debt literature by illustrating how CEO characteristics, beyond traditional financial and operational metrics, can shape external perceptions and affect financial outcomes. By positioning CEO humility as an influential factor, this study encourages further exploration of the role of executive personality traits in shaping capital costs and contributing to corporate financial strategy.

Third, this paper uncovers a mechanism that links CEO humility with the cost of debt. While most previous studies have examined the impact of CEO humility on internal organizational behaviors (Owens, Johnson and Mitchell, 2013; Ou et al., 2014), few have explored how humility influences external financial outcomes. An exception is Petrenko, Aime, Recendes and Chandler (2019), who investigate the humility-market performance relationship from the perspective of external audiences. Taking a different approach to measure CEO's humility, our study focusses on the cost of debt and examines this relationship through the lens of external stakeholders. We find that financial analysts have lower expectations for firms led by humble CEOs, likely due to stereotypical perceptions of humility as conservative or lack of confidence. These lowered expectations, reflected in financial reports, signal to debt lenders a potentially modest performance outlook for firms with humble CEOs. In response, lenders may increase the cost of debt to compensate for perceived limitations in expected growth or returns.

The remainder of this paper proceeds as follows: Section 4.2 reviews the literature and develops several hypotheses. Section 4.3 describes the data and research methodology. Section 4.4 presents the empirical results, and Section 4.5 concludes.

4.2 Theories and Hypotheses Development

4.2.1 Implicit Leadership Theories (ILTs)

This paper is based on Implicit Leadership Theories (ILTs). ILTs are cognitive frameworks or schemas that individuals hold about what constitutes effective leadership. These mental models shape how people perceive, interpret, and evaluate leaders based on specific traits, behaviors, and characteristics they associate with leadership. Introduced by the prior research such as Lord et al. (1984) and Engle and Lord (1997), ILTs suggest that people have preconceived notions of what makes a "good" or "bad" leader, influencing their reactions and judgments toward individuals in leadership roles.

ILTs are based on mental prototypes—sets of attributes or traits that people unconsciously believe leaders should possess, such as confidence, decisiveness, competence, or charisma. When individuals in leadership positions align with these prototypes, followers are more likely to view them as legitimate and effective leaders. Contrarily, leaders who deviate from these mental models may struggle to gain legitimacy or trust, as followers may perceive them as less effective. These theories are often shaped by cultural, societal, and organizational norms. For instance, in some cultures, humility may be seen as a strength, while in others, assertiveness or dominance is preferred.

Numerous studies have demonstrated that external appraisals of firms—such as media optimism and analysts' forecasts—are significantly shaped by CEO characteristics (Malmendier and Tate, 2009; Olsen et al., 2013). People tend to base their expectations of a firm's performance on their perceptions of the CEO's leadership qualities. Specifically, they often favor CEOs who exhibit traits such as arrogance (Hayward and Hambrick, 1997), hubris (Hiller and Hambrick, 2005), narcissism (Chatterjee and Hambrick, 2007, 2011), and overconfidence (Li and Tang, 2010).

These traits are commonly associated with the dominant figureheads of U.S. organizations (Haleblian and Finkelstein, 1993), as such leaders are often perceived as driving high performance within their firms. Conversely, firms led by CEOs who do not exhibit these traits may elicit lower performance expectations.

In the context of CEO humility, implicit leadership theories (ILTs) may introduce biases among stakeholders. When humility is not traditionally associated with effective leadership, followers, analysts, and lenders may perceive humble CEOs as less competent or assertive, which can shape their views of the firm's potential and financial stability. According to ILTs, loan lenders or financial analysts are likely to predict lower performance for firms led by humble CEOs. Prevailing perspectives suggest that leadership effectiveness stems from perceived strength or boldness, qualities such as masculinity and assertiveness, charisma, and traits aligned with McClelland's leadership motivation framework, which emphasizes a high need for power, low need for affiliation, and strong self-control (Offermann, Kennedy, and Wirtz, 1994; Deal and Stevenson, 1998; House, Spangler, and Woycke, 1991; McClelland, 1985). These traits are typically associated with confident or even overconfident CEOs, contrasting with the characteristics of humble leaders.

Humble leaders, in contrast, often exhibit low self-orientation, value the contributions of others, acknowledge personal limitations, and remain open to feedback (Owens et al., 2013). While such traits may contribute positively to internal team dynamics, they can also result in external perceptions of weakness, lack of drive, or inadequate decisiveness (Weiss & Knight, 1980; Emmons, 1998). These negative interpretations may be exacerbated when financial analysts assign lower performance expectations to firms led by humble CEOs. Such expectations can influence

debt markets, where lenders may increase the cost of borrowing to account for anticipated underperformance. Accordingly, the first hypothesis is as follows:

H1: CEO humility increases firm's cost of debt.

4.2.2 Mediating effect of analysts EPS expectation

Financial analysts play a critical role in capital markets by offering forward-looking evaluations of firm performance, particularly in the form of earnings forecasts (Deephouse & Heugens, 2009; Barron et al., 1998). However, due to persistent information asymmetries between firms and external observers, analysts must rely on available signals—such as leadership characteristics—to infer firm quality. In this context, CEO characteristics, such as humility in our study act as influential market signals that affect analysts' forecasts of a firm's expected performance (Becker, Medjedovic and Merkle, 2019).

According to the implicit leadership theories, analysts play a critical role in capital markets by offering forward-looking evaluations of firm performance, particularly in the form of earnings forecasts (Deephouse & Heugens, 2009; Barron et al., 1998). However, due to persistent information asymmetries between firms and external observers, analysts must rely on available signals—such as leadership characteristics—to infer firm quality. Humble CEOs, who demonstrate low self-focus, accountability, openness to feedback, willingness to admit weaknesses or mistakes, and may be perceived externally as lacking self-confidence and passion, do not fit the bold, strong, and assertive prototype that tends to yield positive evaluations of CEO effectiveness and high performance expectations (Weiss and Knight, 1980; Emmons, 1998; Owens, Johnson, and Mitchell, 2013). Therefore, financial analysts may have lower performance expectations for firms led by humble CEOs, and their reports are likely to signal low expectations for debt lenders.

Thus, debt lenders, influenced by analysts' projections, may also adopt a more cautious outlook, raising interest rates or yields to compensate for perceived risks associated with lower firm performance. Therefore, I propose the following hypothesis:

H2: Analyst's expectation mediates the relationship between CEO's humility and the cost of debt.

4.2.3 Moderating effect of firm age

As firms operate over time, they accumulate more tangible and intangible assets, build a financial track record, and gain valuable experience. These attributes serve as "bonus points" for debt lenders when determining interest rates or covenants, as they reduce liquidation risk and increase the likelihood of profitability. Empirical studies have shown that life cycle stage has a relationship with lend yields. Owen and Yawson (2010) find that younger firms face borrowing costs approximately 15 basis points higher than those of mature firms, while mature firms pay 11 basis points more than older, established firms. Similarly, Dickinson (2011) shows that firms in their early or declining phases face spreads 6% and 12% greater, respectively, than those in maturity.

As firms mature, they establish a stronger market presence, reputation, and tracking record, which may contribute to a lower cost of debt. However, older firms may also develop rigid structures and processes, making it more challenging to adapt quickly to changing market conditions. In such cases, investors or stakeholders may prefer a CEO capable of breaking through bureaucracy and driving innovation. When the stereotyped perception of humble CEOs aligns with the characteristics of an aging firm, expectations for the firm's performance may further decline,

ultimately resulting in a higher cost of debt. Based on the analysis above, I propose the following hypothesis:

H3: The negative relationship between CEO's humility and the cost of debt is enhanced as firm age increases.

The conceptual framework derived from our hypotheses is illustrated in Figure 4.1. This model outlines the proposed relationships between CEO humility, analysts' EPS expectations, firm age, and the cost of debt. It highlights how CEO humility influences debt costs both directly and indirectly through analysts' EPS expectations, which serves as a mediating variable. Additionally, the model shows the moderating role of firm age, suggesting that the impact of CEO humility on debt costs may vary depending on the firm's maturity.

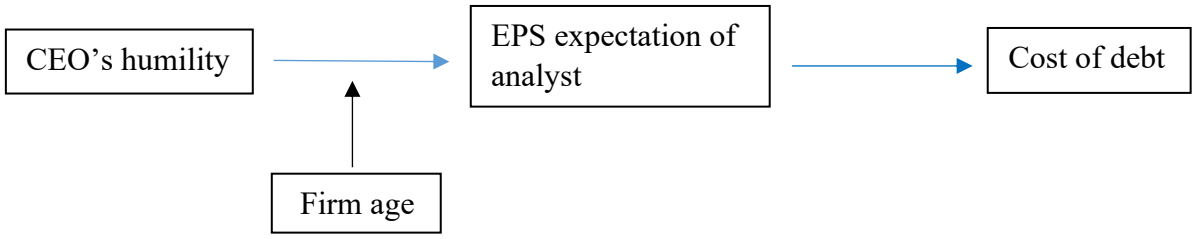

Figure 4.1 Framework of the Role of Humility and Mechanisms

4.3. Data and Methodology

4.3.1 Data source

Our sample comprises CEOs from publicly traded firms in USA, listed in the Capital IQ transcripts database, covering the period from 2010 to 2019. Using publicly available transcripts, we measure CEO humility by calculating scores derived from earnings conference call transcripts through the text analysis software *DICTION*. These scores serve as our quantification of CEO humility. Financial statement and firm-level data are obtained from Compustat, with financial and utility firms excluded due to regulatory considerations (specifically, firms with SIC codes ranging from 4900 to 4999 and 6000 to 6999). CEO demographic data is sourced from BoardEX. The dataset is quarterly, resulting in a total of 16,328 observations across 985 firms for analysis. To address the influence of extreme values, all continuous variables are winsorized at the 1st and 99th percentiles.

4.3.2 Variables

4.3.2.1 Dependent variable: cost of debt

The cost of debt is defined as the yield difference between corporate bonds and risk-free government securities, such as Treasury bonds, of similar maturities (Anderson, Mansi, & Reeb, 2003). While this market-based approach is commonly used, this study uses an accounting-based proxy following Zou and Adams (2008) and Chui, Kwok, and Zhou (2016). Specifically, we define the cost of debt as the ratio of a firm's total interest expenses to its average total debt, given by:

$$Cost\ of\ debt_{it} = \frac{total\ interest\ expenses_{it}}{average\ total\ debt_{it}}, \quad (2)$$

where the average total debt of firm *i* in year *t* is calculated between quarter *t – 1* and quarter *t*.

4.3.2.2 Independent variable: CEO's humility

Following Ou et al. (2014) and drawing on text analysis methods used to measure CEO personality traits (Ridge and Ingram, 2017; Humphreys and Wang, 2018; Harrison et al., 2019), we develop a measure of CEO humility by analyzing earnings conference call transcripts through the *DICTION* software.

Earnings conference calls, conducted quarterly, typically include the CEO, CFO, vice presidents, other top management members, analysts, and institutional investors discussing business operations and strategic decisions. These calls provide a unique lens into CEO personality, as they incorporate both a structured presentation segment and a question-and-answer (Q&A) session. The Q&A segment reveals the CEO's spontaneous responses, which are more likely to convey their personal thoughts and character traits (Matsumoto, Pronk, and Roelofsen, 2011). Therefore, these transcripts offer a rich source for assessing authentic humility traits in CEOs.

For this analysis, we use *DICTION 7.2*, a software widely applied in organizational research to derive constructs from linguistic data (Short and Palmer, 2008; Ridge and Ingram, 2017). This approach uses a top-down text analysis method, relying on predefined word lists based on theoretical frameworks or previous research to measure specific traits (Humphreys and Wang, 2018).

Our measure of humility focuses on six dimensions: self-awareness, appreciation of others, openness to feedback, low self-focus, a self-transcendent pursuit, and a transcendent self-concept. We start by referencing 19 survey items previously used to capture these humility dimensions (Ou et al., 2014) and identify keywords for each dimension. Table 4.1 summarizes the keywords associated with each dimension. To refine the word lists, we start with synonyms from *The Synonym Finder* (Rodale, 1978) and validate them through three expert raters (Chandler et al.,

2019). Words approved by at least two raters are retained in the final lists. Using *DICTION 7.2*, we apply these six curated word lists to each quarterly conference call transcript, calculating raw word frequency scores to capture the expression of humility in CEO speech. This approach provides an objective, reliable measure of CEO humility based on linguistic patterns in real-time corporate communications. CEO humility is then quantified as an index comprising the six humility dimensions, calculated through the following equation:

$$Humility = \frac{(\text{self-awareness} + \text{appreciation} + + \text{openness} - \text{selffocus} + \text{selftranscendent pursue} + \text{transcendent selfconcept})}{\text{total} - \text{wordcount}}, \quad (1)$$

where self-awareness, appreciation, openness, self-focus, self-transcendent pursuit, and transcendent self-concept represent the raw frequency scores for each respective word list, as calculated by the *DICTION* software.

Table 4.1 Keywords for Each Humility Dimension

Humility dimension	Keywords
self-awareness	seek, feedback, acknowledge, admit, awareness
appreciation of others	appreciation, contribution, notice, strength, compliment
openness to feedback	learn, open, feedback, ideas, advice
low self-focus	self-attention, self-profile, fame, self-focus
self-transcendent pursuit	mission, society-care, whole-world, self-improvement
transcendent self-concept	power-significance, imperfection, non-ego, non-control

4.3.2.3 Mediating Variable: Analysts' EPS Forecasts

Analyst expectations are measured using the consensus earnings per share (EPS) forecast from I/B/E/S for quarter *t*, normalized by the firm's stock price in the same quarter. EPS forecasts represent aggregated assessments from analysts and are widely used to capture market expectations of future performance (Hong & Kubik, 2003; Kim, Lobo, & Song, 2011; Petrenko et al., 2019).

4.3.2.4 Moderating Variable: Firm Age

Firm age is computed as the number of years since the company's initial public offering (IPO), calculated as the current year minus the IPO year plus one. Older firms typically face lower debt spreads due to greater stability (Amin et al., 2023), although rigidity and reduced flexibility may pose challenges in rapidly evolving environments.

4.3.2.5 Control variables

We control potential confounding factors at the individual, firm, and industry levels, as well as time trends. At individual-level, CEO's age is controlled as age has been shown to negatively influence risk-taking behavior, which in turn affect firm performance (Stewart et al., 1999; Kellermanns et al., 2008; Yim, 2013). Gender differences among CEOs, particularly in financial decision making, are well-documented. Research indicates that female CEOs tend to avoid riskier decisions compared to their male counterparts (Huang and Kisgen, 2013; Khan and Vieito, 2013; Ho, Li, Tam and Zhang, 2015; Faccio, Marchica and Mura, 2016). Thus, we control the CEO gender in the analysis. CEO tenure is also controlled for, as longer tenures typically provide CEOs with greater experience, knowledge, and networks, which may lead to more conservative decision-making, ultimately impacting firm's cost of debt (Owusu et al., 2022).

At firm-level, we control firm size, firm age, ROA, leverage ratio, cash flow and collateral availability, following established literature (Bebchuk et al., 2011; Petrenko et al., 2019). For instance, as firm size and age increase, performance and risk-taking tend to decrease (Keim, 1983; Ouimet and Zarutskie, 2014; Kieschnick and Moussawi, 2018). Additionally, ROA and cash flows influence a firm's strategy and cost of debt (Minton and Schrand, 1999), while collateral reduces risk and affects loan pricing (Berger and Udell, 1990)**.** Firm Size is measured as the natural logarithm of total assets. Firm Age is calculated from the first IPO date, recognizing that the length of time a firm has been listed significantly affects how firm age moderates the impact of governance (Filatotchev, Wright and Arberk, 2006). ROA is defined as the ratio of income before extraordinary items to total assets. Cash Flow is measured by the ratio of operating income before depreciation to total assets. Collateral is measured by tangible assets ratio**,** the ratio of Property, Plant, and Equipment (PPE) over total assets. A summary of all variable definitions is provided in Table 4.2.

Table 4.2 Variables Definition and Data Sources

Variable	*Definition*	*Data source*	
Dependent variables			
Cost of debt	Ratio of total interest expense to average of total debt from quarter t-1 to quarter t		Zou and Adams (2008); Chui, Kwok and Zhou (2016)
Independent Variables			
CEO's humility	Calculated from transcripts of earnings conference calls using *Diction* software	Capital IQ transcripts	
Mediators			
ESP expectation	analysts' consensus forecast for firm's EPS scaling by the firm's stock price	I/B/E/S Compustat	Prenko, Aime, Recendes and Chandler, 2019
Moderators			
Firm_age	Current year minus ipo-year (item IPODATE) plus 1	Compustat	Kieschnick and Moussawi, 2018
Controls			
Firm_size	Natural logarithm of the total market value (Ln(item ATQ))	Compustat	Prenko et al., 2019
Firm_age	Current year minus ipo-year (item IPODATE) plus 1 as firm age	Compustat	Kieschnick and Moussawi, 2018
ROA	ROA is measured by a ratio of income before extraordinary items (item IBQ) to 1-quarter-lagged total assets (item ATQ)	Compustat	Hou et al., 2015
Cashflow	Operating income before depreciation (OIBDQ)/total assets (ATQ).	Compustat	Duchin Matsusaka, Ozbas, 2010
Collateral	Property, Plant, and Equipment (PPE) (PPENTQ)/total asset (ATQ).	Compustat	Luck and Santos, 2023
CEO_age	An indicator of CEO's age	BoardEx	Prenko, Aime, Recendes and Chandler, 2019
CEO_gender	A binominal indicator of CEO's gender, 1 denotes female and 0 male	BoardEx	
CEO_tenure	An indicator of the period that the CEO is in the position	BoardEx	

4.3.3 Methodology

Given the longitudinal structure of the data—consisting of quarterly firm-level observations—we adopt a panel data approach consistent with empirical practices in finance and accounting (Barton & Simko, 2002; Kasznik & McNichols, 2002). Because our main explanatory variable (CEO humility) is relatively stable across time and unique to individuals, we use Generalized Estimating Equations (GEE) for hypothesis testing. This method is particularly suitable for repeated measures data and accounts for within-subject correlation (Liang & Zeger, 1986). We specify a Gaussian distribution with an identity link function and adopt an exchangeable correlation structure grouped by CEO, addressing autocorrelation and clustering within firms (Gupta & Misangyi, 2018). Robust standard errors are employed to correct for potential model misspecifications (Hardin & Hilbe, 2012). List-wise deletion is used to deal with missing data. To address the influence of extreme values, all continuous variables are winsorized at the 1st and 99th percentiles.

To control for industry effects, we classify firms using 12 industry portfolios from the Kenneth R. French database, excluding financial and utility sectors. The regression model is as follows:

$$Dependent_{i,t} = \alpha_i + Independent_{i,t} + controls_{i,t} + \varepsilon_{i,t}, \quad (2)$$

where dependent variable is the cost of debt in firm *i* in quarter *t*; independent variable is CEO's humility score. Control variables include size, age, cash flow, ROA, CEO's age, gender, and tenure. The model is unweighted.

To investigate the mediating role of analysts' EPS expectations, we employ a step-by-step approach, adding EPS expectations to the basic regression model (Baron and Kenny, 1986; Zhao, Lynch, and Chen, 2010; Mai and Hamid, 2021). We begin by examining the impact of CEO

humility on EPS expectations, followed by assessing the effect of EPS expectations on the cost of debt. If the effect above is significant, we then include both CEO humility and EPS expectations in equation (2). If both coefficients remain significant, partial mediation is inferred; if humility's coefficient becomes insignificant while the forecast remains significant, this indicates full mediation.

4.4. Empirical Analysis

Table 4.3 provides the summary statistics for all variables used in the study. While the number of observations varies by variable, the full regression sample includes 21,783 firm-quarter records[4]. Both the cost of debt and humility measures are log-transformed due to their non-normal distributions and strictly positive values. The average cost of debt is -4.4, with values ranging from -11.7 to 4.9, fitting a normal distribution. CEO humility is measured by the frequency ratio of relevant words to total words, resulting in a very low raw score. For ease of interpretation, we scale this score by a factor of 1,000 in the regressions. The average humility score is 1.14, ranging from 0 to 11.7. The average EPS expectation is 0.03, ranging from -114.5 to 80.3, also fitting a normal distribution. Control variable statistics are consistent with expected ranges from prior literature.

[4] List-wise deletion is used to deal with missing data.

Table 4.3 Summary Statistics

Variable	N	Mean	Sd	Min	P25	P50	P75	Max
debtcost	25455	-4.400	0.654	-11.74	-4.713	-4.398	-4.101	4.934
humility	31859	1.1400	0.8486	0	0.6010	0.9600	1.4543	11.736
EPS_exp	27692	0.0310	1.575	-114.5	0.0291	0.0502	0.0692	80.30
firmsize	31834	7.715	1.513	2.390	6.619	7.580	8.722	13.39
firmage	29740	8.985	0.650	4.522	8.625	9.047	9.455	9.965
cashflow	31471	0.0195	0.0429	-1.861	0.0126	0.0227	0.0337	1.006
collateral	31784	0.248	0.229	0	0.0756	0.163	0.353	0.970
leverage	30692	0.270	0.253	0	0.0999	0.243	0.379	3.945
roa	31468	0.0306	0.0406	-1.794	0.0208	0.0320	0.0450	0.572
tenure	29951	2943	2283	91	1309	2467	3937	17752
age	29926	63.90	7.347	35	59	64	68	95
gender	29951	1.947	0.225	1	2	2	2	2

The correlation matrix for all variables is presented in Table 4.4. CEO humility is positively correlated with the cost of debt, suggesting that firms with more humble CEOs are likely to face higher borrowing costs. Additionally, CEO humility has a significant negative correlation with analysts' EPS expectations, suggesting that analysts may perceive humble CEOs as potentially less aggressive or assertive in growth pursuits, thereby moderating their earnings expectations for such firms. Conversely, EPS expectations show a significant negative correlation with the cost of debt, implying that as analysts' earnings expectations increase, the cost of debt tends to decrease, reflecting enhanced confidence from lenders. Firm age shows a negative correlation with both the cost of debt and CEO humility. This suggests that more mature firms generally secure financing at lower costs, likely due to their established credibility and proven financial performance. Additionally, these firms are often led by CEOs who demonstrate lower levels of humility. On the other hand, a positive correlation exists between firm age and analysts' EPS expectations, indicating that analysts tend to anticipate stronger or more stable earnings from older, more established companies. These observed correlations among variables are consistent with our panel regression results, reinforcing the relationships hypothesized and supporting the robustness of our analytical framework. This consistency between correlation results and regression outcomes provides further validation of the hypothesized mediating and moderating effects in our study.

Table 4.4 Correlation Matrix of Variables

	debtcost	humility	EPS_exp	firmsize	firmage	cashflow	collateral	leverage	roa	tenure	age	gender
debtcost	1											
humility	0.0410*	1										
EPS_exp	-0.0956*	-0.0614*	1									
firmsize	-0.1598*	-0.0489*	0.2752*	1								
firmage	-0.1437*	-0.0319*	0.1737*	0.3897*	1							
cashflow	-0.1529*	-0.0451*	0.4190*	0.1751*	0.1289*	1						
collateral	0.0569*	-0.0123*	0.0464*	0.2099*	0.0491*	0.1314*	1					
leverage	0.0185*	0.0126*	0.00490	0.2011*	0.0231*	-0.0724*	0.1720*	1				
roa	-0.1084*	-0.0464*	0.4085*	0.1527*	0.1125*	0.8024*	0.0961*	-0.0335*	1			
tenure	0.0201*	0.0097	-0.0127*	-0.2185*	-0.0125*	0.0548*	-0.0090	-0.1098*	0.0389*	1		
age	0.0465*	-0.0121*	0.0422*	-0.0009	0.0677*	0.0292*	0.0994*	-0.0351*	0.0338*	0.1845*	1	
gender	0.0055	-0.0111	-0.0052	-0.0075	-0.0057	-0.0245*	-0.0348*	-0.0060	-0.0234*	0.0815*	0.0850*	1

Table 4.5 reports the results examining the effect of CEO humility on the cost of debt. Columns 1 and 2 use GEE regression, while Columns 3 and 4 employ fixed-effects regression for robustness check. Columns 1 and 3 provide baseline regressions without firm level and individual control variables. Columns 2 and 4 show full regressions, which incorporate firm characteristics, CEO demographics, and include both industry and quarter effects. The results in Column 2 reveal a significant positive effect of CEO humility on the cost of debt, with a coefficient of 0.0024, significant at the 5% level. Similarly, Column 4 shows a significant positive relationship between CEO humility and the cost of debt, with a coefficient of 0.0023, significant at the 5% level. These findings support Hypothesis 1, suggesting a positive relationship in which an increase in CEO humility corresponds with a higher cost of debt.

Table 4.6 reports the effect of analysts' EPS expectations on the cost of debt. To validate the mediating role of analysts' EPS expectations in the relationship between CEO's humility and the cost of debt, we need confirm whether EPS expectations influence the cost of debt. Based on the Hausman test result (data not shown), columns 1 and 2 use a fixed-effects regression to control for firm-level heterogeneity since CEO humility was not the independent variable. Columns 3 and 4 employ GEE regression for robustness check. Column 2 reveals a significant negative effect of EPS expectations on the cost of debt, with a coefficient of -0.5477, significant at the 1% level. Consistently, Column 4 shows a significant negative effect of EPS expectation on the cost of debt, with a coefficient of -0.4134, significant at the 1% level. These findings suggest that higher EPS expectation from analysts is associated with lower debt costs, and vice versa.

Table 4.5 Effect of CEO's Humility on the Cost of Debt

	GEE		Fixed Effect	
	(1)	(2)	(3)	(4)
VARIABLES	Cost of debt	Cost of debt	Cost of debt	Cost of debt
humility	0.0022**	0.0024**	0.0012	0.0023**
	(1.9731)	(2.1192)	(1.2090)	(2.2225)
firmsize		-0.0707***		-0.0978***
		(-4.3941)		(-9.7996)
firmage		-0.0264		0.1283***
		(-0.8974)		(3.9210)
cashflow		-0.5610**		-0.3824**
		(-2.0951)		(-2.5022)
collateral		-0.2390***		-0.5456***
		(-2.6128)		(-9.3026)
leverage		-0.3639***		-0.5141***
		(-4.6422)		(-19.9783)
roa		0.1733		0.1796
		(0.5959)		(1.4964)
tenure		-0.0000		-0.0000
		(-0.6764)		(-0.8107)
Age		0.0008		0.0009
		(0.4739)		(1.2671)
gender		0.0436		0.0585***
		(1.0562)		(3.0078)
Constant	-4.3370***	-3.4604***	-4.4257***	-4.4509***
	(-33.2570)	(-11.3903)	(-21.4303)	(-13.2657)
Observations	25,455	21,783	25,455	21,783
Number of firms	2,665	1,097	2,665	1,097
Ind & quarter	Yes	Yes	Yes	Yes
Adj R-squared			-0.039	0.053

z-statistics in parentheses for GEE regression, t-statistics in parentheses for FE regression
*** p<0.01, ** p<0.05, * p<0.1

Table 4.6 Effect of ESP Expectation on the Cost of Debt

	Fixed Effect		GEE	
	(1)	(2)	(3)	(4)
Vavriables	Cost of debt	Cost of debt	Cost of debt	Cost of debt
EPS_expectation	-0.4654***	-0.5477***	-0.5385***	-0.4134***
	(-7.3814)	(-8.3390)	(-5.2025)	(-3.4956)
firmsize		-0.0489***		-0.0585***
		(-4.7453)		(-3.3809)
firmage		0.1002***		-0.1975***
		(3.0428)		(-6.7166)
cashflow		-0.4212***		-0.4953*
		(-2.6203)		(-1.7778)
collateral		-0.6218***		-0.1760**
		(-10.3135)		(-1.9808)
leverage		-0.5719***		-0.5030***
		(-21.3979)		(-6.1049)
roa		0.3334***		0.3956
		(2.6802)		(1.2548)
Constant	-4.1425***	-4.1935***	-4.1151***	-1.9709***
	(-17.0572)	(-11.9295)	(-111.6483)	(-7.4635)
Observations	22,047	20,245	22,047	20,245
Number of id	2,354	1,037	2,354	1,037
Adjusted R-squared	-0.036	0.057		
Ind & quarter	YES	YES	YES	YES

t-statistics in parentheses for FE regression, z-statistics in parentheses for GEE regression
*** p<0.01, ** p<0.05, * p<0.1

Table 4.7 examines the mediating role of analysts' EPS expectations in the relationship between CEO humility and the cost of debt. Columns 1 and 3 provide baseline regressions without individual and firm level control variables. Columns 2 and 4 control CEO's demography, firm characteristics, industry, and quarter effects. Columns 1 and 2 report the effects of CEO humility on EPS expectations, while Columns 3 and 4 examine the effect on the cost of debt when both CEO humility and EPS expectations are included in the regression. Column 2 indicates that CEO humility negatively influences EPS expectations, with a coefficient of -0.0002, significant at the 5% level, suggesting that higher CEO humility is associated with lower EPS expectations. However, when both CEO humility and EPS expectations are included in the regression, EPS expectations retain a negative effect on the cost of debt with a coefficient of -0.4719, significant at the 1% level, while CEO humility shows a positive effect on the cost of debt, with a coefficient of 0.0021, albeit with a reduced significance level from 5% to 10%. According to Baron and Kenny (1986), a partial mediating effect is indicated when the coefficient of CEO humility remains significant but with a reduced level of significance upon inclusion of EPS expectations. Consequently, Tables 4.6 and 4.7 support Hypothesis 2, providing evidence that analysts' EPS expectations partially mediate the relationship between CEO humility and the cost of debt.

Table 4.7 Mediating Effect of Analyst Expectation

VARIABLES	(1) EPS_exp	(2) EPS_exp	(3) Cost of debt	(4) Cost of debt
humility	-0.0003**	-0.0002**	0.0020*	0.0021*
	(-2.2588)	(-1.9997)	(1.7801)	(1.8942)
EPS_exp			-0.5367***	-0.4719***
			(-5.1847)	(-4.2396)
firmsize		0.0134***		-0.0463***
		(14.8997)		(-4.0564)
collateral		-0.0220***		-0.1931***
		(-3.0854)		(-2.7046)
roa		0.2075***		0.3151
		(7.2868)		(1.2221)
cashflow		0.1888***		-0.7048***
		(2.8550)		(-2.8831)
leverage		-0.0077		-0.3249***
		(-1.6156)		(-5.3198)
tenure		0.0000		-0.0000
		(0.9847)		(-0.4347)
Age		0.0001		0.0014
		(0.4536)		(0.9395)
gender		-0.0000		0.0196
		(-0.0063)		(0.5315)
Constant	0.0345***	-0.0595***	-4.1234***	-3.7810***
	(7.7107)	(-4.2099)	(-109.3615)	(-23.2742)
Observations	27,692	24,975	22,047	21,452
Number of id	2,688	2,454	2,354	2,307
Ind & quarter	Yes	Yes	YES	YES

Robust z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

To address potential endogeneity, we conduct instrumental variable (IV) analyses. Using lagged humility as an instrument for CEO's humility, results show that humility has a negative effect on EPS expectation (-0.0066), a positive effect on the cost of debt (0.0260). Similarly, to solve the potential causal endogeneity in the relationship between EPS expectation and cost of debt, we apply an IV analysis using lagged EPS expectation as an exogenous instrument for EPS expectation. The results are consistent with the main results. EPS expectation has a negative effect on the cost of debt (-0.8199). The detailed results are reported in Table 4.8.

Table 4.9 examines whether firm age moderates the relationship between CEO humility and cost of debt. Column 1 shows that CEO's humility positively and firm age negatively affects the cost of debt. Column 2 illustrates that the interaction between CEO humility and firm age has a positive coefficient of 0.0035, significant at the 5% level, indicating that firm age strengthens the effect of CEO humility on the cost of debt. These results support Hypothesis 3, which predicted a moderating effect of firm age. A possible explanation is that older firms may develop rigid structures and processes, making them more difficult to adapt quickly to changing market conditions. When the stereotyped perception of humble CEOs aligns with the characteristics of an aging firm, expectations for the firm's performance may further decline, ultimately resulting in a higher cost of debt.

Table 4.8 Effect of CEO's Humility on EPS Expectations and the Cost of Debt: Instrumental Variable

VARIABLES	(1) EPS_exp	(2) Cost of debt	(3) Cost of debt
Iv(lagged_humility)	-0.0066*	0.0260***	
	(-1.7210)	(3.7602)	
Iv(lagged EPS_exp)			-0.8199***
			(-7.8516)
tenure	0.0000***	0.0000	
	(2.7000)	(0.4431)	
Age	0.0001	-0.0011	
	(1.3626)	(-0.9844)	
gender	-0.0009	0.0720***	
	(-0.3875)	(2.8662)	
firmsize	0.0207***	-0.0792***	-0.0395***
	(21.1185)	(-6.7111)	(-3.4078)
collateral	-0.0485***	-0.4419***	-0.5644***
	(-8.1291)	(-6.3039)	(-8.4411)
roa	0.1656***	0.1425	0.3486***
	(22.1270)	(1.0441)	(2.6364)
firmage			0.0670*
			(1.7752)
cashflow			-0.3868**
			(-2.1762)
fleverage			-0.6026***
			(-20.2401)
Constant	-0.0729**	-3.4762***	-4.0264***
	(-2.5546)	(-11.3443)	(-9.7909)
Observations	21,804	18,626	17,299
Number of id	1,110	1,064	970
Ind & year	YES	YES	YES

z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4.9 Moderating Effect of Firm Age

VARIABLES	(1) Cost of debt	(2) Cost of debt
humility	0.0024**	-0.0290*
	(2.2236)	(-1.8401)
firmage	-0.0333*	-0.0386**
	(-1.9451)	(-2.1074)
humility#firmage		0.0035**
		(1.9998)
firmsize	-0.0707***	-0.0707***
	(-10.4334)	(-10.4388)
cashflow	-0.5610***	-0.5623***
	(-3.5104)	(-3.5190)
collateral	-0.2390***	-0.2385***
	(-5.3658)	(-5.3556)
leverage	-0.3639***	-0.3638***
	(-14.9589)	(-14.9548)
roa	0.1733	0.1743
	(1.3828)	(1.3911)
tenure	-0.0000	-0.0000
	(-1.4292)	(-1.4260)
age	0.0008	0.0008
	(1.1186)	(1.0990)
gender	0.0436**	0.0436**
	(2.2201)	(2.2237)
Constant	-3.4604***	-3.3485***
	(-13.4384)	(-12.7073)
Observations	21,783	21,783
Number of id	1,097	1,097
Ind & quarter	YES	YES

Robust z-statistics in parentheses
*** p<0.01, ** p<0.05, * p<0.1

4.5. Discussion

This paper is the first to develop a measure of CEO humility using textual analysis. Previous studies on CEO humility have predominantly relied on surveys or third-party ratings to capture humility (Ou et al., 2014; Petrenko et al., 2019). Survey-based methods, however, have notable drawbacks: they often suffer from low response rates among CEOs and may introduce bias due to self-reporting. Surveys also face issues with recall bias and replicability. While third-party ratings, also known as video metric methods, can mitigate these problems, they only capture humility as perceived by the raters and may not fully reflect the "self-views" held by CEOs. Additionally, these methods can be costly if raters need to be hired.

Textual analysis addresses these limitations by measuring multiple dimensions of humility while being time- and cost-efficient. Transcript data can be accessed from databases and processed with software, providing a streamlined approach. However, the key challenge in textual analysis lies in designing a validated word list. Textual analysis has been used to assess personality traits such as the Big Five (Harrison et al., 2019), with modesty being the trait most closely related to humility (Ridge and Ingram, 2017). Yet, modesty represents only a portion of humility. According to Ou et al. (2014), modesty concerns self-presentation and expression, while humility encompasses additional "self-views." Humility serves as a foundation for modesty, but modesty alone does not fully "capture" humility (Morris et al., 2005).

This paper investigates the relationship between CEO humility and the cost of debt, exploring potential mechanisms and boundary conditions. Our findings indicate that CEO humility positively affects the cost of debt, with firms led by humble CEOs facing higher debt costs. Drawing on implicit leadership theory, we suggest that people may have stereotyped perceptions of humble CEOs, evaluating them based on generalized assumptions rather than actual capabilities. Humble CEOs may inadvertently signal a lack of ambition, confidence, and competence—traits

typically associated with strong leadership. Consequently, debt lenders may hold lower expectations for firms led by humble CEOs, prompting them to raise interest rates as compensation for perceived risk. We further identify analysts' EPS expectations as a channel through which CEO humility influences the cost of debt. Lower EPS expectations from analysts for firms led by humble CEOs signal higher perceived risk, leading lenders to increase debt yields accordingly. Additionally, we find that the positive effect of CEO humility on debt cost intensifies as firm age increases, possibly because lenders perceive heightened agency risks in older firms.

This paper makes important contributions to the fields of leadership studies and capital financing by introducing a novel approach to measuring CEO humility and exploring its implications for firm financing costs. However, our study has several limitations. First, the issue of endogeneity remains a challenge. In our study, potential latent factors may still influence the cost of debt but are captured within the error term, leading to a correlation between the error term and the independent variable. This correlation could bias our results and lead to confidence intervals that may not accurately reflect true relationships. Future research could employ several strategies to address endogeneity, such as using instrumental variables and two-stage regression, to further address endogeneity concerns and enhance the robustness of findings.

Second, our measure of CEO humility relies on text analysis from earnings call transcripts, which, although innovative, is limited by the inherent constraints of textual data. As our measure is based on the frequency of humility-related language, it may not fully capture the depth of the trait, especially if CEOs adjust their communication styles for investor audiences. Future research could triangulate these findings with other humility measures or apply natural language processing (NLP) techniques that capture more nuanced language patterns.

Finally, while we have identified analysts' EPS expectations and firm age as significant mediating and moderating variables, other external factors, such as macroeconomic conditions or shifts in market sentiment, could also play a role in shaping the relationship between CEO humility and financing costs. Future studies could explore additional external factors to build a more comprehensive model of how CEO humility interacts with a range of internal and external conditions to influence firm financing decisions.

This paper has several practical implications for firms, CEOs, and investors. First, given the positive relationship between CEO humility and the cost of debt, firms led by humble CEOs should focus on clearly demonstrating their ability to achieve strong performance and profitability when seeking financing. By highlighting these aspects, humble CEOs can help dispel potential stereotypes held by lenders, who may otherwise perceive humility as a lack of ambition or decisiveness. This proactive approach can enhance lenders' confidence and ultimately contribute to reducing the firm's cost of debt.

Second, to cultivate investor trust, humble CEOs may need to project an image that carefully balances humility with a visible sense of confidence and competence. While humility can foster a positive internal culture, it may not align with investors' expectations, who often equate confidence with capability and leadership strength. Therefore, humble CEOs might consider emphasizing their strategic skills, long-term vision, and ability to lead decisively. By actively managing their external image, they may counteract any potential biases that investors may hold and foster greater confidence in the firm's prospects.

This study underscores the importance of strategic image management for humble CEOs, particularly when navigating the external perceptions that can influence financing and investment opportunities. By understanding how their leadership traits interact with investor and lender

expectations, humble CEOs can better position their firms for success in the capital markets, leveraging both their humility and demonstrated competence to foster long-term growth and stability.

4.6. Conclusion

In conclusion, this paper provides new insights into the relationship between CEO humility and the cost of debt, demonstrating that firms led by humble CEOs may face higher debt costs. Drawing on implicit leadership theory, we argue that stereotypical perceptions of humility can influence lenders' and analysts' expectations, leading to increased interest expenses due to perceived risks. Our analysis identifies analysts' EPS expectations as a mediating factor, while firm age serves as a moderator, amplifying the effect of CEO humility on debt costs in older firms. These findings contribute to both leadership studies and capital financing literature by highlighting how CEO personality traits, particularly humility, can shape external perceptions and financial outcomes.

Overall, this study underscores the complex role of CEO humility in corporate finance, suggesting that while humility may positively influence internal firm culture and operations, it may also introduce external financing challenges. By revealing the nuanced effects of CEO humility on debt costs, we encourage corporate leaders and investors to consider the broader financial implications of leadership traits, ultimately contributing to a more comprehensive understanding of how personality influences firm outcomes in the capital markets.

CHAPTER 5: GENERAL CONCLUSION

This dissertation investigates how underexamined, non-financial attributes—specifically FFI and CEO humility—shape key firm outcomes, including performance, innovation, and financing costs. Through three essays, it provides a nuanced understanding of how organizational identity and executive personality traits influence both internal dynamics and external stakeholder perceptions. The findings highlight the double-edged nature of characteristics such as family identity and humility, which can yield benefits under certain conditions but impose costs under others.

The first essay examines the impact of FFI on firm performance. It finds that strong identification with family values and legacy is associated with reduced analyst coverage and greater forecast dispersion, ultimately lowering firm value. These effects are moderated by firm performance relative to aspirations, suggesting that family firms may shift from socioemotional to performance-oriented goals under pressure. Methodologically, this essay introduces a novel text-based measure of FFI, offering a scalable, replicable approach that advances agency theory and enriches the family business literature. Essay 2 explores CEO humility—particularly the dimension of teachability—as a driver of corporate innovation. Using a difference-in-differences approach to mitigate endogeneity concerns, it provides causal evidence that teachable CEOs enhance both the volume and impact of innovation. This essay contributes to upper echelons theory and personality research by demonstrating that disaggregating complex traits like humility reveals distinct effects on organizational outcomes. Essay 3 analyzes the external financial implications of CEO humility, focusing on its effect on the cost of debt. Drawing on implicit leadership theory, it finds that humble CEOs may be perceived as less assertive or ambitious, leading to lower analyst expectations and higher borrowing costs. Analyst earnings-per-share (EPS) forecasts are identified as a mediating mechanism, with firm age moderating the relationship. This essay contributes to

both leadership and capital structure literature by linking executive personality traits to external financing conditions.

Despite these contributions, the dissertation has several limitations that suggest promising directions for future research. While textual analysis offers scalability and replicability, it may oversimplify complex constructs and miss nuanced language shaped by audience, context, or culture. Future work could integrate multimodal data, such as vocal tone, facial expressions, or physiological cues, to capture executive emotions and behaviors more comprehensively. Second, the focus on large, U.S.-based public firms limits generalizability to smaller firms, private companies, or those in different cultural or institutional settings. Future studies could test the robustness of these findings using cross-national or global samples, examining how variations in governance systems and cultural norms moderate the effects of family identity and CEO humility. Third, while several mechanisms such as analyst expectations and inventor inflow, are examined, other relevant pathways remain underexplored. Future research could investigate how identity and humility influence outcomes through strategic communication, stakeholder engagement, board dynamics, or employee perceptions. Exploring these alternative channels would provide a more holistic understanding of how non-financial attributes shape firm behavior and market responses.

In sum, this dissertation contributes to a deeper understanding of how subtle, non-financial characteristics, such as family identity and CEO humility, affect firm outcomes. By integrating perspectives from leadership, governance, and finance, it lays a strong foundation for future research on the behavioral and perceptual underpinnings of corporate performance and valuation.

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