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Shareholder Patience: Implications for Executive Compensation and Firm Performance

Abstract

Purpose: This paper explores how shareholder patience can influence firm performance and the efficacy of executive compensation and corporate governance in organizations. The shareholders' patience, as reflected in their tendency to hold stock for extended periods, enables firm management to make long-term decisions and sustain ongoing project stability, which reflects positively on firm value. Shareholder patience amplifies the positive effects of un-exercisable options on a firm's long-term performance and restrains overconfident CEOs by improving governance rather than by relying on market reactions, which positively influences performance.

Study design/methodology/approach: The quantitative analysis conducted in this paper utilizes a fixed-effects regression model.

Sample and data: This paper utilizes a multi-industry sample of 1,397 publicly traded U.S. firms that operated between 1999 and 2016. The data were retrieved from various archival sources.

Results: Shareholders' patience was positively associated with a firm's performance, both in the short term and the long term. Further, the shareholders' patience accentuated the positive effects of TMT un-exercisable stock options on the firm's long-term performance but did not influence the negative effects of TMT exercisable stock options on the firm's performance. Shareholder patience weakened the negative effects of CEO overconfidence on firm performance.

Originality/value: This paper provides evidence of the effects of shareholders' patience on the efficacy of executive compensation, which reflects positively on a firm's performance.

Research limitations/implications: The findings presented in this paper have limitations in terms of generalizability to non-U.S. firms and private and entrepreneurial firms.

Keywords: Shareholders, Executive Compensation, Corporate Governance, Firm Performance, CEO Overconfidence.

JEL classification: M10, M52, G34, L25

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الملخص

صبر المساهمين: الآثار المترتبة على نظم التعويضات التنفيذية وأداء الشركات

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هدف الدراسة: تتناول هذه الدراسة أثر صبر المساهمين على أداء الشركة وفعالية نظم التعويضات والحوكمة. يقاس صبر المساهمين من خلال قرارهم الاحتفاظ بسهم الشركة لفترات طويلة؛ مما يمكن الإدارة من اتخاذ قرارات طويلة الأجل والحفاظ على استقرار المشاريع؛ وهو ما ينعكس إيجاباً على أداء الشركة. وجدنا أن صبر المساهمين يزيد من فعالية خيارات الأسهم (غير القابلة للتفعيل) المقدمة للإدارة؛ إذ زاد من أثرها الإيجابي على المدى الطويل. كما وجدنا أن صبر المساهمين يقلل من أثر الثقة المفرطة للرئيس التنفيذي من خلال تحسين نظم الحوكمة بشكل ينعكس إيجاباً على أداء الشركة.

تصميم/منهجية/طريقة الدراسة: تستخدم الدراسة أسلوب التحليل الكمي باستخدام نموذج التحليل ذي التأثيرات الثابتة.

عينة الدراسة وبياناتها: تستخدم الدراسة عينة من 1397 شركة أمريكية مدرجة بمختلف الصناعات بين عامي 1999 و2016.

نتائج الدراسة: تشير النتائج إلى الأثر الإيجابي لصبر المساهمين على أداء الشركة على المديين القصير والطويل. وجدنا أن صبر المساهمين يزيد من فعالية خيارات الأسهم (غير القابلة للتفعيل) المقدمة للإدارة على المدى الطويل، كما أننا لم نجد آثاراً سلبية لخيارات العنصر على الأسهم (القابلة للتفعيل) على أداء الشركة. أخيراً، أدى صبر المساهمين إلى تقليل الآثار السلبية للثقة المفرطة للرئيس التنفيذي على أداء الشركة.

أصالة الدراسة: تقدم هذه الدراسة دليلاً على آثار صبر مساهمي الشركة على فعالية نظم التعويضات والحوكمة؛ مما ينعكس إيجاباً على أداء الشركة على المديين القصير والطويل. حدود الدراسة وتطبيقاتها: نتائج الدراسة غير قابلة للتعميم على الشركات غير المدرجة في الأسواق الأمريكية.

الكلمات المفتاحية: المساهمون، التعويضات التنفيذية، حوكمة الشركات، أداء الشركات، الثقة المفرطة للرئيس التنفيذي.

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Introduction

Management and corporate governance studies have emphasized that shareholders' behaviors influence a firm's decision makers, which reflects on the firm's performance (DesJardine et al., 2022; Shin et al., 2022). As the primary source of the firm's financial resources and the legal claimants of its cash flows (Tantalo & Priem, 2016), shareholders significantly impact the decisions made by the firm's management by electing directors to the board, engaging in shareholder activism, and taking legal action in cases of fraud (Adams et al., 2011; Freeman & Reed, 1983; Goranova et al., 2017). Evidence shows that shareholders' reactions have influenced the outcomes of various corporate decisions, such as acquisitions (Blagoeva et al., 2020), corporate social responsibility (CSR; Flammer, 2015), and workforce downsizing (Brauer & Zimmermann, 2019). While scholars and practitioners have underlined the effects of shareholders' behaviors on firms' corporate governance and executive compensation systems (Brookman et al., 2007; Freeman & Reed, 1983; Freeman, 2010), understanding how and when these behaviors impact the efficacy of these practices is essential to evaluating their contributions to a firm's long-term value.

While extant research has emphasized management's tendency to prefer decisions with shorter payback periods (Reilly et al., 2016; Sampson & Shi, 2023), shareholder patience enables the firm's management to make resource allocation decisions that accentuate the firm's long-term performance (Souder et al., 2016). Such patience is reflected in the shareholders' collective decision to hold the firm's stock for extended durations without frequently selling it, a phenomenon known as "patient capital" (Sirmon & Hitt, 2003; Thanassoulis & Somekh, 2016). Firms with higher capital patience benefit from having shareholders that approve of and endorse management's decisions, which enables decision makers to invest in alternatives with higher returns that require longer payback periods, such as research and development (R&D; Bromiley et al., 2017), capital expenditure (CAPEX; Souder & Bromiley, 2012, 2017), and new market entry (Phua et al., 2018).

This paper advances theoretical arguments on the effects of shareholders' patience, as reflected by the firm's capital patience, on the firm's performance. With respect to long-term performance, we propose that patient shareholders are willing to wait for the firm's long-term investments to fully materialize without triggering stock market reactions that may jeopardize the prospects of new long-term investments. The shareholders' patience is also expected to positively impact

the firm's short-term performance by reducing market disruptions and possible pressures to prematurely divest the firm's ongoing projects (Chen & Feldman, 2018). Furthermore, we propose that shareholders' patience influences the efficacy of the firm's executive compensation. Specifically, shareholders' patience can accentuate the benefits of un-exercisable stock options on long-term performance, while it can also exacerbate the negative effects of exercisable stock options on short-term performance. Finally, shareholders' patience is expected to significantly weaken the negative effects of CEO overconfidence on firm performance, as these patient shareholders can enforce a better foundation for the firm's corporate governance practices (Banerjee et al., 2015).

While scholars have underlined the effects of the shareholders on the firm's corporate governance, decision-making, and managerial short-termism (Lavery, 1996; Sampson & Shi, 2023; Souder et al., 2016; Zhang & Gimeno, 2016), empirical research on this topic remains scarce. Considering the impacts of this important group of stakeholders on the efficacy of the firm's corporate governance, this paper asks the following questions:

RQ1: How does shareholder patience affect a firm's short-term and long-term performance?

RQ2: How does shareholder patience influence the effect of executive compensation on firm performance?

This paper answers these research questions by empirically testing our hypothesized arguments using a multi-industry sample of 1,397 publicly traded U.S. firms that operated between 1999 and 2016. The analysis utilizes archival data sources on firm-level financial and market data, executive compensation, and board composition. To test these effects, we utilize a fixed-effects model and conduct robustness checks to confirm the consistency of our findings. Our analysis provides support for the effects of shareholders' patience on firm performance, both in the long term and in the short term and shows that this patience improves the impact of stock-based compensation and governance practices on firm performance.

This paper advances three major contributions. First, it extends our knowledge about the stakeholders' role in corporate governance (Freeman & Reed, 1983) by underlying the effect of shareholders' patience on management's decisions and firm performance. Second, this paper contributes to the research on executive

compensation (Devers et al., 2007) by examining the effects of shareholders' patience on the effectiveness and outcomes of stock-based compensation. Finally, this paper enriches the research on CEO overconfidence (Schumacher et al., 2020) by verifying the benefits of shareholders' patience as an important factor in restraining the negative effects of an overconfident CEO on a firm's short-term and long-term performance.

Literature Review

Management scholars and practitioners are fundamentally interested in understanding the critical role that stakeholders take in a firm's corporate governance process (Andrei et al., 2022; Freeman, 2010; Goranova et al., 2017; Shin et al., 2022), as well as how these groups influence managerial decision-making (Soudier et al., 2016). A firm's stakeholders are internal or external groups that are interdependently connected to the organization; these include the employees, shareholders, customers, suppliers, market analysts, media, and others (Daft, 2015). The shareholders, in particular, are a prominent group of the firm's stakeholders and are considered the primary source of the firm's financial resources (Tantalo & Priem, 2016). In spite being the firm's owners and thus the legal claimants of its future cash flows, the shareholders are exposed to significant risk that can result from decision makers' self-interested behaviors (Eisenhardt, 1989; Jensen & Meckling, 1976), which negatively reflect on the firm's long-term value.

While the shareholders (i.e., principals) can reduce their investment risks through diversifying in multiple holdings, the decision makers (i.e., agents) generally have a substantial portion of their personal wealth invested in the firm in the form of salaries, bonuses, unexercised stock options, restricted equity holdings, and firm-specific human capital (Certo et al., 2003; Zhang et al., 2008), which shifts their priorities toward preserving their position within the company. Such vulnerability encourages decision makers to avoid taking appropriate levels of risk (Sanders & Carpenter, 2003), to prefer a short investment time horizon (Stein, 1988, 1989), and to prioritize the reduction of their unemployment risk over the firm's long-term value creation (Ellul et al., 2024). Due to this incentive-misalignment problem between the firm's principals and its agents, scholars and practitioners have dedicated significant attention to better understanding how shareholders' actions influence the effectiveness of the corporate governance process in organizations (Flammer et al., 2019; Freeman & Reed, 1983; Shleifer & Vishny, 1997; Zhang et al., 2008).

The firm's shareholders are known to continuously examine management's choices, confidence, and commitment to the firm's strategy (Rivera et al., 2017; Shi & DesJardine, 2022; Shleifer & Vishny, 1997). Research on shareholder activism has stressed the effects of shareholder intervention in changing a firm's strategic direction (Goranova & Ryan, 2014; Westphal & Bednar, 2008), which shareholders accomplish by signaling their dissatisfaction with decisions made by the management (David et al., 2007). For instance, shareholder activists are known to react negatively to firms that perform poorly in terms of environmental, social, and governance (ESG) issues; these shareholders are also known as ESG activists (Dimson et al., 2015). Further, evidence shows that active shareholders critically evaluate the CEO's implicit motives for achievement and power, and in many cases, they react negatively to these motives by publicly denouncing the firm and short-selling its stock (Shi & DesJardine, 2022). Similarly, institutional shareholders are known to respond strongly to negative corporate events, especially when the CEO is dismissed involuntarily, by abandoning the firm and selling their holdings in the market (Parrino et al., 2003). Hence, market reactions serve as credible signals of the shareholders' commitment, sentiments, and approval of the firm's strategy (Souder et al., 2016), particularly under changing conditions, including the introduction of new products (Phua et al., 2018), intensified competition (Zhang & Gimeno, 2010), or workforce downsizing (Brauer & Zimmermann, 2019).

The shareholders' commitment to the firm's strategic direction is typically reflected by their decisions to sell or hold the firm's stock for extended durations, a collective phenomenon known as "patient capital" (Sirmon & Hitt, 2003; Souder et al., 2016; Thanassoulis & Somekh, 2016). Higher levels of capital patience usually signal shareholders' commitment to the firm's strategic directions and approval of the decisions of its leadership (Hawn et al., 2018; Souder et al., 2016). Unlike transient investors, dedicated investors are oriented toward the long term and often pressure management to make decisions that accentuate the firm's long-term value. For instance, Zhang and Gimeno (2016) have shown that the presence of dedicated investors served as a governance mechanism that reduced management's tendency to make inter-temporal tradeoffs between short-term and long-term benefits. The authors also found that the presence of dedicated shareholders increased the effectiveness of implemented governance mechanisms and encouraged management to choose alternatives that accentuated the firm's long-term value. Taking these effects into consideration, the strategic management literature

emphasizes the pivotal role that shareholders play in shaping a firm's strategic trajectory and their influence on its corporate governance process (DesJardine et al., 2022; Shleifer & Vishny, 1997; Wiersema & Zhang, 2011).

Hypotheses Development

Agency theorists have underlined the incentive misalignment problem between the firm's shareholders and its management, which stems from the separation of ownership and control (Eisenhardt, 1989; Jensen & Meckling, 1976). The shareholders, as key stakeholders, influence the firm's corporate governance by monitoring the management's decisions, electing board members, engaging in activism, and taking legal action in cases of corporate fraud (Adams et al., 2011; Goranova et al., 2017; Shi & DesJardine, 2022). The shareholders' choice to sustain their investment in the firm, especially under uncertainty, usually signals their endorsement of the management's decisions and their commitment to the firm's long-term strategy (Phua et al., 2018; Souder et al., 2016). Unlike shareholders, managers are known to prioritize reducing the uncertainty associated with their decisions and to favor investments that yield results in the short term (Souder & Shaver, 2010; Stein, 1988), even when those returns are sub-optimal (Martin et al., 2016). This problem is known as managerial "short-termism" (Lavery, 1996), which is common in various developed economies (Sampson & Shi, 2023) and is found to be negatively associated with a firm's long-term performance (Reilly et al., 2016).

Shareholder Patience and Firm Performance

Through trading the firm's stock, shareholders signal their sentiments, endorsement, and approval of the management's decisions, and they can thus influence the outcomes of corporate events. These signals are observed through the shareholders' trading frequency; frequent trading indicates reactivity, while infrequent trading reflects patience (Blagoeva et al., 2020; Souder et al., 2016). Infrequent trading of a firm's stock by shareholders is a collective phenomenon referred to as the firm's "patient capital" (Sirmon & Hitt, 2003; Thanassoulis & Somekh, 2016). The firm's capital patience reflects the shareholders' willingness to wait for the firm's strategy to yield its projected outcomes, which enables the decision makers to consider investments with higher returns that require longer payback periods (Souder et al., 2016). Without such patience, shareholders' trading behaviors can pressure management, leading to the rejection of new long-term investments or the premature divestiture of ongoing projects (Chen & Feldman, 2018).

As reflected by the firm's capital patience, the shareholders' patience is expected to influence the management's choices and, consequently, the firm's performance. Higher capital patience signals shareholder endorsement and approval of management's decisions, particularly those that require longer time horizons (Souder et al., 2016). Conversely, lower capital patience can reflect shareholder unwillingness to wait for the firm's long-term investments to fully materialize, which adversely affects the feasibility of these investments and disrupts the operations of ongoing projects. Impatient shareholders can take aggressive action against the firm's management for their decisions by selling or short-selling the firm's stock (Shi & DesJardine, 2022) or by pressuring the management to prematurely divest strategically valuable investments (Chen & Feldman, 2018). In contrast, patient shareholders are more likely to grant additional time for long-term investments to materialize, avoiding disruptions that can jeopardize the deferred returns of these investments. Therefore, firms with higher capital patience are in a better position to capture the long-term benefits of their investments. Hence, we propose the following:

H1(a): Capital patience will strengthen a firm's long-term performance.

While "patience" is often associated with a longer-term horizon, "impatience" may create effects that reflect negatively on the present and the near future. Put differently, the aggressive actions that impatient shareholders may take, such as short-selling (Shi & DesJardine, 2022), pressuring the firm to divest their investments in a project (Chen & Feldman, 2018), or even spreading negative publicity (Blagoeva et al., 2020), can be catastrophic for the firm's position and hinder its short-term performance. Such aggression is rarely experienced by firms with patient shareholders, as these firms usually benefit from the shareholders' endorsement and approval of the strategic direction and support for the leadership. Hence, firms with patient shareholders are generally better positioned to make decisions focused on improving short-term performance than their competitors. To account for these effects, we propose the following:

H1(b): Capital patience will strengthen a firm's short-term performance.

Shareholder Patience and TMT Un-Exercisable Stock Options

Stock-based compensation is globally recognized as the preferred mechanism to achieve incentive alignment between the firm's management and its shareholders (Devers et al., 2007; Jensen & Murphy, 1990). Unlike cash-based incentives

(e.g., salary), stock-based incentives make the TMT's pay contingent on the firm's future performance, which aligns their incentives with long-term value creation (Bebchuk & Fried, 2010). Stock options, a common type of stock-based incentive, give TMT members the right, but not the obligation, to purchase the firm's stock at a specific grant price in the future (Brandes et al., 2003). These stock options are customizable contracts in terms of their vesting periods, which might be three, five, or even ten years (Zhang & Gimeno, 2016). The TMT members who hold these stock options make profits when the stock options are "in the money," which happens when the firm's stock price is higher than the stock option's grant price (Zhang et al., 2008).

As TMT members accumulate un-exercisable stock options over the course of their tenure, their incentives become increasingly aligned with the shareholders' incentives. As a result, TMT members are more likely to consider high-value alternatives that have higher levels of investment risk, even when such alternatives require longer payback periods (Devers et al., 2007; Souder & Bromiley, 2017). Research on stock-based incentives indicates that TMT un-exercisable stock options are positively associated with investments in risky alternatives, including R&D spending (Wu & Tu, 2007) and acquisitions (Gamache et al., 2015), and in long-term alternatives, such as CAPEX (Souder & Bromiley, 2012, 2017).

Scholars have underlined the potential drawbacks of "over-relying" on stock-based incentives, as such alternatives may encourage excessive risk-taking, although this negative effect can be mitigated with an appropriate stock-option incentive design that accounts for such hazards (Sanders & Hambrick, 2007). Sanders and Hambrick (2007) further noted that using stock options in moderation was effective in incentivizing decision makers to consider alternatives with risk levels that were desired by the risk-neutral shareholders. Harris and Bromiley (2007) uncovered another drawback of over-relying on stock-options: The accumulation of stock options can encourage TMT members to, directly before vesting, engage in financial misrepresentation to bolster the firm's stock price and maximize their pay. Hence, the overreliance on stock options as a mechanism to reward TMT members can have negative implications, particularly for firms that do not implement adequate corporate governance mechanisms (e.g., active board monitoring and separation of the chairman and CEO roles). Such negative effects are expected to be more prominent among firms that incorporate a higher percentage of stock-based incentives in the TMT's total pay. Hence, firms are ad-

vised to design their executive compensation systems in a way that mitigates the implications of these hazards.

Throughout their tenure, TMT members accumulate un-exercisable stock options that can be vested after a specified timeframe—three, five, or ten years (Zhang & Gimeno, 2016). That timeframe effectively makes their pay contingent on the firm's future value. To increase their pay, TMT members will generally aim to maximize the value of their holdings of un-exercisable stock options by making value-adding decisions during that period. With that timeframe in mind, TMT members who hold un-exercisable stock options will be more likely to accept alternatives with higher levels of investment risk in the hope of maximizing their pay (Devers et al., 2007), even when such alternatives require longer payback periods (Souder & Shaver, 2010). Furthermore, the accumulation of un-exercisable stock options bolsters the TMT's long-term commitment and their desire to remain with the firm, as any unexercised stock options might be forfeited if the TMT member decides to leave the firm (Hall & Murphy, 2003). Accounting for the possible drawbacks of over-relying on stock-based compensation (Harris & Bromiley, 2007; Sanders & Hambrick, 2007), we expect firms to design their stock-based compensation in a way that mitigates these hazards. In such cases, firms can benefit from aligning the decision maker's incentives more closely with long-term value creation, which can have positive effects on the firm's long-term performance. Hence, we advance the following:

H2(a): TMT un-exercisable stock options will strengthen a firm's long-term performance.

While stock options incentivize TMT members to maximize the firm's value during a specific timeframe, these individuals also have an incentive to maintain their position within the firm, at least until they achieve this objective. To avoid dismissal for underperforming, long-term-oriented TMT members generally have an incentive to sustain adequate short-term performance to accentuate their longevity within the firm. Such short-term performance often serves as a step toward a higher firm value until the TMT stock options become exercisable. In contrast, TMT members who are only compensated with cash are expected to prioritize the sustainability of their future salary payments and the maintenance of the status quo over making any decisions that might accentuate value creation, even in the short-term (Wiseman & Gomez-Mejia, 1998). Accounting for these effects, we propose the following:

H2(b): TMT un-exercisable stock options will strengthen a firm's short-term performance.

Considering their impact on the incentive misalignment problem between a firm's principals and agents (Eisenhardt, 1989; Jensen & Meckling, 1976), un-exercisable stock options are expected to further enable long-term value creation when the firm's shareholders are patient and thus more oriented toward long-term benefits. Specifically, un-exercisable stock options are designed to redirect the TMT's incentives toward long-term value, which encourages them to accept alternatives with deferred benefits (Souder & Bromiley, 2012). Being the legal claimants of the firm's future cash flows (Tantalo & Priem, 2016), the shareholders significantly influence the decision makers' ability to make long-term-oriented decisions, as these stakeholders can interfere through various means (e.g., trade the stock, elect board members, or engage in activism). Considering that capital patience reflects shareholder endorsement and approval of the TMT's long-term initiatives (Souder & Shaver, 2010; Zhang & Gimeno, 2016), this factor can enhance the sustainability of any long-term value-creating decisions made by the long-term-oriented TMT members.

Like the TMT members who are focused on long-term value, patient shareholders are committed to the firm's long-term success and are more likely to be aligned with the firm's strategy and leadership (Souder et al., 2016; Zhang & Gimeno, 2016). In contrast, impatient shareholders may not be aligned with the choices of long-term-oriented TMTs, particularly when such choices involve high uncertainty. In some cases, impatient shareholders can be vocal in their disapproval of and dissatisfaction with the TMT's decisions (Dimson et al., 2015; Shi & DesJardine, 2022), which jeopardizes the sustainability of long-term initiatives undertaken by the firm's management. Such voices can increase doubt about long-term initiatives and even pressure the management to divest these projects prematurely (Chen & Feldman, 2018), which destroys the prospects of any long-term value that might be created from these projects.

Accounting for these arguments, shareholders' patience can further endorse and thus enable long-term-oriented TMTs (i.e., those that hold un-exercisable stock options) to champion long-term-oriented initiatives that aim to maximize the firm's long-term performance. In such cases, shareholder patience will accentuate the incentive alignment achieved from the accumulation of TMT un-exer-

cisable stock options, which can help to direct both the principals and the agents toward maximizing the firm's long-term value. Thus, we advance the following:

***H3:** Capital patience will strengthen the positive effect of the value of the TMT's un-exercisable stock options on a firm's long-term performance.*

Shareholder Patience and TMT Exercisable Stock Options

The effectiveness of stock options as a solution for the incentive misalignment problem is influenced by the exercisability of these contingent contracts (Souder & Bromiley, 2012, 2017). Unlike the un-exercisable stock options, exercisable stock options can be vested immediately if they are "in the money," and the amount that the executives receive from exercising these options increases as the firm's stock price increase (Zhang et al., 2008). Scholars have emphasized that the value of the TMT's exercisable stock options can make management increasingly loss-averse and incentivize them to avoid making decisions that could negatively influence the value of their now-exercisable stock options (Wiseman & Gomez-Mejia, 1998). These behaviors are expected to reflect on the firm's performance.

We expect the value of TMT exercisable stock options to influence a firm's long-term performance. To protect the value of their now-exercisable stock options, TMT members are expected to become increasingly risk averse, which encourages them to shift their priorities to maintaining the status quo in an effort to minimize any potential volatility in the firm's stock price (Wiseman & Gomez-Mejia, 1998; Zhang et al., 2008). In such cases, TMT members will refrain from considering risky alternatives that might increase the firm's value (Devers et al., 2007), particularly when such investments have long payback periods, as extended time horizons accentuate uncertainty (Milliken, 1987; Reilly et al., 2016). Accounting for both effects, a higher value of exercisable stock options is expected to make TMT members more risk averse and thus prioritize the status quo, at least until they "cash out" and exercise their stock options. Until then, they will refrain from making decisions that could bolster the firm's long-term value. Thus, we propose the following:

***H4(a):** TMT exercisable stock options will weaken a firm's long-term performance.*

In the short term, the high value of the TMT's now-exercisable stock options is expected to encourage them to take advantage of the currently high stock price and quickly exercise their holdings (Wiseman & Gomez-Mejia, 1998). The incentive to sell is expected to be more prominent when the value of the firm's stock is

high and when TMT members expect the price to drop. The race to quickly sell the stock will lead to an abnormally large volume of trading that can influence the stock's price. Hence, the larger the value of the TMT's holdings of the firm's exercisable stock options, the greater the incentive to take advantage of the high stock price and the more likely that the TMT will decide to cash their holdings at large volumes to avoid any future declines in the pay they receive from cashing out. This race to exercise the TMT's holdings of exercisable stock options is expected to negatively reflect on a firm's value, at least in the short term. Thus, we propose the following:

H4(b): TMT exercisable stock options will weaken a firm's short-term performance.

Following the logic of the effects of TMT members' race to exercise their stock options on a firm's short-term performance, we expect a high value of TMT exercisable stock options to influence the benefits that firms observe from patient capital. Specifically, a firm's patient capital is expected to further enable TMT members to efficiently predict when they can exercise their now-exercisable stock options at a value-maximizing level. Considering that capital patience indicates the infrequency of the shareholder's trading of a firm's stock (Souder et al., 2016; Thanassoulis & Somekh, 2016), a higher capital patience indicates that a firm's shareholders are less responsive and not as quick to sell when they observe market irregularities, such as when the firm's stock is being sold at larger volumes. Hence, at higher levels of capital patience, TMT members are more capable of efficiently timing when they can exercise their holdings of stock options at a level that maximizes their own pay. In such cases, TMT members have a stronger incentive to exercise their stock options and to sell their holdings at larger volumes. While patient shareholders are not expected to abstain from responding to such events, they are expected to be late to recognize these larger transactions. In anticipation of more price drops, some shareholders may even lose their patience and decide to sell their holdings, jeopardizing the benefit that the firm enjoys from its patient capital.

In contrast, the presence of impatient shareholders (i.e., lower capital patience) is expected to limit a TMT member's ability to sell their holdings of exercisable stock options in large volumes. Specifically, impatient shareholders are active and thus quick to respond to changes or irregularities in the trading of the firm's stock, which make them more likely to sell their positions immediately before the stock price drops further. In such cases, the TMT members will be less capable of exercising the entirety of their holdings of exercisable stock options at a val-

ue-maximizing price, which limits the volume exercised during that short time window. In some cases, these exercisable stock options may become “out of the money” (i.e., the stock price falls below the grant price; Zhang et al., 2008), which further reduces a TMT member’s incentive to sell their holdings of exercisable stock options. Hence, the potential stock price volatility that may result from the reactions of impatient shareholders (i.e., lower capital patience) can limit TMT members’ ability to sell large volumes of stock at the same time, which reduces their negative effects on the firm’s short-term performance. To account for these effects, we propose the following:

***H5:** Capital patience strengthens the negative effects of the value of a TMT’s exercisable stock options on a firm’s short-term performance.*

Shareholder Patience and CEO Overconfidence

Top management’s choice to hold their exercisable stock options for extended durations without vesting is often associated with confidence in the firm’s strategic direction (Campbell et al., 2011; Hirshleifer et al., 2012; Malmendier & Tate, 2005). While risk-averse TMT members may decide to “cash out” their exercisable stock options in an effort to reduce their exposure to firm-specific risk, confident executives may decide to hold their exercisable stock options for an extended period to achieve higher returns (Banerjee et al., 2018; Phua et al., 2018). Among the TMT members, the CEO is perhaps the most influential to the firm’s strategy and decision-making (Finkelstein et al., 2009), and the level of CEO confidence will therefore have a significant effect on the firm’s decisions, including acquisitions (Malmendier & Tate, 2008), innovation (Galasso & Simcoe, 2011), and new product introductions (Phua et al., 2018). In spite of their exposure to firm-specific risk (Hall & Murphy, 2002), confident CEOs generally decide to hold their exercisable stock options because they are committed to the company’s future, which reflects positively on the firm’s stakeholders, including employees, customers, suppliers, and shareholders (Banerjee et al., 2015; Phua et al., 2018).

While CEO confidence can be reassuring to the firms’ stakeholders, CEO overconfidence often leads to misjudgment and a failure in decision-making (Schumacher et al., 2020). Overconfidence can be defined as an inflated confidence in one’s knowledge, skills, and ability to make decisions that lead to positive outcomes to an extent that biases judgement (Camerer & Lovallo, 1999; Malmendier & Tate, 2005). In organizations, CEO overconfidence is often associated with

excessive risk-taking behaviors (Campbell et al., 2011), empire building (Roll, 1986), misjudging the competition (Goel & Thakor, 2008), and overpayment for acquisitions (Hayward & Hambrick, 1997). Further, an overconfident CEO can be dominant and dismissive of other TMT members' opinions, which can lead to tension and conflict among TMT executives (Banerjee et al., 2015; Brown & Sarma, 2007). With such dominance, overconfident CEOs are also known to be overly optimistic about the payoffs of risky investments, which can hinder a firm's performance (Hirshleifer et al., 2012). Accounting for these effects, we propose the following:

H6(a): CEO overconfidence weakens a firm's short-term performance.

H6(b): CEO overconfidence weakens a firm's long-term performance.

Scholars have highlighted several common mechanisms that shareholders use to restrain an overconfident CEO, including improved governance practices through independent board monitoring, active control through the board's committees (Banerjee et al., 2015), activist intervention (Chen & Feldman, 2018), voting against their proposals (Jenter & Lewellen, 2015), and even imposing litigation threats (Banerjee et al., 2018). Aside from these governance-focused solutions, shareholders can signal their disapproval of an overconfident CEO's decision using other market-focused alternatives, including selling or short-selling the stock (Shi & DesJardine, 2022). Unlike governance-focused solutions, the market-focused approach is expected to reflect negatively on the firm's stock price, especially when the shareholders short-sell the firm's stock at large volumes. Impatient shareholders are more likely to express their disapproval of an overconfident CEO through the market-focused approach (i.e., by quickly selling the stock), which negatively reflects on the firm's value.

On the other hand, the governance-focused approach can be effective in restraining an overconfident CEO using constructive alternatives, such as appointing independent board members and applying adequate oversight through the board's committees, that do not directly reflect on the stock price but instead improve decision-making by restructuring the firm's management from within (Banerjee et al., 2015). Considering that patient shareholders are more focused on long-term value creation; they are expected to prefer governance-focused alternatives to other drastic measures that might severely reduce the firm's stock price. Considering these effects, we advance the following:

H7(a): Capital patience weakens the negative relationship between CEO overconfidence and a firm's short-term performance.

H7(b): Capital patience weakens the negative relationship between CEO overconfidence and a firm's long-term performance.

Our conceptual model is summarized in Figure 1A (hypothesized effects on long-term performance) and Figure 1B (hypothesized effects on short-term performance).

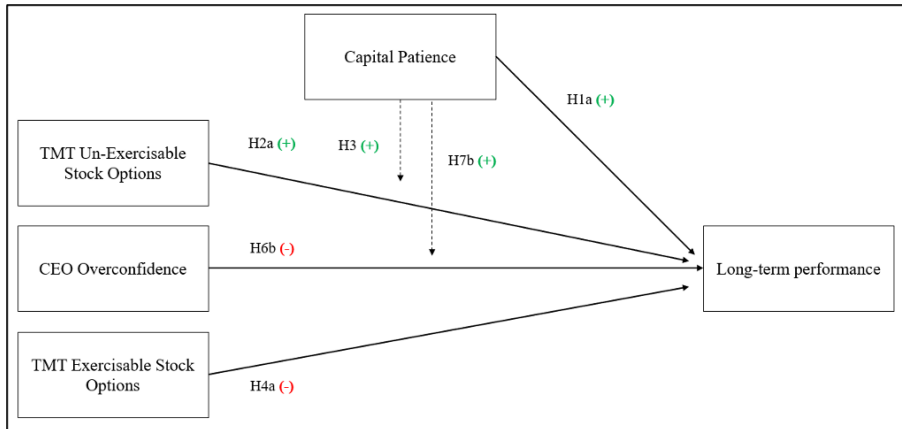


Figure 1A: The Hypothesized Effects on Long-Term Performance

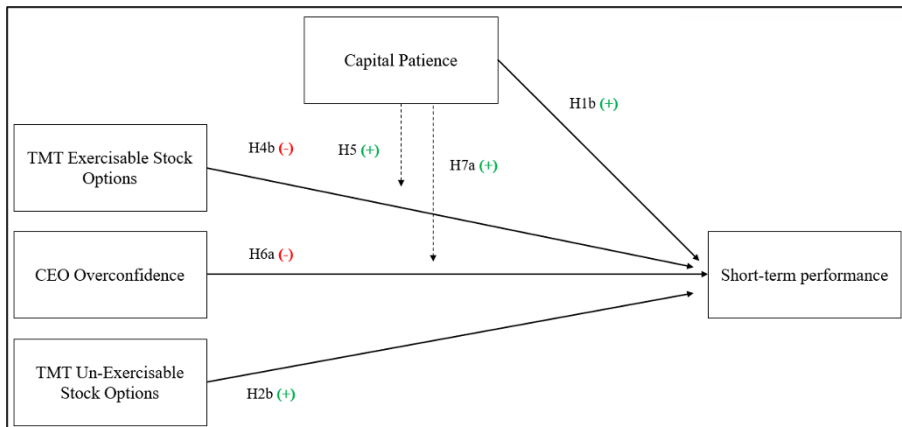


Figure 1B: The Hypothesized Effects on Short-Term Performance

Research Methods

Sample and Data

To construct our sample, we began with the full population of U.S.-based firms that were included in the Execucomp Database from 1999 to 2016. The 17-year period is adequate for examining the effects of our independent variables under changing macroeconomic conditions, including the global financial crisis. While the focus on publicly traded U.S. firms may influence the generalizability of the findings, U.S.-based samples confer various benefits, including the availability of detailed financial and market reports, executive compensation data, information on boards of directors, and comparability with the findings of previous research (Martin et al., 2016; Phua et al., 2018; Souder & Bromiley, 2012; Zhang & Gimeno, 2016). We applied the following exclusion procedures: (1) we excluded firms with no information on executive compensation, particularly those that did not publicize the balances of each top management member's ownership of exercisable and un-exercisable stock options; (2) we excluded firms that did not provide consistent data on the CEO's holdings of stock options, both exercisable and un-exercisable, since this information is necessary to measure CEO overconfidence; (3) we excluded firms that did not have reliable financial or market data, which are needed to calculate our dependent variables, and finally, (4) we excluded information that had missing data for any of our key variables. After these procedures, our final multi-industry sample included 1,397 publicly traded U.S. firms from various industries that operated between 1999 and 2016. This amounted to a total of 7,287 firm-year observations.

To conduct our empirical investigation, we utilized financial, market, compensation, and board data collected from various sources. First, we utilized Execucomp as our primary source of data on executive compensation. Execucomp is the preferred source for longitudinal executive compensation data in the United States and is known for its comprehensiveness and reliability (Cadman et al., 2010). Second, we used Compustat as the primary source of financial and market data on publicly traded firms. Finally, we used BoardEx to capture the impacts of the board of directors on our hypothesized effects, including CEO duality and the board's size. Table 1 provides a year-industry breakdown of the observations included in our sample.

Table 1
Industry-Year Sample Breakdown

SIC range	Industry	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
0100-0999	Agriculture, Forestry and Fishing	0	2	1	0	0	0	0	0	0	1	2	2	1	2	3	2	0	0	16
1000-1499	Mining	1	18	19	19	22	23	27	28	32	31	30	29	30	26	24	21	16	3	399
1500-1799	Construction	0	1	2	2	2	3	3	4	2	2	2	3	4	5	6	4	3	0	48
2000-3999	Manufacturing	13	127	152	178	227	242	256	232	235	206	215	235	262	317	294	252	233	113	3789
4000-4999	Transportation, Communications, Electric, Gas and Sanitary service	5	25	35	37	48	55	56	60	59	58	56	54	54	59	51	47	43	16	818
5000-5199	Wholesale Trade	1	3	11	11	15	19	17	15	15	18	15	15	18	14	15	16	17	12	247
5200-5999	Retail Trade	0	15	31	34	31	43	39	37	41	42	42	43	50	45	50	44	33	9	629
6000-6799	Finance, Insurance and Real Estate	1	5	7	7	9	14	13	11	11	10	11	11	20	24	18	20	18	9	219
7000-8999	Services	2	29	38	51	57	69	75	72	62	55	63	66	94	106	89	79	66	28	1101
9000-9999	Non-classifiable Establishments	0	1	1	1	2	4	3	3	2	2	1	1	0	0	0	0	0	0	21
Total		23	226	297	340	413	472	489	462	459	425	437	459	533	598	550	485	429	190	7287

Measures

Dependent Variable

We created separate dependent variables for short-term and long-term performance. Unlike accounting-based measures of firm performance, such as ROA and ROE, or other strictly market-based measures, such as stock market activity or cumulative abnormal returns (CAR), Tobin's Q confers the advantage of incorporating insights on the firm's value from both accounting and market data (Tobin & Brainard, 1977; Villalonga, 2004), which makes it the preferred measure for research on shareholder trading behaviors and market reactions (DesJardine & Durand, 2020; Surroca et al., 2020). Tobin's Q is calculated as the market value of the firm's equity plus the market value of the firm's long-term debt divided by the firm's total assets (DesJardine & Durand, 2020; Tobin & Brainard, 1977). Following previous research on market reactions, we measured short-term and long-term performance as the difference or change in Tobin's Q within specified periods of time (Ellis et al., 2011). We defined the firm's long-term performance as the three-year difference (Ellis et al., 2011) in Tobin's Q_{t+3} and Tobin's Q_{t-1} . We measured the firm's short-term performance in a similar manner, using a one-year change in Tobin's Q (the difference between Tobin's Q_{t+1} and Tobin's Q_{t-1}).

Independent Variables

The paper's main independent variable is capital patience, which represents the infrequency of trading the firm's stock relative to other firms (Sirmon & Hitt, 2003; Thanassoulis & Somekh, 2016). We followed the procedure detailed in Souder et al. (2016), first calculating the number of stocks traded for each company in our sample in every year and then dividing that number by the number of that company's outstanding stocks. This determined the trading intensity for each firm in our sample, which was then subtracted from the median trading intensity in the firm's industry. The resulting number indicates how patient the firm's shareholders are relative to those of other firms in the industry. A higher number indicates that the median trading intensity in the firm's industry is higher than that of the firm. Hence, a higher number indicates that the firm's capital is more patient than the industry's median, and vice versa. Similar to Souder et al. (2016), we defined the firm's industry using the 2-digit SIC code.

The next category of independent variables captures the value of TMT stock options. We operationalized the average TMT's un-exercisable stock options as

the sum of the value of un-exercisable stock options held by each TMT executive divided by the number of TMT executives in the firm. Similarly, the TMT's exercisable stock options represent the sum of the value of exercisable stock options held by each TMT executive divided by the number of TMT executives in the firm. Each of these measures is reflected in millions of U.S. dollars.

For our measure of CEO overconfidence, we followed the stock option logic advanced by Malmendier and Tate (2005). To construct the measure, we closely followed the procedure detailed by Phua et al. (2018). First, we obtained the number and value of the vested stock options that the CEO holds each year. Second, we measured the degree of confidence for each CEO using the ratio of (1) the average value per stock option divided by (2) the average strike price of the firm's stock. The first component (the average value per stock option) represents the total value of the CEO's holding of stock options divided by the number of stock options held by the CEO. The second component (the average strike price) reflects the firm's year-end stock price minus the average value of stock options. Third, we examined the degree of confidence detailed above and marked individual CEOs as overconfident if their confidence level was at least 67% "in the money" at least twice in the past five years (Ahmed & Duellman, 2013; Campbell et al., 2011; Phua et al., 2018). Hence, CEO overconfidence functions as a binary variable: 1 if the CEO was overconfident and 0 if not.

Control Variables

Our empirical investigation accounts for the effects of industry-level and firm-level variables that may impact a firm's short-term and long-term performance. For the industry level, we controlled for the effects of industry munificence and industry dynamism (Dess & Beard, 1984). First, industry munificence reflects the availability of resources and capabilities among firms in the industry (Cao et al., 2009), which was calculated by regressing the industry's annual sales revenue over the previous five-year period and then dividing the regression slope coefficient by the mean value of annual sales revenue over that period (Kayo & Kimura, 2011; Lin & Dang, 2017). Second, industry dynamism indicates the frequency and magnitude of change in the firm's industry (Richard et al., 2019), which was operationalized using the standard error of the industry's annual sales revenue during the previous five-year period divided by the mean value of annual sales revenue over that period (Kayo & Kimura, 2011; Lin & Dang, 2017).

Our models also controlled for the effects of various firm-level variables that can influence a firm's performance. First, we operationalized the firm size as the natural log of the firm's annual sales revenue (Drnevich & Kriauciunas, 2011). Second, we controlled for strategic dynamism, which reflects the degree of change in a firm's strategy (Chatterjee & Hambrick, 2007). Following Chatterjee and Hambrick (2007), we operationalized strategic dynamism as a composite measure that captures the changes in four categories of the firm's resource allocation activities, including (1) advertising intensity (measured as advertising expenses divided by sales), (2) R&D intensity (measured as R&D expenses divided by sales), (3) selling, general, and administration (SG&A) expenses (divided by sales), and (4) financial leverage (measured as long-term debt divided by equity). We then summed the standardized indicators of these four variables to obtain our measure of strategic dynamism. Third, to capture the effects of slack resources and any excess liquidity, we separately controlled for current ratio (measured as current assets divided by current liabilities), working capital to sales (measured as working capital divided by sales), and equity to debt ratio (equity divided by debt) (Chen, 2008). Fourth, we operationalized sales growth as the percentage change in annual sales in the focal year relative to the prior year.

Moreover, we controlled for the effects of the firm's board of directors, CEO, and top management team to capture the impacts of the firm's strategic leadership on performance (Finkelstein et al., 2009). First, we controlled for the size of the firm's board of directors (BOD size), which is measured as the number of directors on the firm's board. Second, we adopted CEO duality as a binary variable; 1 indicates that the CEO is also the chairman of the board, while 0 indicates otherwise (Krause et al., 2014). Third, CEO tenure reflects the number of years since the CEO took this role in the firm (Hambrick & Fukutomi, 1991). Fourth, we incorporated the size of (the number of executives in) the firm's top management team (TMT size; Carpenter, 2002). Fifth, TMT power disparity was operationalized as the standard deviation of TMT members' total compensation divided by the average of TMT members' total compensation in the firm (Richard et al., 2019). Sixth, TMT turnover was measured as the number of departed TMT members in a specific year divided by the total number of executives in the firm's top management team (Bilgili et al., 2017). Seventh, the top management team's total compensation (TMT compensation) was measured as the sum of the TMT members' total compensation divided by the TMT size (Devers et al., 2007). Finally, our empirical model also controlled for the year and for firm fixed effects.

Model Estimations and Procedures

To eliminate the potential for reversed causality, we measured dependent variables based on the change in Tobin's Q—at $t + 1$ for short-term performance and at $t + 3$ for long-term performance. We used the following fixed-effects models for firm i , where X_{it} reflects a vector of the control variables used in this study:

$$\begin{aligned} \text{Short-term performance}_{i,t+1} = & \beta_0 + \beta_1 \text{Capital patience}_{it} + \beta_2 \text{TMT un-exercisable stock options}_{it} \\ & + \beta_3 \text{TMT exercisable stock options}_{it} + \beta_4 \text{CEO overconfidence}_{it} + \beta_5 \text{Capital patience}_{it} \times \text{TMT exercisable stock options}_{it} \\ & + \beta_6 \text{Capital patience}_{it} \times \text{CEO overconfidence}_{it} + \beta_n X_{it} + \varepsilon_{it} \end{aligned}$$

$$\begin{aligned} \text{Long-term performance}_{i,t+3} = & \beta_0 + \beta_1 \text{Capital patience}_{it} + \beta_2 \text{TMT un-exercisable stock options}_{it} \\ & + \beta_3 \text{TMT exercisable stock options}_{it} + \beta_4 \text{CEO overconfidence}_{it} + \beta_5 \text{Capital patience}_{it} \times \text{TMT un-exercisable stock options}_{it} \\ & + \beta_6 \text{Capital patience}_{it} \times \text{CEO overconfidence}_{it} + \beta_n X_{it} + \varepsilon_{it} \end{aligned}$$

Research Results

Table 2 details the descriptive statistics of all the variables included in our empirical models. Table 3 reveals the Pearson correlations between each pair of variables, as well as the variance inflation factor (VIF) scores of individual variables. The VIF analysis indicated that all of the included variables have a VIF score well below the threshold of 10, which indicates that there are no critical levels of multicollinearity in our models (Greene, 2003).

Table 2
Descriptive Statistics

Variable	Mean	Std. dev.	Min	Max
Dependent Variables				
ST performance (Tobin's Q at t+1 - Tobin's Q at t-1)	-0.03	0.93	-12.68	11.09
LT performance (Tobin's Q at t+3 - Tobin's Q at t-1)	-0.02	1.18	-12.25	15.74
Control Variables				
Industry munificence	0.103	0.100	-0.068	1.049
Industry dynamism	0.027	0.021	0.001	0.192

Cont. Table 2
Descriptive Statistics

Variable	Mean	Std. dev.	Min	Max
Firm size	7.592	1.686	-2.303	13.070
Strategic dynamism	-0.017	0.026	-0.020	1.526
Current ratio	2.446	2.339	0.105	57.605
Working capital to sales	0.790	15.242	-4.406	816.88
Equity to debt	1.540	2.027	-0.663	35.867
Sales growth	0.108	0.839	-0.997	58.094
Size of the Board of Directors	9.371	2.385	3.000	33.000
CEO Duality	0.646	0.478	0.000	1.000
CEO tenure	10.637	7.113	0.000	52.000
TMT Size	5.679	1.106	2.000	14.000
TMT power disparity	0.773	0.349	0.008	2.711
TMT turnover	0.099	0.129	0.000	0.750
TMT Compensation (value in millions)	3.655	5.719	0.161	154.562
Independent Variables				
Capital Patience	-1.342	1.652	-9.988	3.160
TMT Un-exercisable stock options (value in millions)	1.485	6.893	0.000	424.853
TMT Exercisable stock options (value in millions)	5.189	16.897	0.000	556.283
CEO Overconfidence	0.462	0.499	0.000	1.000
<i>N</i> = 7,287				

Table 3
Pearson Correlation Matrix and VIF Scores

#	Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	VIF	1/ VIF		
1	ST Performance	1.00																								
2	LT Performance	0.71	1.00																							
3	Industry munificence	-0.11	-0.13	1.00																				1.85	0.54	
4	Industry dynamism	0.00	0.02	0.64	1.00																				1.85	0.54
5	Firm size	-0.01	-0.03	-0.24	-0.29	1.00																			2.31	0.43
6	Strategic dynamism	-0.03	0.02	-0.02	0.01	-0.20	1.00																		2.90	0.34
7	Current ratio	-0.09	-0.07	0.08	0.14	-0.43	0.04	1.00																	2.01	0.50
8	Working capital to sales	-0.04	0.00	-0.02	0.02	-0.19	0.81	0.08	1.00																2.88	0.35
9	Equity to debt	-0.07	-0.08	0.13	0.14	-0.43	0.03	0.68	0.07	1.00															2.01	0.50
10	Sales growth	-0.01	0.02	0.00	-0.01	-0.06	0.02	0.03	0.00	0.01	1.00														1.01	0.99
11	Size of the Board of Directors	0.01	0.00	-0.14	-0.19	0.58	-0.05	-0.30	-0.06	-0.32	-0.02	1.00													1.60	0.62
12	CEO Duality	-0.04	-0.05	0.04	-0.08	0.16	-0.02	-0.08	-0.03	-0.07	-0.03	0.06	1.00												1.11	0.90
13	CEO tenure	-0.01	-0.02	0.05	0.06	-0.13	0.00	0.09	0.00	0.11	0.00	-0.15	0.19	1.00											1.10	0.91
14	TMT Size	-0.07	-0.05	0.02	-0.07	0.12	0.00	-0.09	-0.01	-0.10	-0.01	0.13	0.03	-0.05	1.00										1.24	0.81
15	TMT power disparity	-0.08	-0.09	0.00	-0.02	0.21	-0.03	-0.06	-0.02	-0.07	0.00	0.06	0.07	0.03	0.17	1.00									1.23	0.81
16	TMT turnover	-0.03	0.00	0.00	-0.01	0.03	0.01	-0.02	-0.01	-0.03	-0.01	0.04	-0.04	-0.04	0.36	0.11	1.00								1.17	0.86
17	TMT Compensation	-0.07	-0.11	-0.09	-0.03	0.38	-0.02	-0.09	-0.02	-0.08	0.02	0.21	0.05	0.05	-0.04	0.33	-0.02	1.00							1.64	0.61
18	Capital Patience	0.13	0.11	-0.06	-0.03	0.02	-0.05	-0.09	-0.06	-0.02	-0.02	0.13	0.02	0.00	-0.03	-0.09	-0.06	-0.02	1.00						1.07	0.93
19	TMT un-exercisable stock options	-0.02	-0.08	0.01	-0.01	0.15	-0.01	-0.01	0.00	-0.01	0.02	0.07	0.02	0.05	0.05	0.12	-0.01	0.37	0.00	1.00					2.06	0.49
20	TMT Exercisable stock options	-0.06	-0.14	-0.02	-0.02	0.22	-0.01	-0.04	-0.01	-0.02	0.02	0.13	0.04	0.08	0.03	0.18	-0.01	0.49	0.02	0.71	1.00				2.40	0.42
21	CEO Overconfidence	-0.10	-0.14	0.09	0.04	0.05	-0.03	0.01	-0.03	0.03	0.02	-0.04	0.04	0.06	0.03	0.23	0.01	0.14	-0.11	0.11	0.20	1.00	1.12	0.89		
N = 7,287																							Av. VIF		1.71	

Our analysis included a series of models that aimed to investigate the hypothesized effects on short-term performance (Model Series A) and long-term performance (Model Series B). Model(s) 1 focused on the effects of the control variables on our dependent variables. Model(s) 2 investigated the hypothesized main effects of *capital patience*, TMT un-exercisable stock options, *TMT exercisable stock options*, and *CEO overconfidence*. Model(s) 3 incorporated the moderating effects of *TMT exercisable stock options* and *TMT un-exercisable stock options*. Model(s) 4 investigated the moderating effects of CEO overconfidence. Finally, Model(s) 5 illustrated the full interaction models regarding short-term and long-term performance.

Table 4
Results of Fixed Effects Regression Model (Controls and Main Effects)

Model	1A (Controls)			1B (Controls)			2A (Main)			2B (Main)		
	ST Performance			LT Performance			ST Performance			LT Performance		
Dependent Variable	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p
Controls												
Industry munificence	-0.741	0.30	0.02 *	-1.913	0.35	<0.01 **	-0.653	0.30	0.03 *	-1.837	0.35	<0.01 **
Industry dynamism	0.744	2.32	0.75	3.608	2.68	0.18	1.518	2.30	0.51	5.293	2.65	0.05 *
Firm size	-0.211	0.04	<0.01 **	-0.334	0.04	<0.01 **	-0.163	0.04	<0.01 **	-0.242	0.04	<0.01 **
Strategic dynamism	-1.326	0.67	0.05 *	1.164	0.78	0.13	-1.263	0.66	0.06 +	1.235	0.76	0.11
Current ratio	-0.064	0.01	<0.01 **	-0.033	0.01	<0.01 **	-0.061	0.01	<0.01 **	-0.032	<0.01	<0.01 **
Working capital to sales	-0.003	0.00	<0.01 **	-0.006	0.00	<0.01 **	-0.003	0.00	<0.01 *	-0.005	0.00	<0.01 **
Equity to debt	-0.031	0.01	<0.01 **	-0.079	0.01	<0.01 **	-0.029	0.01	0.02 *	-0.068	0.01	<0.01 **
Sales growth	-0.028	0.01	0.04 *	0.034	0.02	0.03 *	-0.031	0.01	0.02 *	0.030	0.02	0.05 +
BOD size	0.014	0.01	0.21	0.015	0.01	0.24	0.012	0.01	0.28	0.013	0.01	0.28
CEO Duality	-0.111	0.04	<0.01 **	-0.108	0.05	0.03 *	-0.101	0.04	0.02 *	-0.077	0.05	0.11
CEO Tenure	0.007	0.00	0.02 *	0.007	0.00	0.07 +	0.007	0.00	0.02 *	0.007	0.00	0.05 +
TMT size	-0.043	0.01	<0.01 **	-0.025	0.02	0.12	-0.052	0.01	<0.01 **	-0.036	0.02	0.03 *
TMT power disparity	-0.108	0.04	<0.01 **	-0.115	0.04	<0.01 *	-0.074	0.04	0.06 +	-0.074	0.04	0.09 +
TMT turnover	0.159	0.09	0.09 +	0.195	0.11	0.07 +	0.198	0.09	0.03 *	0.225	0.11	0.04 *
TMT Compensation	-0.012	0.00	<0.01 **	-0.026	0.00	<0.01 **	-0.014	0.00	<0.01 **	-0.022	0.00	<0.01 **
Explanatory Variables												
Capital Patience							0.097	0.01	<0.01 **	0.105	0.01	<0.01 **
TMT Un-exercisable stock options							0.015	0.00	<0.01 **	0.019	0.00	<0.01 **
TMT Exercisable stock options							-0.005	0.00	<0.01 **	-0.013	0.00	<0.01 **

Cont. Table 4
Results of Fixed Effects Regression Model (Controls and Main Effects)

Model	1A (Controls)			1B (Controls)			2A (Main)			2B (Main)		
Dependent Variable	ST Performance			LT Performance			ST Performance			LT Performance		
	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p
CEO Overconfidence							-0.097	0.03	< 0.01**	-0.193	0.03	< 0.01**
<i>Interactions</i>												
Capital Patience * TMT Un-exercisable stock options												
Capital Patience * TMT Exercisable stock options												
Capital Patience * CEO Overconfidence												
<i>Constant</i>	2.961	0.34	< 0.01**	2.361	0.39	< 0.01**	2.591	0.34	< 0.01**	1.905	0.39	< 0.01**
<i>Firm fixed effects</i>	Yes			Yes			Yes			Yes		
<i>Year fixed effects</i>	Yes			Yes			Yes			Yes		
Observations	7,287			7,287			7,287			7,287		
F-value	32.63**			31.60**			33.15**			35.09**		
R-squared												
within	0.15			0.15			0.17			0.18		
between	0.05			0.04			0.08			0.06		
overall	0.08			0.06			0.11			0.09		

** $p < 0.01$, * $p < 0.05$, + $p < 0.10$

Table 4 illustrates the findings of Model 1 (A and B) and Model 2 (A and B). Starting with Model 1 (A and B), we observe that *industry munificence* appears to have negatively influenced both the firm's short-term performance ($\beta = -0.741, p < 0.05$) and its long-term performance ($\beta = -1.913, p < 0.01$). Similarly, firm size had a negative relationship with short-term performance ($\beta = -0.211, p < 0.01$) and long-term performance ($\beta = -0.334, p < 0.01$). These findings are expected, since our measures of firm performance are determined by the change in Tobin's Q. *Strategic dynamism* had a negative effect only on the firm's short-term performance ($\beta = -1.326, p < 0.05$), which may reflect the disruption and costs that firms incur during the early stages of organizational change.

The three measures of slack resources had a statistically significant effect on the firm's short-term and long-term performance. First, the current ratio negatively influenced both short-term performance ($\beta = -0.064, p < 0.01$) and long-term performance ($\beta = -0.033, p < 0.01$). Second, working capital to sales was negatively associated with the firm's short-term performance ($\beta = -0.003, p < 0.01$) and with its long-term performance ($\beta = -0.006, p < 0.01$). Third, equity to debt negatively correlated with short-term performance ($\beta = -0.031, p < 0.01$) and long-term performance ($\beta = -0.079, p < 0.01$). These observations provide evidence for the agency theory perspective of slack resources, which emphasizes the incurred opportunity costs associated with these unallocated resources (Deb et al., 2017; Kim & Bettis, 2014). Interestingly, sales growth harmed the firm's short-term performance ($\beta = -0.028, p < 0.05$) but had a positive effect on the firm's long-term performance ($\beta = 0.034, p < 0.05$). This disparity of effects could be due to the costs that accompany operational expansion and the investments in resources, both physical and human resources, that often accompany a firm's growth in sales.

Models 1 (A and B) also provide insights into the effects of the board of directors, top management team, and CEO on firm performance. CEO duality was negatively associated with both the firm's short-term performance ($\beta = -0.111, p < 0.01$) and its long-term performance ($\beta = -0.108, p < 0.05$), which is largely due to negative effects on the firm's governance practices (Krause et al., 2014). CEO tenure had a positive and statistically significant effect on the firm's short-term performance ($\beta = 0.007, p < 0.05$) but not on the firm's long-term performance. TMT size had a negative impact on the firm's short-term performance ($\beta = -0.043, p < 0.01$), which could be due to the increased difficulty of coordination in larger

firms (Daft, 2015). Furthermore, TMT power disparity appeared to negatively influence both the firm's short-term ($\beta = -0.108, p < 0.01$) and its long-term performance ($\beta = -0.115, p < 0.05$), a result that echoes prior findings on the effect of CEO dominance on firm performance (Brown & Sarma, 2007). Finally, TMT compensation appears to have had a negative effect on both short-term performance ($\beta = -0.012, p < 0.01$) and long-term performance ($\beta = -0.026, p < 0.01$).

Models 2 (A and B) investigated the hypothesized effects of capital patience, TMT un-exercisable stock options, TMT exercisable stock options, and CEO overconfidence on firm performance. We found that capital patience had a positive and statistically significant effect on both short-term performance ($\beta = 0.097, p < 0.01$) and long-term performance ($\beta = 0.105, p < 0.01$). On average, firms that experienced 1 unit increase in their capital patience were associated with a 0.097 increase in their Tobin's Q over the next year (i.e., short-term performance) and a 0.105 increase in their Tobin's Q over the next three years (i.e., long-term performance). This indicates that decision-makers and firms often create more economic value for their shareholders when those shareholders are committed and do not frequently trade the firm's stock. Hence, H1(a) and H1(b) are fully supported.

In terms of TMT stock options, Models 2 (A and B) also provide interesting insights. First, TMT's un-exercisable stock options was positively associated with the firm's short-term performance ($\beta = 0.015, p < 0.01$) and with its long-term performance ($\beta = 0.019, p < 0.01$). On average, firms with a 1 million dollar increase in their average TMT member's holdings of un-exercisable stock options were associated with a 0.015 increase in their Tobin's Q in the following year and with a 0.019 increase in their Tobin's Q over the next three years. While extant research emphasizes that un-exercisable stock options encourage the TMT to make decisions that create long-term value (Devers et al., 2007; Souder & Bromiley, 2012), we found that such motivation also accentuates the company's performance in the short run. Therefore, H2(a) and H2(b) are also supported.

In contrast, we found that TMT's exercisable stock options were negatively associated with both the firm's short-term performance ($\beta = -0.005, p < 0.01$) and its long-term performance ($\beta = -0.013, p < 0.01$). On average, firms with an increase of 1 million dollars in their average TMT member's holdings of exercisable stock options experienced a 0.005 decrease in their Tobin's Q in the next year and a 0.013 decrease in their Tobin's Q over the next three years. So, the negative effects of TMT exercisable stock options hinder short-term performance but also

appear to have a similar effect in the long term. Therefore, the main effects theorized in H4(a) and H4(b) are both supported.

As for the firm's CEO, we found that CEO overconfidence, as reflected by their decision to exercise or hold their stock options, was negatively associated with the firm's short-term performance ($\beta = -0.097, p < 0.01$) and with its long-term performance ($\beta = -0.193, p < 0.01$). On average, overconfident CEOs were associated with a 0.097 decrease in the firm's Tobin's Q in the following year and a 0.193 decrease in Tobin's Q over the next three years. Interestingly, the impact of CEO overconfidence appears to be significantly stronger on the firm's long-term performance. Therefore, the main effects of H6(a) and H6(b) are also supported.

Table 5
Results of Fixed Effects Regression Model (Interaction Models)

Model	3A (Stock Options)			3B (Stock Options)			4A (CEO overconfidence)			4B (CEO overconfidence)			5A (Full Interaction)			5B (Full Interaction)		
Dependent Variable	ST Performance	LT Performance	ST Performance	LT Performance	ST Performance	LT Performance	ST Performance	LT Performance	ST Performance	LT Performance	ST Performance	LT Performance	ST Performance	LT Performance	ST Performance	LT Performance	ST Performance	LT Performance
	Coeff.	SE	P	Coeff.	SE	P	Coeff.	SE	P	Coeff.	SE	P	Coeff.	SE	P	Coeff.	SE	P
<i>Controls</i>																		
Industry munificence	-0.650	0.30	0.03 *	-1.843	0.35	< 0.01 **	-0.626	0.30	0.04 *	-1.804	0.35	< 0.01 **	-0.617	0.30	0.04 *	-1.814	0.35	< 0.01 **
Industry dynamism	1.621	2.30	0.48	5.106	2.64	0.05 +	1.259	2.30	0.58	4.990	2.64	0.06 +	1.354	2.30	0.56	4.852	2.64	0.07 +
Firm size	-0.160	0.04	< 0.01 **	-0.244	0.04	< 0.01 **	-0.164	0.04	< 0.01 **	-0.243	0.04	< 0.01 **	-0.161	0.04	< 0.01 **	-0.245	0.04	< 0.01 **
Strategic dynamism	-1.258	0.66	0.06 +	1.210	0.76	0.11	-1.258	0.66	0.06 +	1.241	0.76	0.10	-1.251	0.66	0.06 +	1.217	0.76	0.11
Current ratio	-0.060	0.01	< 0.01 **	-0.028	0.01	< 0.01 **	-0.059	0.01	< 0.01 **	-0.030	0.01	< 0.01 **	-0.058	0.01	< 0.01 **	-0.026	0.01	< 0.01 **
Working capital to sales	-0.003	0.00	0.02 *	-0.005	0.00	< 0.01 **	-0.003	0.00	< 0.01 **	-0.005	0.00	< 0.01 **	-0.003	0.00	< 0.01 **	-0.005	0.00	< 0.01 **
Equity to debt	-0.030	0.01	< 0.01 *	-0.068	0.01	< 0.01 **	-0.028	0.01	0.02 *	-0.068	0.01	< 0.01 **	-0.029	0.01	< 0.01 *	-0.067	0.01	< 0.01 **
Sales growth	-0.031	0.01	0.02 *	0.030	0.02	0.05 +	-0.030	0.01	0.02 *	0.030	0.02	0.05 *	-0.030	0.01	0.02 *	0.031	0.02	0.05 *
BOD size	0.012	0.01	0.25	0.012	0.01	0.35	0.010	0.01	0.34	0.012	0.01	0.33	0.011	0.01	0.31	0.010	0.01	0.40
CEO Duality	-0.100	0.04	0.02 *	-0.079	0.05	< 0.01 +	-0.098	0.04	0.02 *	-0.073	0.05	0.12	-0.097	0.04	0.02 *	-0.075	0.05	0.11
CEO Tenure	0.007	0.00	0.02 *	0.007	0.00	0.04 *	0.008	0.00	< 0.01 *	0.008	0.00	0.03 *	0.008	0.00	< 0.01 *	0.008	0.00	0.03 *
TMT size	-0.052	0.01	< 0.01 **	-0.036	0.02	0.02 *	-0.050	0.01	< 0.01 **	-0.033	0.02	0.04 *	-0.049	0.01	< 0.01 **	-0.034	0.02	0.03 *
TMT power disparity	-0.073	0.04	0.06 +	-0.075	0.04	0.09 +	-0.070	0.04	0.07 +	-0.070	0.04	0.12	-0.069	0.04	0.07 +	-0.071	0.04	0.11
TMT turnover	0.192	0.09	0.04 *	0.223	0.11	0.04 *	0.194	0.09	0.04 *	0.219	0.11	0.04 *	0.185	0.09	0.05 *	0.218	0.11	0.04 *
TMT Compensation	-0.014	0.00	< 0.01 **	-0.022	0.00	< 0.01 **	-0.013	0.00	< 0.01 **	-0.022	0.00	< 0.01 **	-0.014	0.00	< 0.01 **	-0.022	0.00	< 0.01 **
<i>Explanatory Variables</i>																		
Capital Patience	0.104	0.01	< 0.01 **	0.093	0.01	< 0.01 **	0.069	0.01	< 0.01 **	0.071	0.02	< 0.01 **	0.072	0.01	< 0.01 **	0.064	0.02	< 0.01 **
TMT Un-exercisable stock options	0.014	0.00	< 0.01 **	0.032	0.00	< 0.01 **	0.015	0.00	< 0.01 **	0.019	0.00	< 0.01 **	0.014	0.00	< 0.01 **	0.032	0.00	< 0.01 **

Cont. Table 5
Results of Fixed Effects Regression Model (Interaction Models)

Model	3A (Stock Options)			3B (Stock Options)			4A (CEO overconfidence)			4B (CEO overconfidence)			5A (Full Interaction)			5B (Full Interaction)		
Dependent Variable	ST Performance			LT Performance			ST Performance			LT Performance			ST Performance			LT Performance		
	Coeff.	SE	P	Coeff.	SE	P	Coeff.	SE	P	Coeff.	SE	P	Coeff.	SE	P	Coeff.	SE	P
TMT Exercisable stock options	-0.006	0.00	< 0.01 **	-0.013	0.00	< 0.01 **	-0.005	0.00	< 0.01 **	-0.013	0.00	< 0.01 **	-0.007	0.00	< 0.01 **	-0.013	0.00	< 0.01 **
CEO Overconfidence	-0.097	0.03	< 0.01 **	-0.193	0.03	< 0.01 **	-0.020	0.04	0.59	-0.103	0.04	0.02 *	-0.010	0.04	0.79	-0.114	0.04	< 0.01 **
<i>Interactions</i>																		
Capital Patience * TMT Un-exercisable stock options				0.009	0.00	< 0.01 **										0.008	0.00	< 0.01 **
Capital Patience * TMT Exercisable stock options	-0.002	0.00	0.02 *										-0.002	0.00	< 0.01 **			
Capital Patience * CEO Overconfidence							0.057	0.02	< 0.01 **	0.066	0.02	< 0.01 **	0.065	0.02	< 0.01 **	0.058	0.02	< 0.01 **
Constant	2.578	0.34	< 0.01 **	1.918	0.39	< 0.01 **	2.524	0.34	< 0.01 **	1.826	0.39	< 0.01 **	2.498	0.34	< 0.01 **	1.848	0.39	< 0.01 **
Firm fixed effects	Yes			Yes			Yes			Yes			Yes			Yes		
Year fixed effects	Yes			Yes			Yes			Yes			Yes			Yes		
Observations	7,287			7,287			7,287			7,287			7,287			7,287		
F-value	32.44 **			34.85 **			32.67 **			34.57 **			32.10 **			34.25 **		
R-squared																		
within	0.17			0.18			0.17			0.18			0.17			0.18		
between	0.06			0.09			0.09			0.07			0.06			0.09		
overall	0.11			0.10			0.11			0.10			0.11			0.10		

** $p < 0.01$, * $p < 0.05$, + $p < 0.10$

Table 5 illustrates the moderating effect of capital patience on the effects of TMT stock-based incentives and CEO overconfidence on firm performance, as hypothesized in H3, H5, H7(a), and H7(b). Model 3A showed that TMT exercisable stock options negatively moderated the positive effects of capital patience on a firm's short-term performance ($\beta = -0.002, p < 0.05$). However, upon further examination (see the Robustness Checks section), we found that this effect was not consistent; thus, H5 is not supported. Model 3B investigated the moderation effects of the TMT's un-exercisable stock options (H3). The results show that the extent of the firm's capital patience accentuated the positive effects of the TMT's un-exercisable stock options on the firm's long-term performance ($\beta = 0.009, p < 0.01$). On average, an increase of 1 million dollars in the TMT's un-exercisable stock options increased the effects of 1 unit of capital patience on the firm's long-term performance, as reflected by the change in Tobin's Q (an increase of 0.009). Hence, H3 is fully supported. The moderation effect in H3 is depicted in Figure 2.

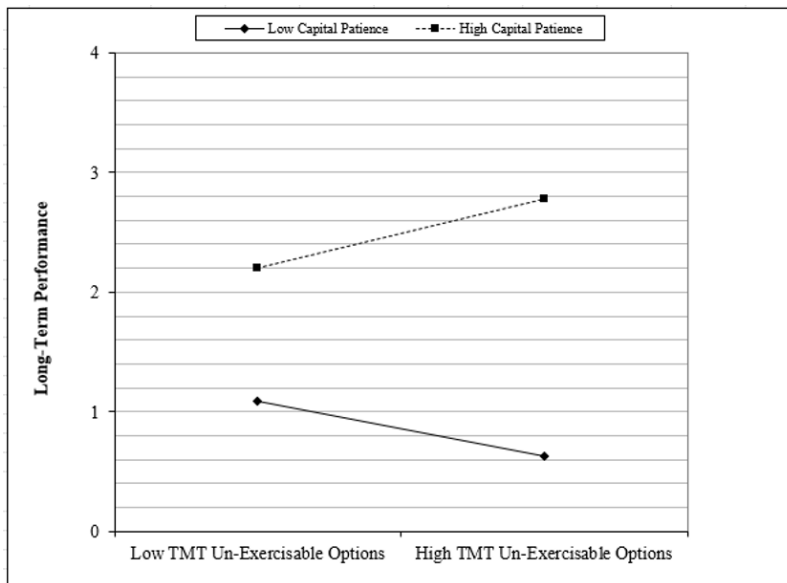


Figure 2: The Moderating of Capital Patience on the Positive Relationship between the Value of TMT Un-Exercisable Stock Options and Long-Term Performance (H3)

Interestingly, the results show that capital patience positively moderated the negative effect of CEO overconfidence on both short-term performance

($\beta = 0.057, p < 0.01$) and long-term performance ($\beta = 0.066, p < 0.01$). In other words, capital patience weakens the negative effects of CEO overconfidence on the firm's performance, both in the short term and in the long term. Patient capital appears to be associated with a greater ability to restrain the excessive behaviors of overconfident CEOs, which may include excessive risk-taking and biased judgment regarding the feasibility of large investments. Such an effect could also be the result of constructive corporate governance practices, including the appointment of independent board members and imposing effective control through the functions of various board committees (Banerjee et al., 2015), which reflect positively on a firm's performance. Conversely, companies with impatient shareholders were found to be at risk of experiencing less favorable market reactions in response to their overconfident CEOs, as those shareholders might be quicker to sell or even short-sell their holdings in response to an overconfident CEO's decisions (Shi & DesJardine, 2022). Hence, H7(a) and (b) are both fully supported. The moderating effects of capital patience on the negative effects of CEO overconfidence on short-term and long-term performance are illustrated in Figures 3A and Figure 3B, respectively.

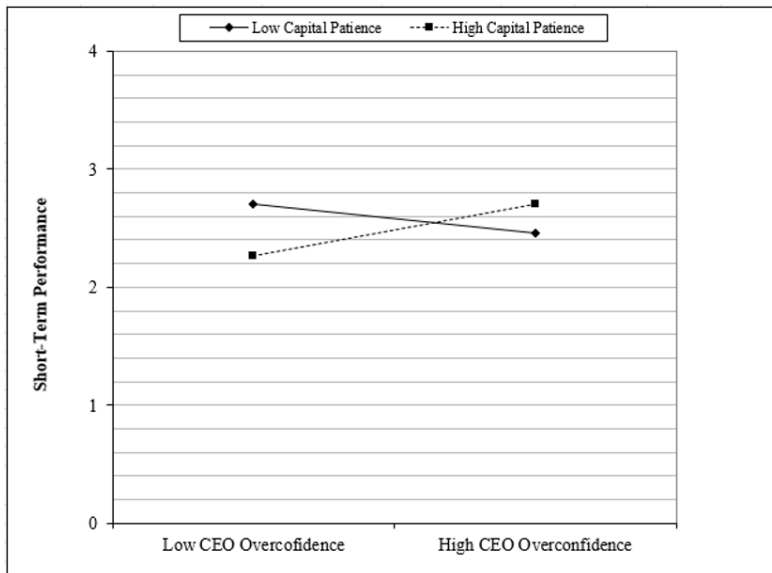


Figure 3A: The Moderating Effect of Capital Patience on the Negative Relationship between CEO Overconfidence and Short-Term Performance (H7a)

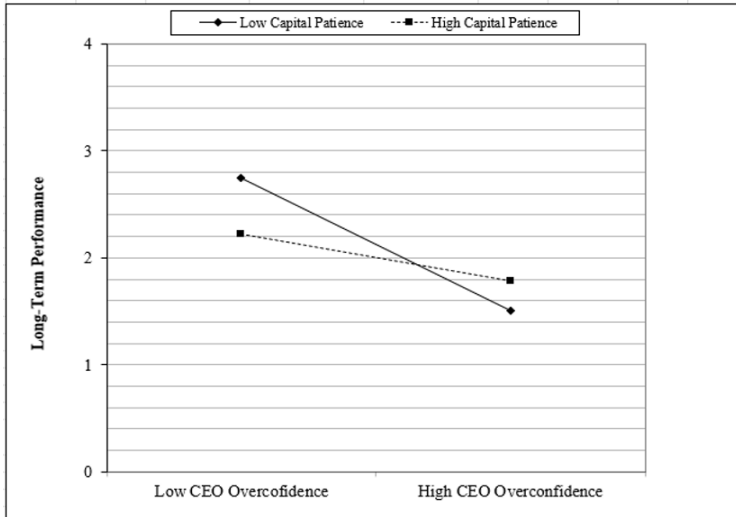


Figure 3B: The Moderating Effect of Capital Patience on the Negative Relationship Between CEO Overconfidence and Long-Term Performance (H7b)

Robustness Checks

To ensure the consistency of our findings on the hypothesized effects, we conducted several robustness checks. We considered using a model with random-effects specifications to conduct our analysis. Before making that decision, we first conducted the Hausman (1978) test to decide the appropriate model specification for our analysis. It suggested that the variables in our model were significantly correlated with the fixed effects in both the short-term performance models ($\chi^2(34) = 119.14; p < 0.01$) and the long-term performance models ($\chi^2(34) = 126.7; p < 0.01$), indicating that random-effects specification was not suitable for our analyses (Certo et al., 2017; Wooldridge, 2010). Hence, we commenced with the fixed-effects model specification in our main analysis.

To further examine the consistency of our findings, we replicated our tests for the hypothesized effects using the Generalized Estimating Equation (GEE), as this model allows researchers to capture between- and within-firm variance (Certo et al., 2017). After applying this test, most of our findings remained consistent, except for the hypothesized moderation effect of capital patience on the negative relationship between TMT exercisable stock options and a firm's short-term performance (H5). While the moderation effects were found to be negative in the fixed-effects model, the effect was positive in the GEE model, which questions the consistency of that finding from the fixed-effects model. Considering this inconsistency, our findings do not support H5. Table 6 provides further detail on the findings of the Generalized Estimating Equation (GEE) model.

Table 6
Results of the Generalized Estimating Equation (GEE) Model

Model	1GE (Main)			2GE (Main)			3GE (Full Interaction)			4GE (Full Interaction)		
	ST Performance			LT Performance			ST Performance			LT Performance		
Dependent Variable	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p
<i>Controls</i>												
Industry munificence	-0.567	0.23	< 0.01 *	-1.437	0.29	< 0.01 **	-0.551	0.23	0.02 *	-1.400	0.29	< 0.01 **
Industry dynamism	0.819	0.96	0.40	4.155	1.30	< 0.01 **	0.640	0.96	0.51	3.832	1.29	< 0.01 **
Firm size	-0.027	0.01	< 0.01 **	-0.033	0.02	0.03 *	-0.029	0.01	< 0.01 **	-0.035	0.01	0.02 *
Strategic dynamism	-0.423	0.65	0.52	1.892	0.78	0.02 *	-0.419	0.65	0.52	1.854	0.77	0.02 *
Current ratio	-0.038	0.01	< 0.01 **	-0.027	0.01	< 0.01 **	-0.037	0.01	< 0.01 **	-0.020	0.01	0.02 *
Working capital to sales	-0.002	0.00	0.06 +	-0.003	0.00	< 0.01 **	-0.002	0.00	0.04 *	-0.004	0.00	< 0.01 **
Equity to debt	-0.019	0.01	< 0.01 *	-0.045	0.01	< 0.01 **	-0.018	0.01	0.02 *	-0.045	0.01	< 0.01 **
Sales growth	-0.015	0.01	0.20	0.021	0.01	0.15	-0.015	0.01	0.20	0.021	0.01	0.14
BOD size	0.008	0.01	0.21	0.007	0.01	0.39	0.007	0.01	0.27	0.005	0.01	0.52
CEO Duality	-0.047	0.02	0.06 +	-0.046	0.03	0.19	-0.050	0.02	0.04 *	-0.048	0.03	0.17
CEO Tenure	0.003	0.00	0.09 +	0.004	0.00	0.12	0.003	0.00	0.06 +	0.004	0.00	0.08 +
TMT size	-0.036	0.01	< 0.01 **	-0.037	0.01	< 0.01 **	-0.035	0.01	< 0.01 **	-0.035	0.01	< 0.01 *
TMT power disparity	-0.063	0.03	0.06 +	-0.056	0.04	0.18	-0.058	0.03	0.08 +	-0.049	0.04	0.24
TMT turnover	0.054	0.09	0.53	0.152	0.10	0.15	0.060	0.09	0.49	0.153	0.10	0.14
TMT Compensation	-0.011	0.00	< 0.01 **	-0.019	0.00	< 0.01 **	-0.010	0.00	< 0.01 **	-0.019	0.00	< 0.01 **
<i>Explanatory Variables</i>												
Capital Patience	0.064	0.01	< 0.01 **	0.086	0.01	< 0.01 **	0.026	0.01	< 0.01 **	0.034	0.01	< 0.01 **
TMT Un-exercisable stock options	0.009	0.00	< 0.01 **	0.015	0.00	< 0.01 **	0.011	0.00	< 0.01 **	0.036	0.00	< 0.01 **

Cont. Table 6
Results of the Generalized Estimating Equation (GEE) Model

Model	1GE (Main)			2GE (Main)			3GE (Full Interac- tion)			4GE (Full Interac- tion)		
Dependent Variable	ST Performance			LT Performance			ST Performance			LT Performance		
	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p
TMT Exercisable stock options	-0.004	0.00	< 0.01 **	-0.011	0.00	< 0.01 **	-0.002	0.00	0.06 +	-0.012	0.00	< 0.01 **
CEO Overconfidence	-0.079	0.02	< 0.01 **	-0.175	0.03	< 0.01 **	0.000	0.03	0.99	-0.089	0.04	0.02 *
Interactions												
Capital Patience * TMT Un-exercis- able stock options										0.013	0.00	< 0.01 **
Capital Patience * TMT Exercisable stock options										0.002	0.00	< 0.01 **
Capital Patience * CEO Overcon- fidence							0.058	0.01	< 0.01 **	0.065	0.02	< 0.01 **
Constant	1.493	0.22	< 0.01 **	0.392	0.27	0.14	1.407	0.22	< 0.01 **	0.261	0.27	0.33
Firm fixed effects	Yes			Yes			Yes			Yes		
Year fixed effects	Yes			Yes			Yes			Yes		
Observations	7,287			7,287			7,287			7,287		
Wald chi2	1,245.20	**		1,251.51	**		1,293.43	**		1,372.86	**	

** $p < 0.01$, * $p < 0.05$, + $p < 0.10$

To further investigate the inconsistent findings related to H5, we considered the possibility of a mediation effect instead of an interaction effect in H5, and then we replicated the same test on H3 to ensure the consistency of both hypotheses. Specifically, we examined whether TMT exercisable stock options mediated the effects of capital patience on a firm's short-term performance. Following the Baron and Kenny (1986) approach, we found that capital patience did not have a statistically significant effect on the value of the TMT's exercisable stock options ($\beta = 0.2075$, $p = 0.290$), which refutes the possibility of a mediation effect in H5. We replicated the same analysis to investigate the possibility of mediation in H3. Here, too, the analysis showed that capital patience did not have a statistically significant effect on the value of the TMT's un-exercisable stock options ($\beta = -0.0709$, $p = 0.428$), which suggests that there is no mediation in H3. Our investigation confirms the robustness of the interaction effects in H3 and refutes the possibility of mediation effects in H3 or H5.

We also conducted two separate sensitivity analyses, one focused on our measure of long-term performance and the other on the effects of CEO overconfidence. In our main analysis, we measured long-term performance in terms of the change in Tobin's Q over a three-year period (Ellis et al., 2011), and we replicated this process using a longer timeframe for the sensitivity analysis, specifically over a five-year period (i.e., Tobin's Q_{t+5} and Tobin's Q_{t-1}). Interestingly, our findings remained consistent, even when we used the extended timeframe, which indicates the robustness of our conclusions.

In our second sensitivity analysis, we removed the CEO overconfidence variable to see if that would change the conclusions. The test confirmed the consistency of our findings on the effects of capital patience, TMT un-exercisable stock options, and TMT exercisable stock options on a firm's short-term and long-term performance, even when the CEO overconfidence variable was removed from the model. The sensitivity analyses, both that which focused on the extended long-term performance and that on the removal of the CEO overconfidence variable, are detailed in Tables 7 and 8, respectively.

Table 7
Results of the Sensitivity Analysis (Different Measures of Long-Term Performance – 3 years vs. 5 years)

Model	1R (Main)			2R (Main)			3R (Full Interaction)			4R (Full Interaction)		
	Dependent Variable	Q (t+3) - Q (t-1)		Q (t+5) - Q (t-1)			Q (t+3) - Q (t-1)			Q (t+5) - Q (t-1)		
	Co-eff.	SE	p	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p
<i>Controls</i>												
Industry munificence	-1.837	0.35	< 0.01 **	-2.825	0.51	< 0.01 **	-1.814	0.35	< 0.01 **	-2.798	0.51	< 0.01 **
Industry dynamism	5.293	2.65	0.05 *	5.895	3.40	0.08 +	4.852	2.64	0.07 +	5.622	3.39	0.10 +
Firm size	-0.242	0.04	< 0.01 **	-0.337	0.05	< 0.01 **	-0.245	0.04	0.01 **	-0.339	0.05	< 0.01 **
Strategic dynamism	1.235	0.76	0.11	-1.146	2.87	0.69	1.217	0.76	0.11	-1.087	2.86	0.70
Current ratio	-0.032	0.01	< 0.01 **	-0.037	0.01	< 0.01 **	-0.026	0.01	< 0.01 **	-0.032	0.01	< 0.01 **
Working capital to sales	-0.005	0.00	< 0.01 **	-0.002	0.00	0.34	-0.005	0.00	< 0.01 **	-0.002	0.00	0.26
Equity to debt	-0.068	0.01	< 0.01 **	-0.102	0.02	< 0.01 **	-0.067	0.01	< 0.01 **	-0.100	0.02	< 0.01 **
Sales growth	0.030	0.02	0.05 +	0.060	0.02	< 0.01 **	0.031	0.02	0.05 *	0.061	0.02	< 0.01 **
BOD size	0.013	0.01	0.28	0.027	0.01	0.07 +	0.010	0.01	0.40	0.024	0.01	0.10
CEO Duality	-0.077	0.05	0.11	-0.099	0.06	0.09 +	-0.075	0.05	0.11	-0.098	0.06	0.09 +
CEO Tenure	0.007	0.00	0.05 +	0.008	0.00	0.05 +	0.008	0.00	0.03 *	0.009	0.00	0.04 *
TMT size	-0.036	0.02	0.03 *	-0.019	0.02	0.31	-0.034	0.02	0.03 *	-0.017	0.02	0.35
TMT power disparity	-0.074	0.04	0.09 +	-0.115	0.05	0.03 *	-0.071	0.04	0.11	-0.113	0.05	0.03 *
TMT turnover	0.225	0.11	0.04 *	0.281	0.13	0.03 *	0.218	0.11	0.04 *	0.272	0.13	0.03 *
TMT Compensation	-0.022	0.00	< 0.01 **	-0.026	0.00	< 0.01 **	-0.022	0.00	< 0.01 **	-0.026	0.00	< 0.01 **
<i>Explanatory Variables</i>												
Capital Patience	0.105	0.01	< 0.01 **	0.103	0.02	< 0.01 **	0.064	0.02	< 0.01 **	0.061	0.02	< 0.01 **
TMT Un-exercisable stock options	0.019	0.00	< 0.01 **	0.012	0.00	< 0.01 **	0.032	0.00	< 0.01 **	0.023	0.00	< 0.01 **
TMT Exercisable stock options	-0.013	0.00	< 0.01 **	-0.012	0.00	< 0.01 **	-0.013	0.00	< 0.01 **	-0.013	0.00	< 0.01 **
CEO Overconfidence	-0.193	0.03	< 0.01 **	-0.292	0.04	< 0.01 **	-0.114	0.04	< 0.01 **	-0.211	0.05	< 0.01 **

Cont. Table 7
Results of the Sensitivity Analysis (Different Measures of Long-Term Performance – 3 years vs. 5 years)

Model	1R (Main)			2R (Main)			3R (Full Interaction)			4R (Full Interaction)		
Dependent Variable	Q (t+3) - Q (t-1)			Q (t+5) - Q (t-1)			Q (t+3) - Q (t-1)			Q (t+5) - Q (t-1)		
	Co-	SE	p	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p
<i>Interactions</i>												
Capital Patience * TMT Un-exercisable stock options							0.008	0.00	< 0.01 **	0.007	0.00	< 0.01 **
Capital Patience * CEO Overconfidence							0.058	0.02	< 0.01 **	0.061	0.02	< 0.01 **
Constant	1.905	0.39	< 0.01 **	2.770	0.46	< 0.01 **	1.848	0.39	< 0.01 **	2.701	0.46	< 0.01 **
Firm fixed effects	Yes			Yes			Yes			Yes		
Year fixed effects	Yes			Yes			Yes			Yes		
Observations	7,287			5,899			7,287			5,899		
F-value	35.09 **			33.57 **			34.25 **			32.41 **		
R-squared												
within	0.18			0.20			0.18			0.20		
between	0.06			0.08			0.09			0.08		
overall	0.09			0.11			0.10			0.11		

** $p < 0.01$, * $p < 0.05$, + $p < 0.10$

Table 8

Results of the Sensitivity Analysis (Effects of CEO Overconfidence)

Model	5R (With CEO Overconfidence)			6R (With CEO Overconfidence)			7R (Without CEO Overconfidence)			8R (Without CEO Overconfidence)		
	ST Performance			LT Performance			ST Performance			LT Performance		
Dependent Variable	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p
<i>Controls</i>												
Industry munificence	-0.653	0.30	0.03 *	-1.837	0.35	< 0.01 **	-0.707	0.30	0.02 *	-1.944	0.35	< 0.01 **
Industry dynamism	1.518	2.30	0.51	5.293	2.65	0.05 *	1.875	2.30	0.42	6.004	2.65	0.02 *
Firm size	-0.163	0.04	< 0.01 **	-0.242	0.04	< 0.01 **	-0.172	0.04	< 0.01 **	-0.261	0.04	< 0.01 **
Strategic dynamism	-1.263	0.66	0.06 +	1.235	0.76	0.11	-1.269	0.66	0.06 +	1.222	0.76	0.11
Current ratio	-0.061	0.01	< 0.01 **	-0.032	0.01	< 0.01 **	-0.061	0.01	< 0.01 **	-0.033	0.01	< 0.01 **
Working capital to sales	-0.003	0.00	< 0.01 *	-0.005	0.00	< 0.01 **	-0.003	0.00	0.02 *	-0.005	0.00	< 0.01 **
Equity to debt	-0.029	0.01	0.02 *	-0.068	0.01	< 0.01 **	-0.030	0.01	< 0.01 *	-0.072	0.01	< 0.01 **
Sales growth	-0.031	0.01	0.02 *	0.030	0.02	0.05 +	-0.030	0.01	0.02 *	0.030	0.02	0.05 *
BOD size	0.012	0.01	0.28	0.013	0.01	0.28	0.012	0.01	0.28	0.013	0.01	0.28
CEO Duality	-0.101	0.04	0.02 *	-0.077	0.05	0.11	-0.107	0.04	< 0.01 *	-0.089	0.05	0.06 +
CEO Tenure	0.007	0.00	0.02 *	0.007	0.00	0.05 +	0.008	0.00	0.02 *	0.008	0.00	0.04 *
TMT size	-0.052	0.01	< 0.01 **	-0.036	0.02	0.03 *	-0.050	0.01	< 0.01 **	-0.033	0.02	0.04 *
TMT power disparity	-0.074	0.04	0.06 +	-0.074	0.04	0.09 +	-0.088	0.04	0.02 *	-0.103	0.04	0.02 *
TMT turnover	0.198	0.09	0.03 *	0.225	0.11	0.04 *	0.202	0.09	0.03 *	0.231	0.11	0.03 *
TMT Compensation	-0.014	0.00	< 0.01 **	-0.022	0.00	< 0.01 **	-0.014	0.00	< 0.01 **	-0.022	0.00	< 0.01 **
<i>Explanatory Variables</i>												
Capital Patience	0.097	0.01	< 0.01 **	0.105	0.01	< 0.01 **	0.101	0.01	< 0.01 **	0.111	0.01	< 0.01 **
TMT Un-exercisable stock options	0.015	0.00	< 0.01 **	0.019	0.00	< 0.01 **	0.015	0.00	< 0.01 **	0.020	0.00	< 0.01 **
TMT Exercisable stock options	-0.005	0.00	< 0.01 **	-0.013	0.00	< 0.01 **	-0.005	0.00	< 0.01 **	-0.013	0.00	< 0.01 **
CEO Overconfidence	-0.097	0.03	< 0.01 **	-0.193	0.03	< 0.01 **						

Cont. Table 8
Results of the Sensitivity Analysis (Effects of CEO Overconfidence)

Model	5R (With CEO Overconfidence)			6R (With CEO Overconfidence)			7R (Without CEO Overconfidence)			8R (Without CEO Overconfidence)		
Dependent Variable	ST Performance			LT Performance			ST Performance			LT Performance		
	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p	Coeff.	SE	p
Constant	2.591	0.34	< 0.01 **	1.905	0.39	< 0.01 **	2.585	0.34	< 0.01 **	1.891	0.39	< 0.01 **
Firm fixed effects	Yes			Yes			Yes			Yes		
Year fixed effects	Yes			Yes			Yes			Yes		
Observations	7,287			7,287			7,287			7,287		
F-value	33.15 **			35.09 **			33.75 **			35.02 **		
R-squared												
within	0.17			0.18			0.17			0.17		
between	0.08			0.06			0.08			0.06		
overall	0.11			0.09			0.10			0.09		

** $p < 0.01$, * $p < 0.05$, + $p < 0.10$

Discussion

Shareholders fulfill an important external role in a firm's corporate governance process that reflects on the management's strategic decisions and, subsequently, the firm's performance (DesJardine et al., 2022; Freeman & Reed, 1983; Goranova et al., 2017; Shin et al., 2022; Shleifer & Vishny, 1997;). While they are the legal claimants of the firm's cash flows, the shareholders are significantly exposed to the hazards of the decision maker's self-interested behaviors and risk aversion, which are often associated with lower firm value (Eisenhardt, 1989; Jensen & Meckling, 1976; Tantalo & Priem, 2016). Furthermore, the shareholders are often critical of the management's choices and are known to express their dissatisfaction and disapproval of the firm's decisions by selling the firm's stock, which is known to impact the outcomes of the firm's major events, including acquisitions (Blagoeva et al., 2020), ESG activities (Dimson et al., 2015), CSR proposals (Flammer, 2015), and workforce downsizing (Brauer & Zimmermann, 2019).

In this paper, we advanced hypotheses on the effects of shareholder patience on the efficacy of a firm's corporate governance and executive compensation, as well as on when this element influences a firm's performance. Capital patience, which is indicative of infrequent trading by shareholders, reflects the shareholders' acceptance of the decision maker's long-term initiatives and willingness to maintain their approval until the deferred benefits of such investments are fully materialized (Sirmon & Hitt, 2003; Souder et al., 2016; Thanassoulis & Somekh, 2016). We argued that such behavior among the firm's stakeholders provides support for the decision-maker's choices, which increases their tendency to invest in value-creating alternatives without interruptions or negative market reactions. Our findings related to H1(a) and H1(b) confirm the positive association between a firm's capital patience and firm performance in the long run and the short run, respectively. Hence, we observe that firms with patient shareholders (i.e., higher capital patience) are generally better positioned to make value-creating decisions.

We also investigated the effects of capital patience on the efficacy and outcomes of a firm's executive compensation systems. We found evidence of various effects of stock-based incentives on firm performance, both in the short term and the long term. Specifically, the findings related to H2(a) and H2(b) confirm that the value of the TMT's un-exercisable stock options is generally associated with higher firm performance in both the long term and the short term. However, our investigation of H3 confirmed that the extent of a firm's capital patience

accentuated the positive effect of these compensation elements on the firm's long-term performance. Such findings suggest that patient shareholders enable long-term-oriented TMTs—who want to maximize the value of their un-exercisable stock options—to make decisions that accentuate the firm's value in the long run. Such findings indicate that the effects of shareholder patience complement the effects of stock-based incentives in bolstering incentive alignment between a firm's owners and its decision-makers, which enhances the efficacy of such systems (c.f., Zhang & Gimeno, 2016).

Interestingly, our empirical investigation did not find support for the effects of a firm's capital patience on the performance outcomes of the TMT's exercisable stock option. While H4(a) and H4(b) revealed a negative effect of the TMT's exercisable stock options on the firm's performance in the long term and in the short term, the firm's capital patience did not mitigate these negative effects. Contrary to H5, our analysis did not provide support for the effects of shareholders' patience on the negative relationship between the TMT's exercisable stock options and the firm's short-term performance. While the finding in H3 suggests that capital patience may enhance the effectiveness of un-exercisable stock options, H5 does not support its effects on exercisable stock options.

Informed by previous scholars (Banerjee et al., 2015), we argued that shareholders can play a critical role in restraining the decisions of an overconfident CEO through improving the firm's corporate governance practices. Considering that CEO overconfidence is associated with various judgment errors that include excessive risk-taking (Campbell et al., 2011), misjudging the competition (Goel & Thakor, 2008), and over-estimating acquisition value (Hayward & Hambrick, 1997), we argued that such judgment bias is likely to reduce the quality of the CEO's decision-making and thus reflect negatively on the firm's performance. As hypothesized in H6(a) and H6(b), the results provide strong support for the negative effect of CEO overconfidence on a firm's short-term and long-term performance, respectively. Interestingly, our findings indicate that the negative effects of CEO overconfidence are even stronger on a firm's long-term performance, which may support that overconfidence biases the CEO's judgment, leading to excessive risks that result in larger losses over extended periods of time. The observation of larger losses in the long term was further supported by our sensitivity analysis using a five-year timeline. This important effect warrants more attention from future scholars.

We also found that shareholder patience weakened the negative effect of CEO overconfidence on firm performance, both in the short term, H7(a), and in the long term, H7(b). This moderation effect is influenced by the patient shareholder's tendency to solve the CEO overconfidence problem by improving the firm's corporate governance practices (Banerjee et al., 2015). They might accomplish this through, for example, adding independent members and active board committees, instead of utilizing market-based mechanisms that involve selling the firm's stock or short-selling it (Shi & DesJardine, 2022), which reflects negatively on the firm's value. Such findings suggest that shareholder patience facilitates a better foundation for a firm's decision-making and corporate governance practices. Finally, Table 9 provides a summary of our findings.

Table 9
Summary of the Research Findings

#	Research Hypothesis	Finding
H1 (a)	Capital patience will strengthen the firm's long-term performance.	Supported
H1 (b)	Capital patience will strengthen the firm's short-term performance.	Supported
H2 (a)	TMT Un-exercisable stock options will strengthen the firm's long-term performance.	Supported
H2 (b)	TMT Un-exercisable stock options will strengthen the firm's short-term performance.	Supported
H3	Capital patience will strengthen the positive effect of the value of TMT's un-exercisable stock options on the firm's long-term performance.	Supported
H4 (a)	TMT Exercisable stock options will weaken the firm's long-term performance.	Supported
H4 (b)	TMT Exercisable stock options will weaken the firm's short-term performance.	Supported
H5	Capital patience strengthens the negative effects of the value of the TMT's exercisable stock options on the firm's short-term performance.	Not Supported
H6 (a)	CEO overconfidence will weaken the firm's short-term performance.	Supported
H6 (b)	CEO overconfidence will weaken the firm's long-term performance.	Supported
H7 (a)	Capital patience weakens the negative relationship between CEO overconfidence and the firm's short-term performance.	Supported
H7 (b)	Capital patience weakens the negative relationship between CEO overconfidence and the firm's long-term performance.	Supported

Research Contributions

This paper advances theoretical and practical contributions to three important areas of management and corporate governance research. First, the paper extends our knowledge on the role of a firm's stakeholders in corporate governance (Freeman & Reed, 1983; Freeman, 2010) by examining the effects of shareholder patience on a firm's short-term and long-term performance. By focusing on shareholders' influence on management's tendency to make intertemporal tradeoffs between short-term and long-term benefits (Lavery, 1996; Zhang & Gimeno, 2016), we highlight the influence of this important stakeholder group regarding encouraging firm management to make decisions that accentuate the firm's long-term value. We expect the findings presented here to also be beneficial to management practitioners, as short-termism is becoming a major macroeconomic problem in various developed markets (Dimon & Buffett, 2018; Sampson & Shi, 2023).

Second, this paper enriches the research on executive compensation (Devers et al., 2007) by examining the effect of shareholders' patience on the outcomes of executive stock-based compensation, particularly in terms of how and when these incentives contribute to long-term value creation. The evidence presented in this paper suggests that the efficacy of the firm's stock-based incentives is influenced by market-based factors related to shareholders' trading behaviors. Our empirical investigation indicates that shareholder patience complements the effects of un-exercisable stock options and enhances alignment between the firm's management and shareholders. Specifically, long-term-oriented TMT members, who aim to increase their pay from un-exercisable stock options, become more capable of making long-term-oriented decisions when the firm's shareholders are patient. This finding underlines the effects of an important shareholder behavior on the efficacy of the firm's executive compensation systems. Hence, scholars and practitioners are advised to account for the effects of market-related elements on the efficacy of stock-based incentives.

Third, this paper also contributes to the research on CEO overconfidence (Schumacher et al., 2020) by stressing the role of shareholders' patience as an element that induces governance-based solutions to the CEO overconfidence problem. Informed by prior scholars who emphasized the effect of corporate governance on restraining an overconfident CEO (Banerjee et al., 2015), we theoretically argued and empirically found that shareholder patience is an important factor in improving corporate governance. Unlike impatient shareholders who would re-

spond to overconfident CEOs by selling the firm's stock, patient shareholders are more likely to resort to governance-based solutions that improve the firm from within and have minimal negative impacts on the firm's stock value. Interestingly, the results presented in this paper confirm that shareholder patience significantly weakens the negative effects of CEO overconfidence on a firm's performance, both in the short term and in the long term. We expect such findings to clarify for corporate governance practitioners the role of patient shareholders in building and sustaining a better foundation for the firm's corporate governance.

Limitations and Directions for Future Research

While this paper makes important contributions to literature, it also has limitations that should be considered. First, the empirical investigation relied on the executive compensation data of publicly traded U.S. firms. While this data provides many advantages in terms of its comprehensiveness, reliability, and comparability (Cadman et al., 2010; Devers et al., 2007), the findings are not generalizable to other markets. Future research can extend the findings presented in this paper by examining the effects of shareholder patience in other geographic markets (e.g., European or Asian markets) or other firm types (e.g., private firms). Second, our measure of CEO overconfidence is based on the CEO's decision to hold their exercisable stock options for extended periods, implying confidence in their ability to increase the firm's value. While this measure is commonly used in prior business research (Ahmed & Duellman, 2013; Campbell et al., 2011; Malmendier & Tate, 2005; Phua et al., 2018), we understand that it does not directly measure the personality attributes of the CEO but instead indirectly captures confidence and overconfidence. Future scholars can extend our knowledge of the effects of CEO overconfidence by comparing our results with those garnered through different measures of this construct (e.g., survey-based approach, interviews, or textual analysis).

Third, our empirical investigation does not directly control for the effects of shareholders' activism, particularly in terms of lawsuits, boycotts, or public announcements (Goranova & Ryan, 2014), which can influence a firm's decisions and performance. Considering that shareholder activists are rather influential in a firm's corporate governance process, they may influence managerial short-termism or the impact of CEO overconfidence on the firm's performance. Future research can extend the findings presented in this paper by further exploring the

effects of this important group of shareholders. Lastly, we did not control for the effects of a firm's ownership structure, particularly institutional ownership (Parrino et al., 2003), in which the representatives of that institution are often classified as dedicated investors (Zhang & Gimeno, 2016). While this category of shareholders is known to be rather influential in a firm's decision-making and corporate governance, we expect them to be more patient than other investors. Hence, understanding the effect of institutional investors, particularly in terms of their impact on a firm's executive compensation, is also an interesting topic for future research.

Conclusion

How does shareholder patience influence a firm's performance? Can this organizational attribute influence the efficacy of a firm's executive compensation and corporate governance? This paper provides the following answers: (1) Shareholder patience is associated with higher firm performance, both in the short term and in the long term. Patient shareholders are more willing to hold a firm's stock for extended periods without making adverse reactions to the firm's decisions, which reflects positively on the feasibility of the firm's long-term decisions and the sustainability of ongoing projects. (2) The shareholders' patience complements the effects of un-exercisable stock options and accentuates alignment between the firm's top management team and its shareholders, which reflects positively on the firm's long-term decisions and performance. (3) Shareholder patience significantly weakens the negative effects of CEO overconfidence on a firm's short-term and long-term value because patient shareholders are more likely to utilize governance-based solutions than market-based solutions. In conclusion, this paper underscores the influence of shareholder patience, an important organizational attribute, on the outcomes of a firm's decision-making and on the efficacy of a firm's executive compensation and corporate governance.

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