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**Corporate Performance, Corporate Investment and Corporate Financial Policy during
Severe Disruption: CEO Experience and Board Governance impact before and after
Global Financial Crisis**

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Abstract

This research investigates how a specific CEO characteristic, namely, CEO outside experience, and board governance influences firm performance, corporate investment, and corporate financing policy, and how this influence differs between a "normal" period and in the aftermath of a major crisis that significantly alters the business environment within which firms operate. The initial motivation for the meta research question is how US firms recovered very differently in the aftermath of the 2008 financial crisis. Whereas outside experience of a CEO could be a weakness during the pre-crisis period because he/she may be unfamiliar with specific characteristics of the firm that underpin its competitiveness and may lack trust of the board, outside experience may be a strength in the post-crisis, because it gives a CEO the ability to think out of the box and thus adapt better to the changed business environment in the aftermath of a (financial or other) crisis. Using a unique dataset of 2402 nonfinancial US firms that are included in the COMPUSTAT North America database, and matching information about various characteristics of their CEOs that are included in the BoardEx database, we explore this issue over the 2000-2019 period. Specifically, we explore the relationship between CEO outside experience and (a) accounting measures of firm performance (Chapter 3), (b) strategic decisions of firms such as those about investment (Chapter 4), and (c) financial decisions of firms such as cash holdings (Chapter 5). Our sample period and empirical strategy enable us to explore these relationships in both the pre- and post-crisis periods.

In this research, I also explore the relationship between board governance and firm performance, strategic investment and cash holding, as well as the moderating role of board governance on the relationships between CEO outside experience and these outcome variables. In my analysis, board governance is a summative measure that incorporates board characteristics such as board size, board independence, CEO duality and busy directorship. Board governance positively moderate the relationship between CEO outside experience and firm performance in pre-crisis but insignificant in post-crisis because the monitoring role of a board is more crucial during pre-crisis period, while advising or other roles of a board

becomes more important in the post-crisis full of uncertainty and volatile. For strategic investment, board governance negatively moderates between CEO outside experience and capital expenditure during pre-crisis period in terms of monitoring role of a board but positively moderates the relationship in the post-crisis to collaboratively work with a CEO with outside experience in terms of advising role. However, the findings regarding total investment are in contrast to the results of the firm's capital expenditure, to reduce agency problems in the pre-crisis and to avoid further loss in the post-crisis with limited financial resources. For financial decisions, board governance positively moderates the relationship between CEO outside experience and cash holdings during pre-crisis period in terms of agency motive, but negatively moderates the relationship in the post-crisis in terms of precautionary motive.

The empirical strategy for the research draws on existing literature (e.g., Bhaumik and Selarka, 2012) and uses a model specification that is both consistent with the literature and also consistent across the three empirical chapters. I examine the robustness of the baseline results using alternative outcome variables, and correct for unobserved heterogeneity using appropriate fixed effects, as well as for potential endogeneity using 2SLS and GMM, where necessary. The analysis also explores whether the estimated relationships are influenced by the financial constraint experienced by the firms, as measured by the Kaplan-Zingales index, and the risk of bankruptcy, as measured by the Altman's *z-score* measure.

The empirical results reported in this dissertation are broadly consistent with the hypotheses that CEO outside experience has statistically significant relationships with the aforementioned outcome variables, and that the nature of the relationships between CEO outside experience and these outcome variables differ between the pre- and post-crisis periods. In Chapter 3, I find that CEOs with outside experience negatively affect firm performance in terms of ROA and ROE in pre-crisis but insignificant in post-crisis. Aforementioned intuition regarding the different influence of CEO outside experience between pre- and post-crisis, my subsequent findings provide support to this intuition.

Specifically, during pre-crisis periods, CEOs with outside experience tend to lack in-depth understanding of the company's core competencies and often are not well-integrated with the existing top management teams and boards. This emphasizes the critical role of the board's monitoring function during such times. Whereas in the post-crisis, my results indicate that, in volatile and uncertain business circumstances, CEOs—regardless of their experience—face uniform challenges in effective management. This underscores the elevated importance of the board's advisory and other functions in such turbulent times. Notably, my findings indicate that board governance does not have a direct impact on firm performance, either before or after a crisis, reinforcing the different moderating role that boards play in different situations. Moreover, board governance positively moderates the relationship between CEO outside experience and firm performance in pre-crisis because CEOs with outside experience are more likely to pursue their own self-interest, but board governance can help to mitigate agency problems and thus improve firm performance. Whereas the moderating impact of board governance is insignificant in post-crisis because boards often lack the necessary information, knowledge, and expertise to effectively monitor the company in volatile and noisy business environments. The findings suggest that the monitoring function of board governance (i.e., Agency theory) is more significant in the pre-crisis period, compared with post-crisis. Additional test indicates that CEO outside industry experience is more likely to enhance firm performance in post-crisis.

In Chapter 4, the results show that the impact of CEO outside experience, corporate governance on corporate investment matter differently between pre-and post-crisis. Specifically, CEOs with outside experience are more likely to invest less in capital expenditure but invest more in R&D for strategic changes to improve competitiveness in post-crisis. Whereas CEOs with outside experience invest more in capital expenditure but invest less in R&D/total investment due to agency problems in pre-crisis. Furthermore, board governance positively moderates the relationship between CEO outside experience and capital expenditure in post-crisis but negatively moderates the relationship in pre-crisis. While board governance negatively moderates the relationship between CEO outside

experience and total investment/R&D in post-crisis but positively moderates the relationship in pre-crisis. The contradicted results between capital expenditure and R&D/total investment are probably due to the fact that capital expenditure, involving developing tangible assets, is easier to justify, while R&D is considered riskier and less certain in creating concrete value. Additional test for sub-sample analysis indicates that CEO outside experience and board governance influence corporate investment decisions differently between pre- and post-crisis, which largely driven by different mechanisms, such as financial constraints and bankruptcy possibilities. Interestingly, financial constraints can also help mitigate agency problems within the company. CEOs with outside experience have a more significant impact in financially constrained firms, while board governance is more important for firms with a higher possibility of bankruptcy.

In Chapter 5, the results show that the impact of CEO outside experience, board governance on corporate financial policy change between pre- and post-crisis. In pre-crisis, CEOs with outside experience are likely to hold less cash due to agency motive to pursue self-interest focusing on career and reputation. In post-crisis, CEOs with outside experience have precautionary motive to hold more cash waiting for future profitable opportunities and being buffer for unexpected downturn. On the other hand, CEOs with outside experience are more likely to use leverage to invest more for strategic change with tax shield in the post-crisis period because they can access outside funding in a changing business environment but have no influence over the amount of leverage the company takes on in pre-crisis. In pre-crisis, board governance enhances the influence of CEOs with outside experience on firms' cash holdings and leverage, as boards have confidence in these CEOs' competence and collaborate more closely with them. However, after a crisis, board governance dampens the impact of such CEOs on financial policies. This is because CEOs become more cautious, preferring to hold more cash, while boards encourage to use these reserves for strategic change and eventually benefit shareholders. Additional tests regarding different mechanisms show that these results are largely driven by companies suffering from high financial constraints to reduce financial cost, and low/medium bankruptcy risk to avoid loss.

The research contributes to the exiting literature from both conceptual and practical perspectives. First, using the specific example of CEO outside experience, it highlights the discontinuity that may exist between the impact that intangible resources of firms may have on firm strategies and firm performance between “normal” or pre-crisis periods and post-crisis periods when there is a significant change in the business environment. This has significant implications for the wider literature on the resource-based view (RBV) of the firm. Second, using the specific example of board governance, it highlights a similar discontinuity that may exist between the direct and moderating impacts of board governance between pre- and post-crisis periods, and thereby adds to the discussion about the role of the board in different contexts, specifically, whether the monitoring role of the board is optimal in all business environments. Finally, both of these conceptual contributions have significant practical implications about how firms that operate in contexts of large economic shocks and significant changes to their business environment may want to think about the role and choice of CEOs, as well as about the role of their boards.

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Declaration

I declare that the thesis is completely based on my own research. I also declare that all information has been obtained and presented in accordance with academic standards and ethical behavior. All the materials contained in the thesis have not previously been submitted for any other degree or qualification at this institution or any other.

Wei Zhang

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1. Chapter 1 Introduction

1.1 Motivation and contribution

The economic literature (e.g., Bloom, Sadun and Van Reenen; 2017; Bloom and Van Reenen, 2010) acknowledge how managers matter by arguing firms with “better” management practices tend to have better performance. But what they have done is to look at management practices across different countries and which of countries have great managerial practices vary by different companies specialized in different quality of management. At this point, management input is not static because the business environment in which the organisation operates is constantly changing. Therefore, the nature of the managerial practices may also have to change and the attributes of the managers that matter who provide positive input to the company may have to change as well.

Managers clearly play a crucial role in determining the competitiveness of companies, the performance, and strategic decisions they make. Therefore, how managers adapt to the changed circumstance matters as the rules of the game change. In other words, previous things are renewed and no longer valid due to the uncertainty. Then what managers do and how they react can be very important as well. Strategic management theory in particular, the literature on dynamic capabilities (e.g., Helfat & Peteraf, 2009; Teece, 2007, 2018) emphasizes that strategic changes for both organization and environment fit to improve firm performance on account of the differences in the ability of managers responds to threats and opportunities by reshaping their companies in some way such as reorient the focus and internal resources (e.g., Schilke, 2014; Teece et al., 1997; Teece, 2007; Zahra et al., 2006). Adner and Helfat (2003) introduce the concept of dynamic managerial capabilities to support the finding of heterogeneity in managerial decisions and firm performance in the face of changing external conditions. In that sense, dynamic capabilities matter. What dynamic capabilities do is to open the “Blackbox”¹, but this is not the focus of my research. In this research, we, therefore, focus on the managers.

¹ Teece (2018, pp.40-49) presents a framework in which “[DC] and strategy combine to create and refine a defensible business model, which guides organizational transformation (pp. 44).” The framework involves three distinct aspects of DC,

External shocks are significant changes in firm's environment derived from shifts in demand, supply, regulation, and innovation, which can destroy established source of competitive advantages (Argyres, Mahoney & Nickerson, 2019; Wang & Shaver, 2014). The global financial crisis of 2008, as a major exogenous shock, has resulted in great economic recession and dramatically changing business environment across countries, which made many firms facing tough circumstance for survival and recovery under the environment full of uncertainty. Some firms are better able to recover from the financial crisis with cautiously strategic plans and actions (Erkens et al., 2012), while others with non-strategic decisions may produce slow and weak recovery, or even accelerate the poor performance of companies (Fiegenbaum and Thomas, 1988; Gary, Wood and Pillinger, 2012). The observation motivates me to question whether this is on account of heterogeneity in the capability of managers to successfully steer a company in an environment of uncertainty when earlier rules of the game do not apply.

The literature on upper echelons theory (e.g., Ali et al., 2004; Hambrick, 2007; Hambrick, & Mason, 1984; Quigley & Graffin, 2017) posits that organization's strategic choices and performance reflect top executives' characteristics, such as top executives' values, experiences, and cognitive bases. In this research, I focus on CEOs as a proxy for upper management in keeping with the upper echelon theory (Adner & Helfat, 2003). CEO is a big resource for a company, which, in some sense, relates to resource-based view (RBV) considering UET and big intangible aspect such as CEO gender, education and experience. Several scholars have recognised managerial experience affects firm behaviour (Kor, 2003, Bach & Smith, 2007, Holmes & Schmitz, 1996), as experienced managers are likely to have better insights into future business opportunities and threats (Shane, 2000), products, technologies, or market development (Helfat & Liebermann, 2002). Particularly, Balsmeier and Czarnitzki (2014) investigate how industry-specific managerial experience influence firms' innovation performance in different institutional environments, by reducing uncertainty or by providing knowledge. This leads me to question whether managerial

namely, sense (i.e., identifying opportunities and threats), seize (i.e., designing and refining the business model and committing resources), and transform (i.e., aligning existing capabilities and investment in additional capabilities).

experience within an industry, which is an intangible resource and is positively correlated with firm performance during "normal" times may become a liability once the rules of the game change or, conversely, whether non-industry experience gives managers the ability to think outside the box that is an asset when old rules of the game do not apply. Even if existing literature focus on education, gender, and many different aspects of CEOs (Faccio, Marchica & Mura, 2016; Khan & Vieito, 2013; King, Srivastav&Williams, 2016), I, therefore, focus on CEO experience----i.e., outside experience to think out of box, particularly when past knowledge is no longer an indicator where firms are going to go in the future.

Although this research focus on the role of the CEO in a changing business environment, CEOs do not operate in a vacuum and are accountable to the corporate board that are constituted ways that should, in principle, reduce agency costs. The effective governance practices stem from the agency theory perspective, where the primary function of a board is to monitor the management and reduce agency cost due to conflict of interest between shareholders and managers (Jensen & Meckling, 1976; Mitton, 2002; Shleifer & Vishny 1997; Sawicki; 2009). A primary implication of agency theory is that failing to reduce the agency cost leads to a drain of the firm's resources, thereby putting the firm at a competitive disadvantage (Karake, 1995). The monitoring functions of the board governance may include ratification of significant decisions, the threat of management entrenchment (Bhatt &Bhatt, 2017).

In contrast to agency theory, Donaldson and Davis (1991) propose stewardship theory suggesting that managers work to maximize shareholder value in the role of advising rather than pursuing their self-interest and thus lead to better organizational outcomes, more effective governance. More recent literature on corporate governance attaches importance to stewardship theory perspective (Kyere & Ausloos, 2021; Yusoff & Alhaji, 2012). This motivates me to question whether the nature of board governance itself changes when the business environment changes rapidly, not least because company performance during such a

period is a noisy signal of a CEO's effort/managerial abilities. I, therefore, argue that during "normal" times board governance may largely be a monitoring/disciplining mechanism, related to agency cost, while during a changed business environment and heightened uncertainty the board may play a more supportive role, e.g., by supplementing the information set and experience of the CEO.

The result of lacking value creation and destroying value has been generally explained by both managerial capability and agency problems (Alexandridis et al., 2017; Ben-Amar and André, 2006; Bhaumik and Selarka, 2012; Helfat & Peteraf, 2015; Somsing & Belbaly, 2017). The focus of the current research, therefore, is on how top manager characteristics (i.e., CEO experience) and the role of board governance affect performance, strategic investments, financing of companies, and how this relationship changes between pre- and post-crises periods.

Our study contributes to literature in several ways. First, the biggest contribution lies in the discontinuities (i.e., pre-crisis and post-crisis) because of the crisis. Since what is good for a normal period is not necessarily the right what works for business when there is a big change in the environment in which firms operate. In other words, what matters early and weighted early does not matter after the crisis. Second, I contribute to the vast literature on the determinants of firm performance, particularly the role of managers in firm performance (Baker and Wurgler 2012; Bloom, Sadun and Reenen, 2017), corporate investment (Keil, 2004; Lichtenstein & Brush, 2001; Shrader & Simon, 1997) and corporate financing (Korkeamäki, Liljeblom & Pasternack, 2017; Muhammad, Bany-Ariffin and Cheng, 2018; Sheikh, 2019) theoretically as well as empirically. Existing literature emphasizes CEO experience between CEO general experience and functional experience (Rodenbach & Brettel, 2012; Li & Zhang, 2007). However, in this research, I focus on CEO outside experience representing whether CEOs can think out of box to adapt to the dynamic environment, considering the changed business environment. Third, this study contributes to a growing stream of studies examining the impact of board governance (e.g., Arora and

Sharma, 2016; Judge et al., 2003; Orbay & Yurtoglu, 2006), which focus on the direct impact of board governance. This study emphasizes the moderating impact of board governance on the relationship between CEO experience and performance, investment, and financing of companies, and how the impact differs between normal and turbulent period.

1.2 Context and Data

I conduct the empirical analysis using a sample of 2402 large US companies across all industries excluding utilities and financial industries during 2000-2019. The context of analysis is the US economy around the 2008 financial crisis during different periods. In this research, the context of analysis is the US economy around the 2008 financial crisis, followed by how the resultant uncertainty and a change in the rules of the game after the crisis in response to capital outflows and fall in profits (Sawicki, 2009), and the need for improved financial stability, increased transparency, risk management practices, and corporate governance (Acharya & Richardson, 2009; Gorton & Metrick, 2012). Because CEO is the crucial decision-maker in daily operations and the conflicts of interest between shareholders and managers in terms of managers' self-interest pursuit result in dramatic concern for corporate strategic decisions (Bosse and Phillips, 2016; Cheffins and Bank, 2009; Guariglia and Yang, 2016; Jensen and Meckling, 1976). The theory of upper echelons (Hambrick & Mason, 1984) supposes that differences in information, experience, and perspective may be beneficial when making decisions in turbulent environment (Hambrick & Finkelstein, 1987; Hambrick, Finkelstein, & Mooney, 2005; Rost & Osterloh, 2010). Whereas, in stable environment, homogeneous TMTs might be more advantageous within stable environment, such as making faster decisions and more capable of debating complex issues (Knight et al., 1999; Pelled, Eisenhardt, & Xin, 1999; van der Walt & Ingley, 2003). The result of lacking value creation and destroying value has been generally explained by agency problems due to the separated ownership and control (Alexandridis et al., 2017; Ben-Amar and André, 2006; Bhaumik and Selarka, 2012). Therefore, this research focuses on the specific factor---i.e., managerial quality (CEO characteristics) and board governance, which could prevent companies from sustaining competitiveness and achieving their expected benefits in the

aftermath of 2008 financial crisis. Therefore, I separate the investigation period ----i.e., pre-crisis (2000-2007), Post-crisis (2009-2011) and Post-crisis 2 (2012-2019) for three main reasons: (1) the discontinuity make it more appropriate to identify the changed role of the CEO experience and board governance; (2) according to the literature on M&A, it helps to distinguish the period for strategic decision-making (Post-crisis 1) and the period for firm recovery (Post-crisis 2); (3) Financial crisis as a natural experiment reduce the reverse causality.

The study, using information related to financial statistics, CEO characteristics, and corporate governance, is based on annual data on U.S. publicly traded firms available on Standard and Poor's Compustat-North America database and BoardEx Compustat's firm-level microdata is widely used in the literature, which includes the operations, market, and financial conditions of businesses in North America (Lu, Wang & Lee, 2013). Additionally, we obtain comprehensive executive and director status data from BoardEx (Tian and Twite, 2011), the premier database on board composition of publicly traded firms, which covers roughly 10,000 firms in nearly 50 countries, in order to generate firm-level corporate governance measures related to CEO and board characteristics (Erkens et al., 2012). Lastly, we match firms across the BoardEx database and the Compustat database using the CIK code (Fang et al., 2018; Meyer-Doyle et al., 2019). The empirical analysis is concentrated on all industries, with the exception of financial firms (SIC codes 6000 to 6999) and utilities (SIC codes 4900 to 4949). This is because high leverage in non-financial firms indicates distress but is normal in financial firms and utilities have a much closer relationship to the state (DeAngelo et al., 2004; Fama and French, 2001; Gatchev et al., 2009; Serfling, 2014).

1.3 The Structure of the Study---Individual Empirical Chapters

CEOs play both an entrepreneurial role requiring strategy formulation and resource integration and a managerial position including day-to-day business management and strategy implementation (Li & Patel, 2009; Penrose, 2009). Importantly, the CEO influences a wide

range of strategic company-related behaviours and outcomes in terms of their characteristics (Harris & Helfat, 1997; Miller, Xu, & Mehrotra, 2015).

Chapter 3 (the first empirical chapter) explores whether CEO outside experience have different impact on firm performance before and after the financial crisis, and whether the moderating effect of board governance on this relationship changes between pre- and post-crisis periods. I have used multiple proxies for firm performance such as ROA, ROE, and Tobin's q, and that used GMM to correct for potential endogeneity concern. The results show that the impact of CEO outside experience and board governance matters differently between pre-crisis and post-crisis period.

The study indicates that in the pre-crisis period, CEOs with outside experience have a detrimental effect on firm performance, specifically in terms of Return on Assets (ROA) and Return on Equity (ROE). This lends evidence to the hypothesis that such CEOs often suffer from a lack of in-depth understanding of the firm's core competencies, limited familiarity with the company, and inefficient integration with the existing top management team in a stable environment. Conversely, in the post-crisis environment characterized by heightened volatility and uncertainty, the performance impact of CEOs, regardless of their experience origin, becomes statistically insignificant. This suggests that CEOs are uniformly challenged in identifying the appropriate strategic decisions and actions in such a turbulent business environment.

Additionally, there is no direct relationship between board governance and firm performance before or after a crisis. Moreover, prior to the crisis, there was a positive moderating effect of board governance on the relationship between outside experience of the CEO and firm performance. This is because CEOs who possess outside experience are more likely to act in their own self-interest, but board governance can help to reduce agency problems and enhance firm performance. However, in the post-crisis period, the moderating effect of board governance is negligible since boards frequently lack the information, expertise, and

background knowledge needed to effectively monitor the company in a turbulent and chaotic business environment. The results imply that, in comparison to the post-crisis time, the monitoring role of corporate governance—that is, agency theory—was more important in the pre-crisis period. According to additional testing, a CEO with outside industry experience is more likely to improve the performance of the company after a crisis. Because CEOs with outside experience are more prized for their comparatively novel expertise, view, and skills that CEOs with outside firm experience, which makes CEOs more able to formulate and implement strategic change to adapt in the changed business environment. (Harris and Helfat, 1997; Zhang and Rajagopalan, 2010). Our main results are robust to endogeneity concerns. The results also hold across different measures of firm performance.

Then in **Chapter 4 (the second empirical chapter)** I look underneath the hood and focus on factors that are generally correlated with long term competitiveness and performance, and those that are associated with strategic directions that a firm (i.e., its upper management) take. Therefore, this chapter explores whether outside industry experience of CEOs have different impact on corporate investment before and after the financial crisis, and whether the moderating effect of corporate governance on this relationship changes between pre- and post-crisis periods. I address the potential endogeneity concern using GMM the two-stage least squares (2SLS). I have used multiple proxies for corporate investment such as capital expenditure, total investment, and R&D.

I find that CEOs with outside experience invest more R&D in post-crisis with purpose of strategic change to enhance a firm's competitiveness in turbulent environment (Shaikh et al., 2018), but invest more in capital expenditure, less total investment, and less R&D in pre-crisis as they are cautious and risk averse regarding agency problems in stable environment. Besides, board governance negatively affects capital expenditure and positively affect R&D in post-crisis, but positively affect capital expenditure and negatively affect R&D in pre-crisis. Boards are generally more short-sighted in stable period but are motivated to plan for the long-term in volatile periods. However, board governance doesn't directly influence the

overall level of corporate investment. Furthermore, board governance positively moderates the relationship between CEO outside experience and capital expenditure in post-crisis but negatively moderate the relationship in pre-crisis. While board governance negatively moderates the relationship between CEO outside experience and total investment/R&D in post-crisis but positively affect the relationship in pre-crisis. The results show a contradiction between capital expenditure and R&D/total investment. This is likely because capital expenditure, which involves building tangible assets, is easier to justify, while R&D is considered riskier and less certain in creating concrete value. Additional test for sub-sample analysis indicates that CEO outside experience shapes corporate investment decisions differently between pre- and post-crisis. The results are greatly driven by different mechanisms---i.e., financial constraints and bankruptcy possibilities.

In Chapter 5 (the third empirical chapter), I finally turn to corporate financial decisions and focus, in particular, on cash holdings and leverage that are important in the context of a post-crisis world where liquidity is an issue. In the relevant literature (Schopohl, Urquhart& Zhang, 2021; Sheikh, 2019). I address the potential endogeneity concern using GMM. In pre-crisis, CEOs with outside experience tend to hold less cash, due to self-interest like career concerns and reputation. In post-crisis, such CEOs are more cautious and hold more cash for future opportunities. Meanwhile, CEOs with outside experience doesn't affect the level of firm leverage in pre-crisis, but afterwards, they're more likely to use leverage for strategic changes. As for the board of directors, they're generally more cautious after a crisis, preferring to hold more cash as buffer to deal with unexpected issues. The board also monitor CEO's self-interest pursuit, especially in pre-crisis, encouraging CEOs to invest more and hold less cash. As for triple interaction, boards positively moderate the relationship between CEO outside experience and corporate cash holdings/leverage in pre-crisis period, because boards are more likely to trust and collaborate with outside CEOs with great competence. However, after a crisis, the influence of the board turns negatively moderate the relationship between CEO outside experience and corporate financial policies. This shift occurs because

while CEOs become more cautious, preferring to hold onto cash, boards monitor CEOs to use more cash strategically benefit shareholders.

In the research, CEO outside experience shapes corporate financial policy differently between pre- and post-crisis. The results show great difference under different mechanisms---i.e., financial constraints, bankruptcy possibilities and growth opportunities. The study finds that these relationships are largely driven by firms with high financial constraints and low-to-medium bankruptcy risk, signalling agency problems in pre-crisis and precautionary behaviour in post-crisis. Interestingly, financial constraints can act as an alternative of board governance to mitigate agency issues. The results offer a detailed understanding of how a CEOs outside experience can differently affect a company's financial policy before and after a crisis. These insights are crucial for managerial decisions, especially in planning executive succession and adjusting financial policies in response to external shocks.

1.4 Philosophical and methodological positioning

This research is studied in terms of ontology, referring to the authenticity of the information from data and the understanding of its existence, which could influence the behaviors of firms. The Philosophical approach of the research is positivist and deductive study.

According to DC, this research focuses on the characteristics of top executives, which is, in some sense, intangible resources of firms from RBV perspective. Upper echelon theory leads me to focus on CEO, particularly CEO outside experience to think out of box. CEOs do not operate in a vacuum and are accountable to the corporate board that are constituted ways that should, in principle, reduce agency costs or provide advice to CEOs. We, therefore, focus on agency theory/stewardship theory to explain it and come up with the research questions. As noted, before, we have a number of observations that financial crisis leads to disruption and thus severe consequences, such as demand reduction, unemployment increase, and credit crunch. In addition, some firms may survive from the crisis and recover to the pre-crisis level eventually, whereas others may go out of business. Therefore, we would like to deeply understand firms with which good managerial qualities are more likely to recover faster---i.e.,

better firm performance with certain changes by strategic investment and corporate financing decisions.

This research aims to explore whether outside industry experience of CEOs have different impact on firm performance, strategic decisions---i.e., corporate investment and corporate financing decision before and after the financial crisis, and whether the moderating effect of corporate governance on this relationship changes between pre- and post-crisis. governance on firm performance, strategic decisions---i.e., corporate investment and corporate financing decisions change between pre- and post-crisis. Whether financial constraints, bankruptcy possibility and growth opportunities influence the relationship and find the explanations measuring the accepted knowledge by testing related hypotheses. We therefore use secondary data collected from Compustata and BoardEx database and use statistical analysis in terms of OLS regression model to get quantitative results (Research Onion, 2018). Accordingly, this is archived research based on the archived secondary data, which allow us to collect sufficient and reliable data to explain changes happening over the long span in terms of the financial crisis. As noted above, we use quantitative method and cross-section dataset across several years, such as pre-crisis (2000-2007), immediately after the crisis (2009-2011), and post-crisis period (2012-2019) to conduct the research. Overall, my research is positivist, deductionist, and uses a quantitative methodical approach using archival data, which is longitudinal in nature.

2. Chapter 2 Global financial crisis (GFC) of 2008

2.1 Background

According to the financial data of time-series graph marking U.S. recessions in **Figure2-1**. and existing literature, the financial crisis shared certain characteristics as follows: deep and prolonged asset market collapses, profound declines in real output reflected by Industrial Production Index in **Figure 2-2**, dramatic decrease in employment indicated by unemployment rate in **Figure 2-3**, a period deflation suggested by the decreased Customer Price Index in **Figure 2-4**. Besides, The CBOE Volatility Index (VIX), popularly known as

“Wall Street’s fear gauge”, dominates risk-management models in finance and reflects investors’ anxiety and complacency. **Figure 2-5** presents that the highest value of VIX occurred (the greatest volatility on S&P 500 during crisis (2008), which indicates a sign that investors (e.g., business, individuals) were feeling anxious during the crisis. Therefore, we argue that major exogenous shocks, such as financial crisis of 2008 and current COVID-19 pandemic recession raise alarms for us that we live in a world of *uncertainty* that could carry significant risk for business and highlight the importance of adapting to the challenging environment in terms of what drives uncertainty and how that affects volatility.

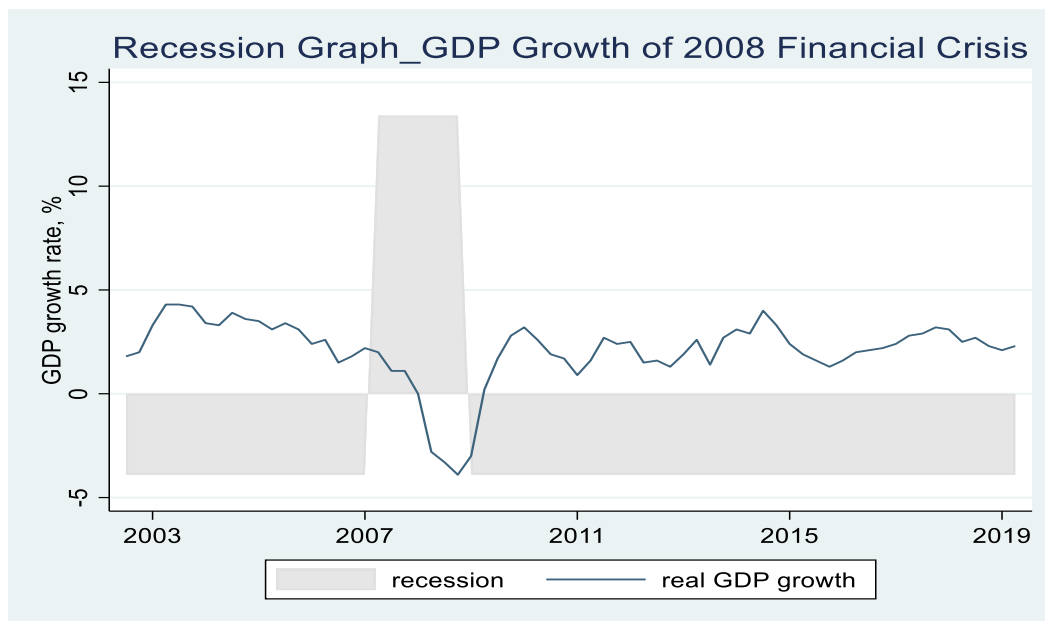


Figure 2-1. Time-series marking U.S. recessions of 2008 financial crisis (FRED data)

Note: Recession that holds a value equal to the maximum growth rate when USRECQM (recession indicator) equals one and holds the minimum growth rate when USRECMQ equals zero.

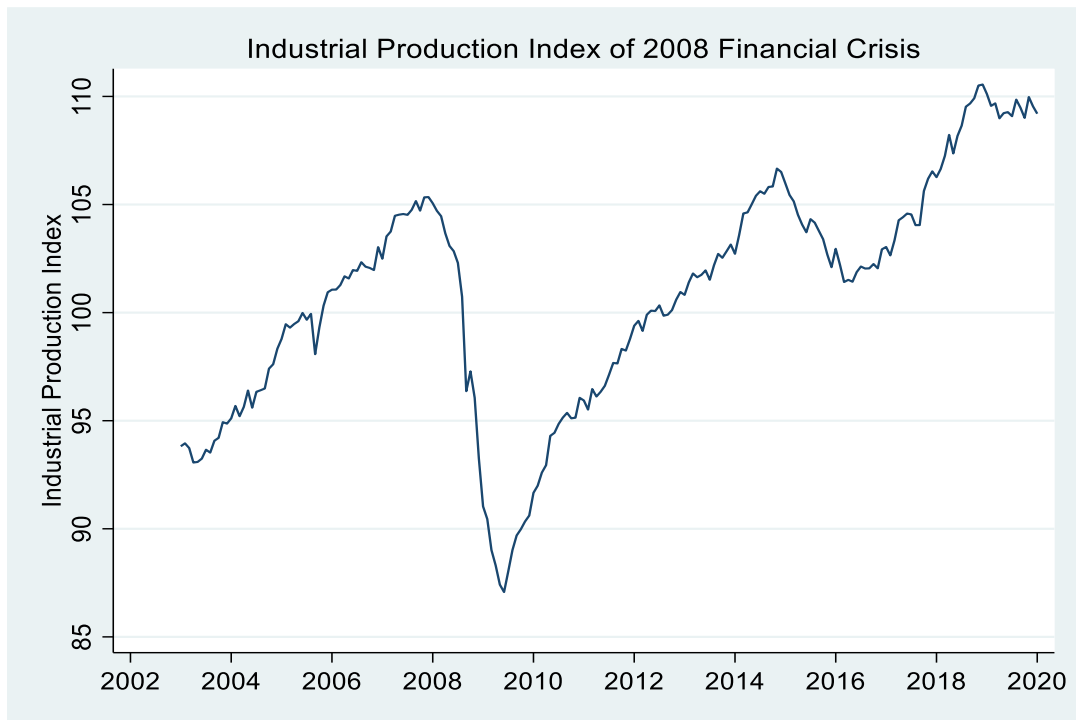


Figure 2-2 Industrial Production Index of 2008 Financial Crisis

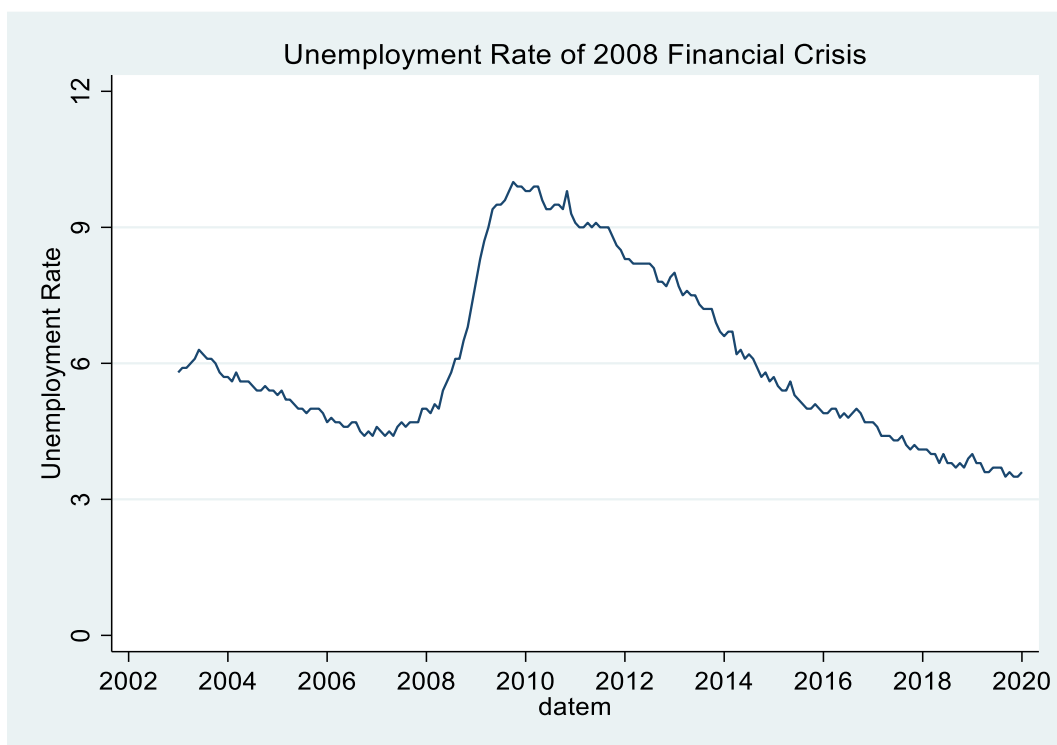


Figure 2-3 Unemployment rate of 2008 Financial Crisis

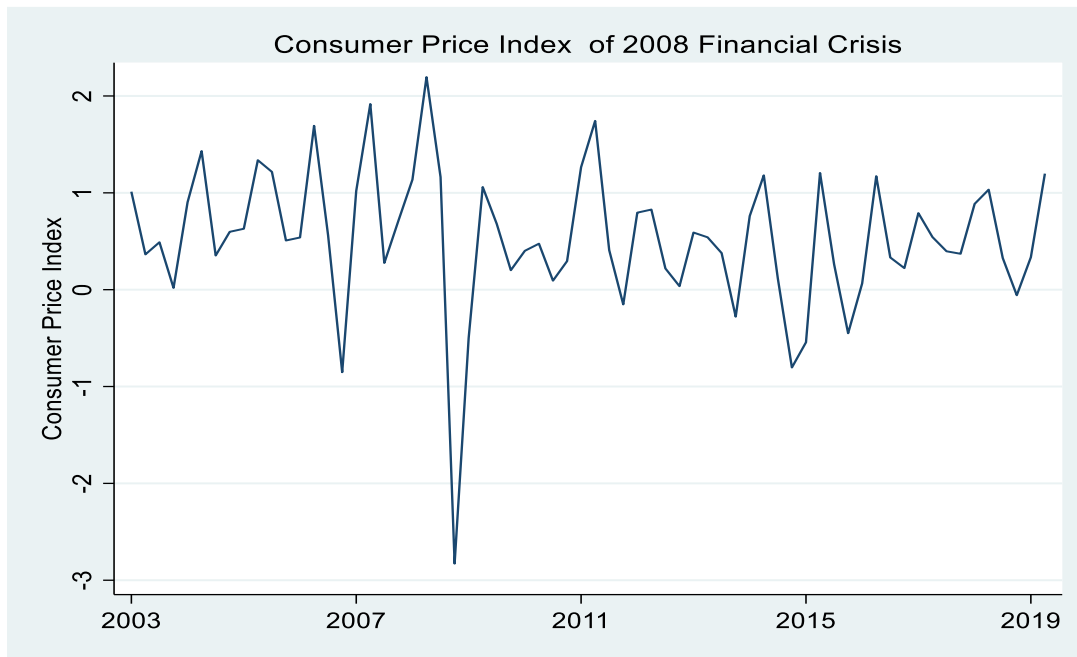


Figure 2-4 Consumer Price Index of 2008 Financial Crisis



Figure 2-5 CBOE Volatility Index: VIX U.S.

The Global Financial Crisis (GFC) of 2008 can be a good example of a huge external shock in the competitive business environment, which influenced almost all industries driving

companies to change their strategies for the purpose of survival and recovery (Pollard & Hotho, 2006). The financial crisis of 2008, as the only major and sudden exogenous shock recently prior to COVID-19 pandemic in the competitive business environment, has resulted in great economic recession and dramatically changing business environment across countries, which toughly influenced almost all industries driving companies to change their strategies for the purpose of survival and recovery (Pollard & Hotho, 2006). In addition, GFC has long-lasting impact on an economy and the strength and speed of recovery depends on the severity of the recession and financial crisis. The US economy was severely hit during the financial crisis due to the high level of profitability in the mortgage industry (Mizen, 2008). The major crises all confronted the global economy and severely hit the United States, particularly the financial system. Therefore, I study US firms because it is where the crisis started, and it provides a stable context and ample research data for my research.

2.2 Consequences of GFC of 2008

The financial crisis of 2008 has been the most severe global financial crisis and economic downturn since the 1930s Great Depression. It began in September 2008 with the sudden bankruptcy of Lehman Brothers, which was caused by the collapse of the US real estate market and the default of us subprime mortgage customers in U.S. financial institutions in August 2007 (Gregoriou, 2009). The global financial crisis of 2008 shocked the core global financial system and thus had a widespread effect on the global economy.

The crisis represents an unexplored negative shock to the contracted supply of external finance for non-financial firms because of the dramatic capital declines within U.S. financial sectors associated with write-downs of bad loans and plummeting values of collateralized debt obligations (Duchin et al., 2010). It led financial institutions to an increased interest in risk management and a lower capacity and preference to take on risks (Greenlaw, Hatzius, Kashyap, and Shin, 2008; Duchin et al., 2010). The liquidity deficiency in the financial sector could result in great difficulties to obtain or renew bank loans or made credit more expensive generally for non-financial industries, especially bank-financing dominant firms (Gorton,

2010; Kestens, Cauwenberge and Bauwhede, 2012). Consequently, when firms use external finance such as bank loans, debt and equity, a cost premium could occur given the imperfections in capital markets. There was a severe shock in 2008 and led to widespread financial constraints in terms of total credit and debt because there was a huge decline, presented in **Figure 2-6** and **Figure 2-7**.



Figure 2-6 Total Credit to Private Non-Financial Sector, Adjusted for Breaks, for United States



Figure 2-7 Nonfinancial corporate business; debt as a percentage of net worth, Level

Furthermore, reduction in customer demands² due to the financial crisis causes the decline of the net worth of companies, which worsens the terms on which they can borrow. Eventually, a sharp decline in demand can lead firms to suffer from losses, which can again make it more difficult for them to access debt markets since they may struggle with covenants for their existing debt. Moreover, there is a huge drop of GDP growth in 2008 in **Figure 2-1** and Wilshire 5000 Index measuring the total market return severely drop in 2008 presented in **Figure 2-8**, which indicates the severe decline of consumption expenditure and investment. In terms of the two indicators, there is an important move towards creating cost efficiencies within the firms, reducing shareholder value and lowering return on investments (Stiglitz, 2009).

² Kahle and Stulz (2013) demonstrate that a sharp decrease in demand leads to a large drop of capital expenditures, which subsequently makes firms require less financing and results in the decline of the debt issuance and equity issuance.

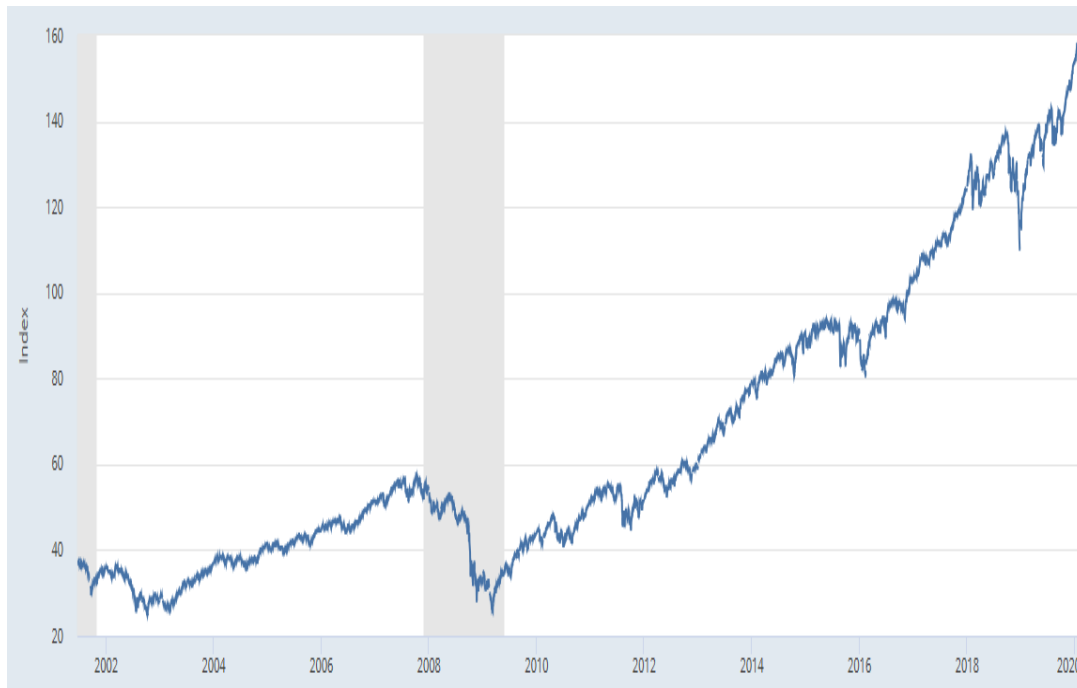


Figure 2-8 Wilshire 5000 Total Market Index of 2008 Financial Crisis

The financial crisis led to an increased uncertainty aggravated the drying up liquidity provided by financial institutions and thus widespread financial constraints, which highlights the significance of managerial ability in alleviating the financial constraints (Andreou, Ehrlich & Louca, 2014) and led to certain strategic activities to change the inefficiency of historic strategies (Grewal & Tansuhaj, 2001; Wan & Yiu, 2009). Mishkin (2011) argue that financial frictions were crucial for business cycle, which suggests that there is a heterogeneity of business cycle of companies before and after the crisis due to the widespread financial constraints in the aftermath of the financial crisis of 2008. Subsequently, GFC of 2008 severely affected corporate investment (Watts & Zuo, 2012), because new information illuminates a gap between a firm's target outcome and its expected performance in uncertain context (Cyert & March, 1963; Kirtle & O'Mahony, 2019; Levitt & March, 1988).

In terms of bank lending shock, it could be more difficult for firms to borrow from banks during the financial crisis. Although the influence on firm total borrowing depends on the ability of firms (e.g., managerial ability) to find substitute forms of credit, existing literature concludes that it is difficult and expensive for firms to access substitute sources to replace bank lending (Slovin, Sushka & Polonchek, 1993). As firms' financing conditions affect

corporate investment, we argue that financial constraints of firms in the aftermath of financial crisis, to some extent, reduce firm agency problems that may cause over-/under-investment (Wang, Chen, Chen & Huang, 2016). Therefore, it is necessary to compare the difference of managerial quality impact on firm performance and the role of corporate governance before and after the crisis because of the uncertain business environment and constraints firms face.

2.3 Firm heterogeneity caused by GFC of 2008

2.3.1 Different impact of financial crisis across industries

We verify how national GDP, unemployment, CPI, Industrial Production Index credit rating, and Wilshire 500 Total Market Index of firms is affected by GFC of 2008. As GFC of 2008 resulted in reduction in credit available, price conscious consumer spending, increase in unemployment, trend of establishing cost efficiencies within firms, reduction in shareholder value and lower return on investments (Stiglitz, 2009), we can conclude that GFC of 2008 strongly affected firm performance due to the uncontrolled input and uncertain output (Kunc & Bhandari, 2011). The figure about economic policy uncertainty index for US in **Figure 2-9** shows that there is greater uncertainty in the aftermath of the 2008 financial crisis.

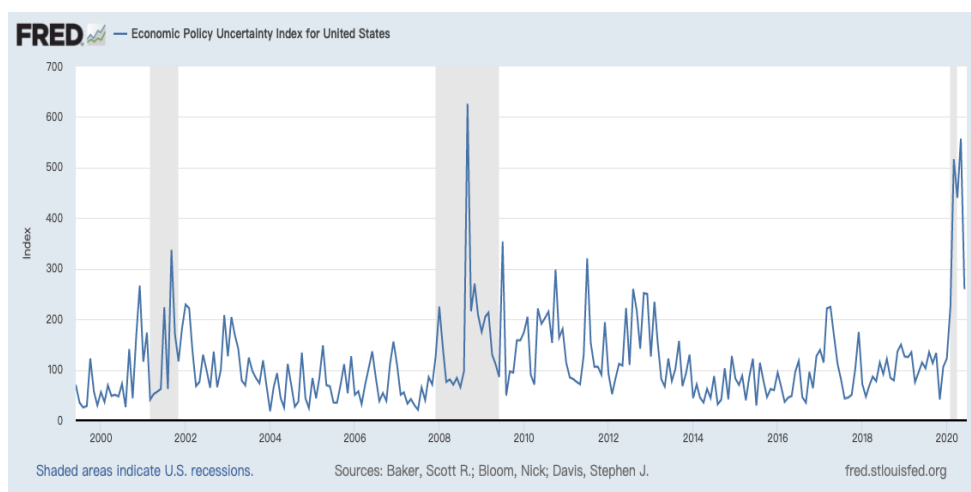


Figure 2-9 Economic Policy Uncertainty Index for United States (2000-2019)

Regarding the different characteristics across different industries, particularly resilience, firms in different industries suffer from GFC differently. **Figure 2-10 to Figure 2-13** show that firms are adversely affected by the systematic crisis (i.e., 2008 financial crisis) and the heterogeneous impact on firm varies across industries. Almost all industries suffer a drop from financial crisis, but the extent of the falling performance (ROA and ROE) varies across industries. Besides, some industries suffer huge fall in 2008, others suffered great decline in performance in 2009. In terms of the timeline, the financial crisis started in September 2008 Lehman Brothers Bankruptcy, but the financial crisis of the Great Recession worsened in 2009 and end in August 2009 (Vortelinos, 2016). We, therefore, argue that firms have had different degrees of exposure to GFC of 2008. Moreover, high uncertainty caused by GFC of 2008 significantly influences investors' attitudes and behavior and thus firm performance. Even though firms perform differently initially due to various reasons, we conjecture that strong firms can better respond to the pandemic due to different managerial capability.



Figure 2-10 Heterogenous impact of 2008 financial crisis on firm performance (ROA) across industries

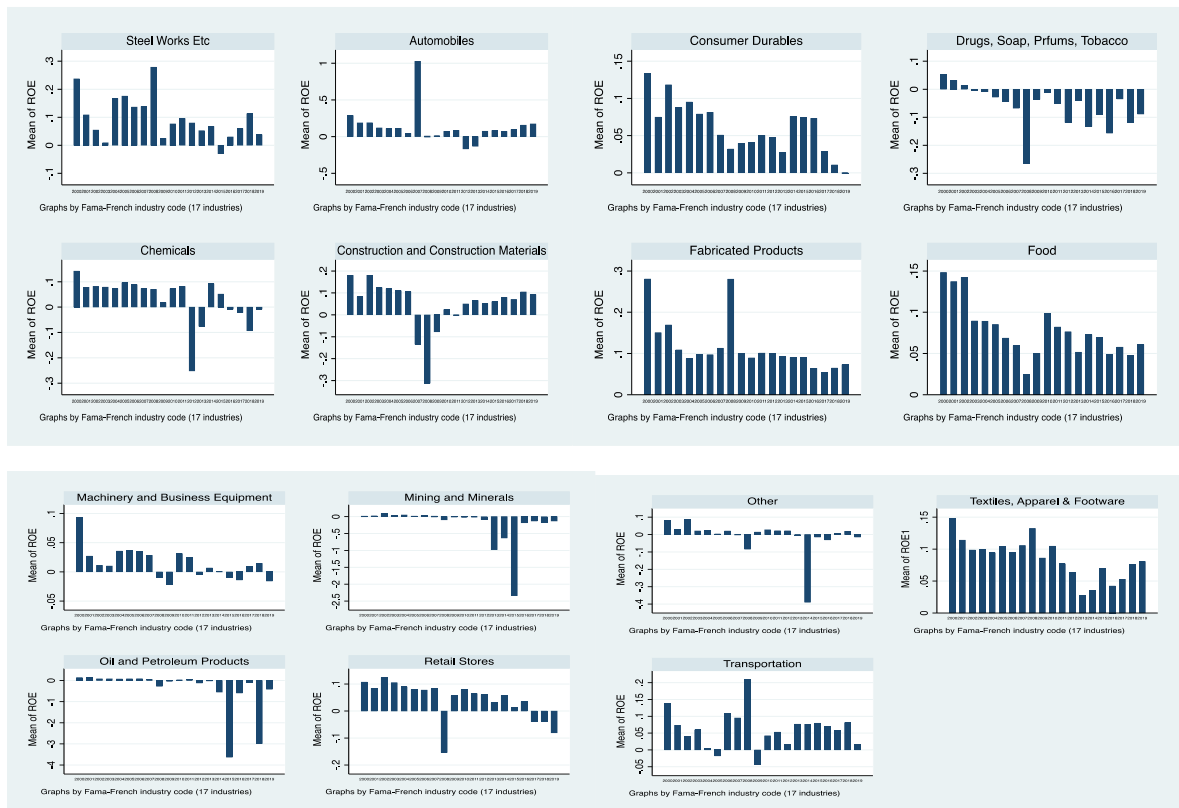
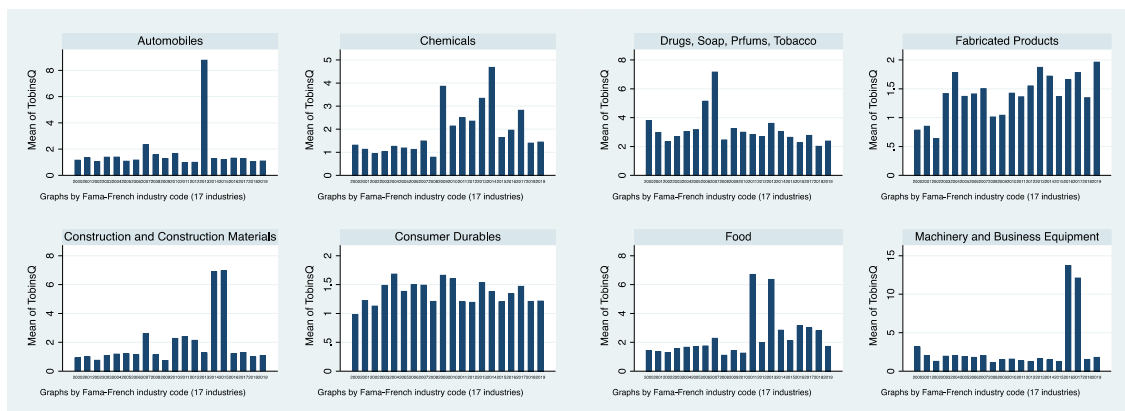


Figure 2-11 Heterogenous impact of 2008 financial crisis on firm performance (ROE) across industries



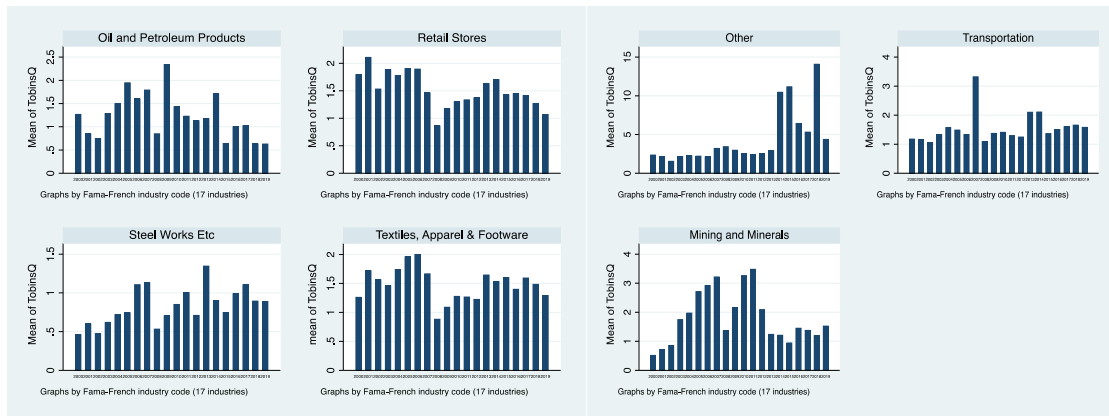


Figure 2-12 Heterogenous impact of 2008 financial crisis on firm performance (Tobin's Q) across industries

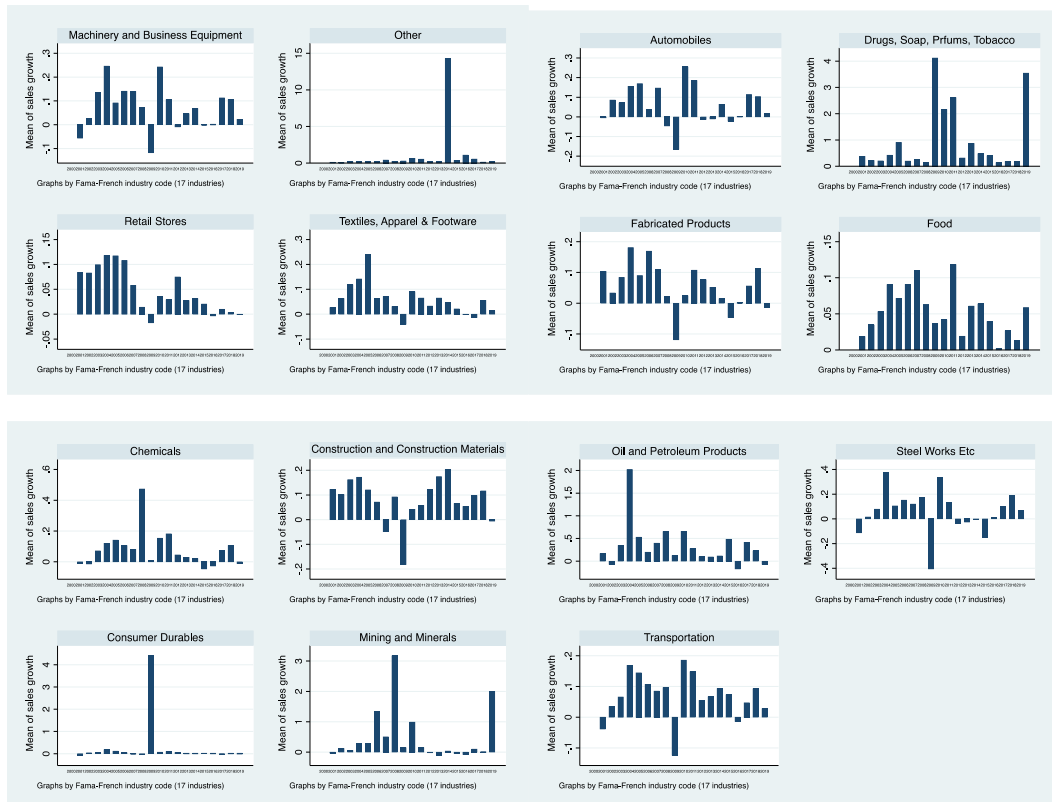


Figure 2-13 Heterogenous impact of 2008 financial crisis on firm performance (Sale Growth)

2.3.2 Different recoveries across industries after the financial crisis

The average recovery of firms after the financial crisis is different in different industries. I use sales in post-crisis divided by average 3-year period sales in pre-crisis (2005-2007) to compute the recovery rate presented in **Figure 2-14**. According to **Figure 2-14** and **Figure 2-11**, I observe that following the financial crisis of 2008, there is significant heterogeneity in

the recovery of firms to their pre-crisis level, even within industries. Some industries have decreased recovery rate immediately after the crisis but increase dramatically later, which shows a V-shape recovery. While other industries present a steady increase in recovery. From firm-level, some firms following disruptions, companies recover at different speed, presented in **Figure 2-15 and Table 2-1**. The sales recovery rate in post-crisis shows a growth trend for top firms (90 percentile firms) and a relatively stable trend for median firms (50 percentile firms), but a decrease trend for bad performing firms (10 percentile). Overall, it shows that some firms quickly recover from the crisis, while some firms take significantly longer to recover; and even may not recover at all. Carrière-Swallow and Céspedes (2013) argue that firms suffering severe drop in investment during the financial crisis may also experience a subsequent overshoot in activity, which leads firms to taking significantly longer to recover.

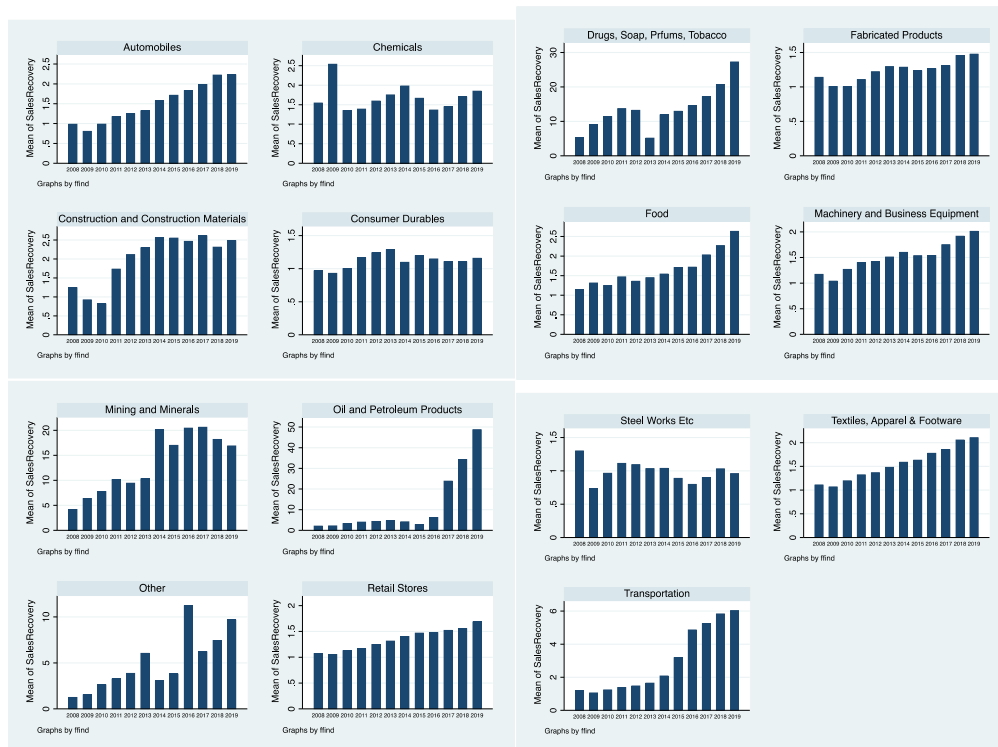


Figure 2-14 Heterogenous recovery of 2008 financial crisis on firm across industries (Sale Recovery Rate)

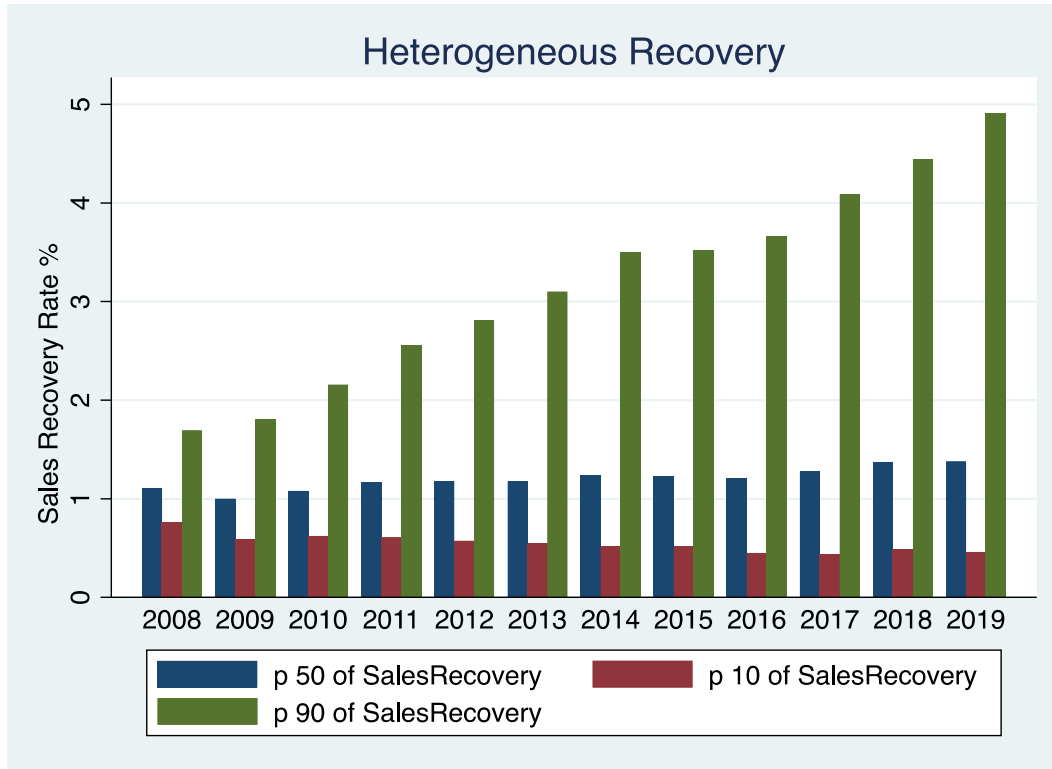


Figure 2-15 Heterogenous recovery rate between median companies, 10th and 90th percentile

Table 2-1 Heterogenous recovery rate between median companies, 10th and 90th percentile

Data Year	P10 Sales Recovery	P50 Sales Recovery	P90 Sales Recovery
2008	0.7642	1.1029	1.6936
2009	0.5877	1.0004	1.8024
2010	0.6236	1.0804	2.1557
2011	0.6099	1.1646	2.5535
2012	0.5740	1.1769	2.8084
2013	0.5509	1.1799	3.1006
2014	0.5181	1.2400	3.4979
2015	0.5158	1.2262	3.5172
2016	0.4502	1.2105	3.6586
2017	0.4366	1.2821	4.0858
2018	0.4887	1.3723	4.4433
2019	0.4615	1.3784	4.9094

In terms of bank lending shock, it could be more difficult for firms to borrow from banks during the financial crisis. Although the influence on firm total borrowing depends on the ability of firms to find substitute forms of credit, existing literature concludes that it is difficult and expensive for firms to access substitute sources to replace bank lending (Slovin,

Sushka and Polonchek, 1993). In addition to bank lending, Gorton (2010) presents how bonds that investors thought was safe had become risky, which led to a panic and to upheaval in the capital markets. Consequently, the shock led to the pursuit of quality, which reduced the supply of many forms of credit and made credit more expensive generally. Although the pursuit of quality increases the cost of capital of firms, firms also experience greater financial constraints in terms of the difficulty to borrow since credit markets are not able to function normally (Gorton, 2010). **Figure 2-16 and Figure 2-17** present that the distribution of financial constraints _i.e., KZ index) for firms across different crisis period and imply that the financial crisis led to widespread financial constraints.

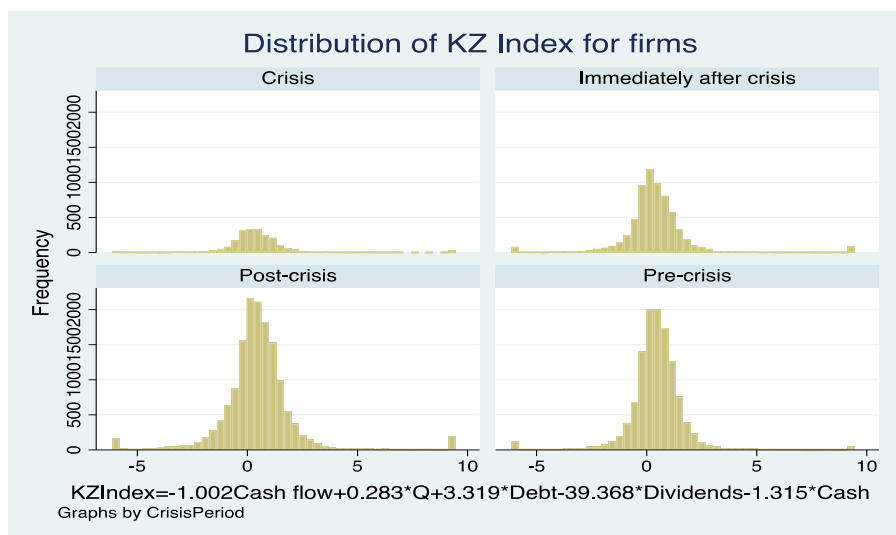


Figure 2-16 Distribution of KZ Index for firms

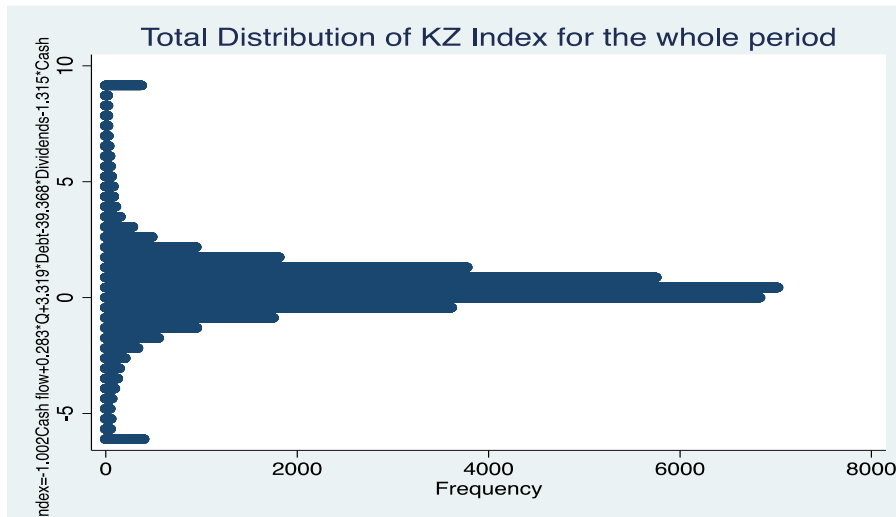


Figure 2-17 Distribution of KZ Index for the whole period

Therefore, we have two observations in terms of financial crisis of 2008 in Appendix I Graph 1 as follows:

Observation 1: The financial crisis of 2008 was widespread and severe, and hence almost all firms suffer from it due to the panic and to upheaval in the capital markets and other macro-economic environment.

Observation 2: As a consequence of the financial crisis, firms found it difficult to access external finance. However, it is quite likely that there was considerable heterogeneity in the resultant financial constraints, presented the Distribution of KZ index for firms in **Figure 2-16 and 2-17**.

The first observation identifies that the GFC of 2008 as an exogenous shock truly provides a changing business environment that firms have to struggle for survival and recovery by certain strategic changes. As almost all firms face different degrees of financial constraints, which motivated us to investigate how firms invest differently and perform differently in the face of different financial constraints in terms of their managerial quality and corporate governance.

In order to survive and prosper in the suddenly changing business environment, companies should continuously renew themselves and reform their business strategy. However, some firms are better able to recover from the financial crisis with cautiously strategic plans and

actions (Erkens et al., 2012), while others with non-strategic decisions may produce slow and weak recovery, or even accelerate the poor performance of companies (Fiegenbaum and Thomas, 1988; Gary, Wood and Pillinger, 2012).

There was a severe shock in 2008 and led to widespread financial constraints in terms of total credit and debt because there was a huge decline around and how the recoveries in these different industries show great heterogeneity. According to **Figure 2-15 and Table 2-1**, there is a great difference between the median company and two different extent of distribution (10th and 90th percentile) companies in terms of sales recovery rate.

2.3.3 Different recoveries of companies in terms of different CEO (outside/inside) experience and board governance across industries after the financial crisis

GFC of 2008 led to high uncertainty avoidance but the degree of uncertainty avoidance depends on different characteristics of managers relating to identifying and seizing opportunities. CEO experience, backgrounds, and characteristics of CEOs shape their cognitive perspectives and the differences in the impact of strategic decision-making process and thus performance, by directing their area of vision, filtering their perceptions, identifying issue, seeking and processing information (Cyert & March, 1963; Hambrick, 2007; Hambrick and Mason, 1984). Therefore, CEO outside experience reflects CEO's ability to tolerate ambiguity, integrate complexity and think out of box, which plays an important role particularly when the financial crisis leads to great uncertainty and change the rule of the game (Hsu, Chen & Cheng, 2013). CEOs with outside experience are prized for novel knowledge and skills to initiate novel strategic change (Harris and Helfat, 1997; Zhang and Rajagopalan, 2004). Besides, Zhang and Rajagopalan (2010) the degree of strategic change can positively affect firm performance. I, therefore, argue that firms with outside experienced CEOs may make certain strategic changes as a response to the changed business environment.

Besides, Brunnin, Nordqvist and Wiklund (2007) argue that outside board members are more likely to think creatively about the strategic choices that are available to the company because of their independence from the company's daily operations (Forbes and Milliken, 199).

Therefore, we can argue that corporate governance can affect strategic decisions of firms not only from agency theory perspective but also stewardship perspective. In this research, the implication of corporate governance for firm performance and strategy is more likely from agency perspective in pre-crisis period, but from stewardship theory in post-crisis as the great uncertainty caused by financial crisis required strategic change for adaptation.

It is now well understood in the academic literature that the financial crisis of 2008 has resulted in deep recession, and thus made firms strive for survival and recovery by certain changes in response to the shocks. As such, a benchmark is required to define firm recovery, in which firms experienced dropping performance from their pre-crisis average level and have to recover back to pre-crisis level or even much better (Jin , Luo &Wang, 2018). There is some evidence suggesting that incentive structures of firms and their management influence the recovery speed of firms following a shock related to their corporate investment (e.g., Chacar and Vissa, 2005). Therefore, we argue that GFC of 2008 is the appropriate context for addressing that research questions whether CEO characteristics affect corporate investing and financing activities and thus firm performance. The advantage of using the financial crisis of 2008 as a natural experiment for the empirical analysis is that available evidence suggests that few people had anticipated the crisis before 2008. This is borne out by the sharp decline in a number of different economic indicators in 2008 (spilling over into 2009), in particular, in the share prices that capture the expectations of the market about future financial health of companies. At the same time, the crisis of 2008 was evident to everyone. Hence, it is possible to argue that 2008 is a watershed moment whereby *all* firms in the USA were able to sense the threat posed by the disruption, and that there is little evidence to suggest that, with a few exceptions perhaps, companies and their management had sensed the crisis before 2008 itself. In the next chapter I am introducing the structure of this study. I have split my wider research question into three empirical studies.

3. Chapter 3 Empirical Chapter 1

Corporate Performance during Severe Disruption: CEO Experience and Board Governance impact before and after Global Financial Crisis

Abstract

This research examines how firm performance and CEOs outside experience and board governance influence firm performance and how this influence differs between a "normal" period and in the aftermath of a major crisis that significantly alters the business environment within which firms operate, using Financial Crisis of 2008 as an exogenous shock. I find that firms led by outside experienced CEOs have poor performance than those led by inside experienced CEOs in terms of ROA and ROE in pre-crisis (2000-2007) period, but CEO outside experience has no impact in the aftermath of crisis (2012-2019) period. CEOs with outside experience are less familiar with companies, lack integration with the current TMT in stable periods. Whereas CEOs are clueless about what to do in turbulent periods. Further, my findings suggest that there is no direct correlation between board governance and firm performance both pre- and post-crisis. Moreover, board governance positively moderates the relationship in pre-crisis, as boards monitor CEOs to mitigate agency problems in pre-crisis. Whereas board governance insignificantly moderates the relationship in post-crisis. Boards lack the necessary information and expertise to effectively monitor CEOs, as CEOs have difficulties in processing information and making decisions in a changed business environment. Additional tests indicate that CEOs with outside industry experience are observed in firms with better performance in post-crisis, because their diverse backgrounds are more able to initiate strategic changes to adapt to the changing environment. These findings have significant implications for boards when selecting CEOs and for managers and policymakers aiming to achieve rapid recovery following major exogenous shocks like the COVID-19 pandemic.

3.1 Introduction

The important role of a CEO reflecting multidimensional skills, knowledge, contacts, and experience valuable as a key driver of a firm's performance and competitive advantage has been well established in the literature since Li and Patel (2019), and Schmidt et al. (2016). However, the mechanism of how CEOs' experience works in the dynamics of the business environment in firm performance is still an open question. Li and Patel (2019) suggest that having CEOs with either general or firm-specific experience in leadership can affect the

firm's work efficiency. To improve outcomes of companies in the face of increasingly turbulent environments, CEOs with diverse work experiences are in increasingly high demand (Lazear, 2012; Li and Patel, 2019) in terms of initiating a wide range of strategic actions (Crossland, Zyung, Hiller, & Hambrick, 2014; Custódio, Ferreira, & Matos, 2017). Li and Patel (2019) show that firms with CEOs drawing on varied experiences to manage uncertainty and complexity, more likely to enjoy a higher chance of survival by avoiding strategic repertoire to seek out novel opportunities (Custódio et al., 2013; Murphy & Zabojsnik, 2007). On the other hand, firm-specific experienced CEOs attempt to align the external environment and the available resources at their current firm better (Wang & Murnighan, 2013). Therefore, this research considers the empirical stylized facts about CEO experience in the context of dynamic business environment following an exogenous shock in which CEOs and firms match based on multiple characteristics (Eisfeldt & Kuhnen, 2009).

Contrary to the pre-shock period that seizing opportunities is more important, post-shock market conditions have greatly changed that overcoming threats shows greater significance, in which suboptimal decisions make firms lose opportunities due to much rapidly out-of-date information and unknown territory, which could lead to severe consequence (Christie et al., 2003). Almost all industries under the financial crisis drive companies to change their strategies for the purpose of survival and recovery (Pollard & Hotho, 2006). However, the recovery of firms in the aftermath of the crisis varies across firms due to different decision-making.

The observation motivates the research for the following reasons. First, firms need to sustain competitive advantage (SCA) vis-à-vis other firms for the adaptation of the dynamic environment over time by generating value-creating strategy (Helfat & Peteraf, 2003; Helfat & Winter, 2011; Teece 2007; Teece et al. 1997). However, the adaptation of the turbulent environment over time requires more strategic changes for survival and recovery compared with stable environment (Pollard & Hotho, 2006). Firms' capability to solve problems, scan

opportunities and overcome threats through recreating ³resources and capabilities play an important role in remaining competitive in a turbulent environment (Barreto 2010; Stefano, Peteraf, and Verona 2010). As companies whose managers are better able to choose a well-defined strategy (i.e., business model, investment, and financing alternatives) for the adaptation of the challenging environment perform better than companies whose managers does not do that (Helfat & Peteraf, 2003; Teece et al., 1997). Managerial quality has fueled ongoing debates and research throughout the world recently, given its importance and ability to influence firm performance in terms of firms' strategic decision-making (e.g., Barker and Mueller, 2002; Chemmanur et al. 2019; Kaur and Singh, 2019; Yung and Chen, 2018).

When companies face uncertainty and significant changes to the business environment, they rely on the management to adopt strategies that would help them negotiate those changes and retain or augment their competitiveness. The literature suggests that a proxy for the upper management in a company is the CEO who is in central positions to initiate and lead organizational change processes (Rosing et al., 2011; Elenkov and Manev, 2005). CEOs characterized by selective perspectives will make decisions based on their demographic, cognitive, social and psychological characteristics⁴ (Ting et al., 2015), which helps explain how CEO characteristics contribute to firm performance in terms of UET (e.g., Hambrick, 2007; King, Srivastav & Williams, 2016; Prasad & Junni, 2016). Also, there is a large literature linking CEO characteristics to firm performance and a variety of firm-related strategic actions (e.g., Harris & Helfat, 1997; Miller, Xu, & Mehrotra, 2015).

A question, however, is whether CEO characteristics matter in quite the same way during stable economic periods and turbulent periods characterized by changes and/or uncertainty. Companies attacked by exogenous shock need a steadying influence at the helm, which is

³ Firm's resources include tangible physical, monetary, and human resources, intangible organisational knowledge and skills as well as technical know-how (Ansoff 1965; Hofer and Schendel 1978).

⁴ However, it is difficult to measure CEO cognitive, social, and psychological characteristics using archived data but have to get data via interview. Therefore, this study focuses on CEO demographic characteristics due to the data limitation.

more likely to come from CEOs who exchange ideas and thoughts equitably with other top managers (Peterson, Smith, Martorana, & Owens, 2003). Moreover, to the extent that information is more uncertain and noisier during turbulent period, a more decentralized decision-making process tends to produce better outcomes (Sah & Stiglitz, 1986). A particular stream of literature that investigates the relationship between CEO characteristics and firm performance in specific context, such as environment turbulence and discretion (Haleblian & Finkelstein, 1993; Sun, G Zou), industry downturns (Han, Nanda & Silveri, 2016) and in a systemic or firm-specific performance shock (Bereskin & Cicero, 2013; Jenter& Kanaan, 2015). Our research differs from those studies in that we use an exogenous shock as a natural experiment to compare the different role of CEOs before (stable environment) and after (turbulent environment) the exogenous shocks instead of only the turbulent environment.

Additionally, in modern companies, CEO actions are meant to be influenced (even restrained, where necessary) by the boards. Hence, a related question is whether a company's board moderates the relationship between CEO characteristics and firm performance and whether they play the same role during stable and turbulent economic times. Two primary theoretical perspectives dominate the research on the impact of corporate boards on CEO actions. Agency theory argues that boards can question management decisions resisting management pressure and evaluate CEO behaviors for monitoring by mitigating CEO discretion (Jensen & Meckling, 1976; Mitton, 2002; Shleifer and Vishny 1997; Sawicki; 2009), resulting in positive performance effects. In contrast, management and organizational scholars, relying on stewardship theory (Donaldson & Davis, 1991), argue that shareholders provide managers with advice in the company to protect their interests and to help CEO consider issues from different perspectives (Cook and Burrell, 2013; Naseem, 2019). Based on the conflicted perspectives between agency theory and stewardship theory, we believe that universal prescriptions for corporate governance are inappropriate. It's essential to identify whether corporate governance helps firms achieve their strategic transformation to adapt to the changing environment and thus improve performance. Hence, we raise the research question

whether corporate governance, tailored to fit the firm's environment as well as its current financial and life cycle situations, can moderate the relationship between CEO experience and firm performance.

However, not all companies face the same risk of going bankruptcy because not all CEOs have trouble in making strategic decisions and take certain actions in terms of the different managerial characteristics of CEOs. The role of CEOs' experience, on the one hand, depends on the given the complexity of certain companies, firm-specific knowledge, industry specific knowledge and more diverse knowledge may be critical to weathering exogenous shocks. On the other hand, once CEOs pursue their private interest or lack managerial ability based on their working experience, board governance of firms could catch more attention. Therefore, the research helps explain which of these routes either CEO experience or board governance play more important role in firm performance especially when there is a severe external shock and the shifted relationship before and after the exogenous shock.

Our objective is to address this gap in the literature, by integrating upper echelons theory with agency theory or stewardship theory in terms of CEOs, board governance, and exogenous shocks. Specifically, this study examines the impact of CEO experience and board governance on firm performance matter differently before and after the financial crisis of 2008. In this research, I find that the impact of CEO outside experience and board governance on firm performance changes between pre- and post-crisis (2012-2019). Further the changed impact between pre-and post-crisis shows robust results among different measures of firm performance.

Our research will contribute to literature in three different ways. First, we contribute to the vast literature on the determinants of firm performance theoretically as well as empirically, particularly the role of managers in firm performance (Baker and Wurgler 2012; Bloom, Sadun and Reenen, 2017; Buyl et al., 2011; Nemlioglu and Mallick, 2017). Refer to the

considerable literature on the origin of CEO successors⁵ and the impact of CEO attributes on firm performance, such as CEO age and CEO gender (Serfling, 2014; Peni, 2014). Distinct from these studies, we investigate the role of CEO in the formation of inside and outside experience by identifying the conditions under which different kinds of CEO experience triggers desirable financial outcomes.

Second, corporate governance aims to either protect shareholders by preventing managers from achieving outcomes at the cost of the shareholders' interests or protect and maximize shareholders' wealth through firm performance. Chen (2014) investigates how firms changed their governance structures to deal with the financial crisis of 2008 and the relation between corporate governance adjustment and firm performance during the financial crisis. The research adds to a growing stream of studies examining the impact of board governance on the firm performance (e.g., Arora and Sharma, 2016; Judge et al., 2003), by explore whether and how the role of board governance in firm performance change between stable and changing environment, considering both agency theory and stewardship theory. Further, Jensen and Zajac (2004) provide evidence that characteristics of corporate elites may predict different preferences for corporate strategies, which vary significantly depending on the governance position in which the demographic characteristics are observed. As such, effective board governance helps CEOs move away from what has been successful in the past but perhaps no longer viable in a changed environment. The emphasis in the corporate governance literature is on the 2008 financial crisis inducing effect of adjusting corporate governance. Therefore, this research contributes to investigating the moderating role of board governance on the relationship between CEO experience and firm performance and whether the moderating role of board governance changes between pre-and post-crisis.

⁵ Some research has found that firms prefer outside successors when there is a poor performance and a need for initiating swift and strategic changes (Boeker and Goodstein, 1993; 1993; Kesner and Sebor, 1994; Shen and Cannella, 2002; Zajac, 1990). On the contrary, another stream of research argue that outside CEO negatively relates to firm performance due to lacking firm-specific skills and supports from top management team (Bailey and Helfat, 2003; Denis et al., 2000; Fondas and Wiersema, 1997; Zhang and Rajagopalan, 2004).

Third, we use the financial crisis of 2008 as a natural experiment to empirically explore whether and how different kinds of CEO experience leads to better performance and the moderating effect of board governance structure before and after the financial crisis. As financial crisis makes firms survive in a new situation, same managerial quality may play different role in firm performance between pre-and post-crisis period. Our research design mitigates unobserved heterogeneity that potentially drives firms' choice of CEO and corporate governance mechanism under different business environments. Therefore, the research makes contribution to contextualize the effect of managerial quality and the moderating effect of board governance structure on the relationship.

Furthermore, some scholars argue that there is a clear need to consider the "future depth" of the impact of performance on strategic choice (Denrell, Fang, & Levinthal, 2004; Levinthal & March, 1993). In addition to environmental (external) factors, firm (internal) factors become more crucial to firms' survival and success (Efrat and Shoham, 2012). Therefore, we use different measures of firm performance in terms of different goals and outcomes (Ben-Oz and Greve, 2015; Zahra and George, 2002) to investigate the relationship mentioned above.

3.2 Literature Review

3.2.1 Resource-Based View (RBV)

3.2.1.1 CEO experience as VRIN resources and its impact on firm performance and investment

As many researchers emphasize intangible resources, (e.g., those arising from knowledge and experience) as central factors to differentiate performance of various firms by affecting strategic decision-making of firms (Barney, 1992; Carpenter, Sanders & Gregersen, 2001; Teece et al., 1997). There is considerable controversy about both CEO inside vs. outside experience, which is a kind of VRIN resource as sustained competitive advantage of firms

(Teece, 1997) in terms of the resource-based view (RBV). CEOs' experience affects how CEOs reconfigure and shape their capabilities and skills sets and distinctive worldviews along with personal and professional networks (Carpenter, Sanders & Gregersen, 2001; Dyer & Singh, 1988). Hence, CEOs can inquire information about economic environment uncertainty, pressure and market trends that can affect if they can better seize opportunities and overcome threats to foster the strategic decision-making process and thus affect performance. Value created based on CEOs' certain skills, views and networks are more likely to be amplified, particularly when specific types of CEO experience benefit the companies by mitigating contingency they face (Pfeffer & Salancik, 1978). Furthermore, executives' experiences affect their strategic choices for companies and how they perceive the environments of companies (Herrmann and Datta, 2006). Therefore, this research investigates whether firm specific knowledge or industry-specific knowledge CEOs possess is more or less important in some sense.

On the one hand, lacking outside experience could be a barrier to understand other industry, since outside experience may affect if firms have wide view to make a complex managerial decision in the rapidly changing environment (Carpenter, Sanders & Gregersen, 2001; Keil, Lavie & Pavićević, 2021). CEOs with outside experience are more likely to diagnose a problem and identify better solutions based on alternative approaches to solve it, even if new problems occurred (Dragoni, Oh, Vankatwyk, & Tesluk, 2011). This is because such CEOs are more likely to think in a new way and are less likely to commit to established courses of actions (Hambrick, Gelekaibycz & Fredrickson, 1993) and have lower risk-taking propensity (Finkelstein and Hambrick, 1990; Wiersema and Bantel, 1992). CEOs worked in different companies experience different problems and different decision scenarios, which help CEOs develop and accumulate more robust and richer knowledge and skills and better able to combine diverse knowledge learned from different previous solutions in different firms (Keil, Lavie & Pavićević, 2021; Smith & gregorio, 2017).

On the other hand, some researchers find that CEO with outside experience are more difficult to capitalize their experience efficiently and may cause misfit between the CEO's experience and the current firm's characteristics, because they are less formalized with the company's internal context (Carpenter, Sanders & Gregersen, 2001; Zhang and Rajagopalan, 2004). CEOs with outside experience may not better understand which solutions could be effectively implemented and worked well in the current firm based on current firms' specific conditions (Dokko et al., 2009). Whereas CEOs with inside experience are better able to draw on their experience to raise relevant and applicable solutions and accurately anticipate opportunities and challenges to implement the solution (Carpenter, Sanders & Gregersen, 2001). Because CEOs with inside experience are less ambiguous to align the external environment and the available resources in focal firm, and more easily to obtain richer and reliable information and access knowledge of the firm due to their embedded better in intrafirm networks (Cao, Maruping & Takeuchi, 2006 and thus improve firm performance (Wang & Murnighan, 2013). Because they are more easily to obtain richer and reliable information and access knowledge of the organization, by better embedded in intrafirm networks and familiar with the process that can contribute to the efficient and effective implementation of solutions (Bigley & Wiersema, 2002; Cao, Maruping & Takeuchi, 2006). Further, their lack of firm-specific skills combines with pressure from the board of directors to improve performance makes the outsider CEOs more likely to take premature actions rather than well thought-out changes in strategy (Gabarro, 1987).

A large amount of literature discussed CEO's origin---i.e., an insider or outsider impact on post-succession performance (e.g., Agrawal, Knoeber & Tsoulouhas, 2006; Berns & Klarner, 2017; Keil, Lavie & Pavićević, 2021; Zhu, Hu & Shen, 2020), which emphasizes either the extensive or diverse executive experience of outside CEOs. Efficient application of CEOs skills, views and networks contribute to the efficient running of a company or external environment management. Moreover, firm-specific and industry specific knowledge play a critical role in weathering exogenous shocks, such as financial crisis, which may affect the effectiveness of CEOs with either outside experience (alignment with the company's specific

situation) or inside experience (fresh eyes in terms of business environment changes). Zhang and Rajagopalan (2010) argue that inverted U-shaped relationship differs between firms led by outside CEOs and those led by inside CEOs. Exogenous shocks could lead to strategic change of firms to adapt to the challenged environment, but the level of strategic change captures the extent to which a firm's pattern of resource allocation in key strategic dimensions is different from its own experience. A high level of strategic changes required in dramatically changed environment enhance the disruptive effect far more than the adaptive effect. Therefore, I argue that CEOs with different levels of experience impact firm performance differently depending on the business environment. (Georgakakis & Ruigrok, 2017; Huson, Malatesta & Parrino, 2004).

RBV and dynamic capability allow us to better and accurately predict when CEO outside experience and inside experience can be transferred into competitive advantage and thus help improve firm performance. Our study extends CEO experience on firm performance by investigating whether the impact of CEOs with outside experience on firm performance changes between pre- and post-shock. In terms of various reasons for intangible resources, specifically CEOs' work experience, as central to distinguishing firm performance, Hambrick and Mason (1984) propose that characteristics of "upper echelons" of firms importantly affect the outcomes of companies.

3.2.2 Upper Echelons Theory (UET)

Upper Echelons Theory (UET) emphasizes that top executives make decisions and take actions based on their personalized interpretations of the situations they face (Hambrick, 2007; Hambrick and Mason, 1984; Nielsen, 2010). CEOs play critical role in strategic leadership by seeking and processing information to understand the strategic situations they face and then design strategic actions leading organizational change processes in response to the dynamic environment (Elenkov and Manev, 2005; Hambrick et al., 2005; Hambrick and Mason, 1984; Rosing et al., 2011) presented in Figure3-1, and this influence is increasing over time (Quigley and Hambrick, 2015). It occurs because CEO perceptions become the pre-

dominant basis for firm actions as the unknown and unavailable cause–effect relationships when environmental uncertainty is high (Finkelstein & Hambrick, 1996; Kaplan, 2008). CEOs usually follow their track and focus on their own paradigm before the crisis. However, the crisis brought all executives into unknowns and challenges, which may make firms particularly dangerous relying on CEOs with unreliable experiences and cognitive bias.

CEOs with outside experience are perceived to lack the experience within the company (i.e., limited understanding of firms' resources and constraints) that might serve as a basis for accurate judgments (Greiner, Cummings & Bhambri, 2003), whereas CEOs with inside experience is perceived to lack novel knowledge and skills (Zhang & Rajagopalan, 2010). CEOs with outside experience are more likely to initiate changes that deviate from instead of building upon existing firm capabilities, which may make firms suffer from a great risk of failure and a high cost of implementation (Zhang & Rajagopalan, 2010). Since strategic changes of companies building on existing competencies are more likely to enhance immediate performance than changes that require entirely new competencies (Haveman, 1992; Sastry, 1997). On the other hand, CEOs with inside experience are more likely to have emotional commitments to the firm's status quo, which may be adaptative in stable environment but may prevent firms from initiating effective changes in terms of fresh eyes, particularly in turbulent economic environment (Zhang & Rajagopalan, 2010). Overall, the impact CEO with inside/ outside experience vary across the stable and turbulent environment.

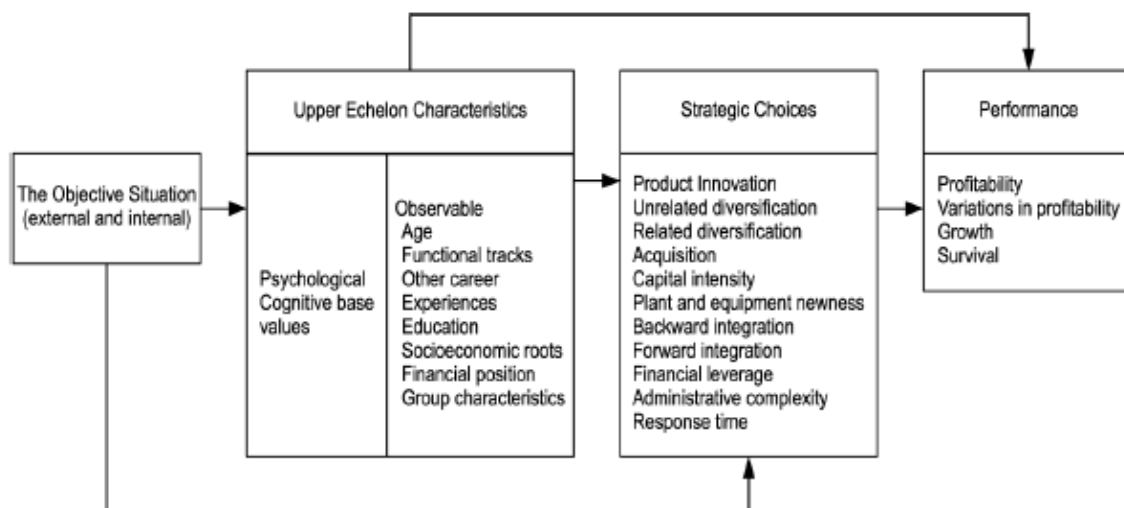


Figure 3-1 Upper echelons perspective: Hambrick and Mason (1984)

CEOs often have difficulties making decisions due to information overload, ambiguous cues, and competing goals and objectives (Carpenter, Geletkanycz, & Sanders, 2004, p. 750). Consequently, strategic decisions and actions in such situations seem to be strongly driven by their respective personalities. In order to achieve better performance, both managers and boards of directors must be willing to move away from what has been successful in the past but perhaps no longer viable in a changing environment (Choi and Szewczyk, 2018). Corporate elites' characteristics may predict different preferences for corporate strategies, which vary significantly depending on the governance position in which the demographic characteristics are observed (Jensen and Zajac, 2004). As such, board governance comes into play either its monitoring role or advising role, since harmful managerial behavior based on certain CEO characteristics resulting in moral hazard, adverse selection or information asymmetries will destroy firm value.

A great stream of literature investigates how corporate governance directly affects firm performance (Bhagat & Bolton, 2019; Chen, 2014) and risk-taking (e.g., Berger, Kick & Schaeck, 2014; Koirala et al., 2020). Moreover, there is some recent literature examine whether corporate governance adapts to sudden environment changes to maintain firm survival and success (CHEN, 2014; Rennie, 2006; Perry & Shivdasani, 2005; Scholten,

2005). However, there is no exiting literature to investigate the indirect impact of board governance except for the literature on CEO duality. Duru, Iyengar and Zampelli (2016) estimate a dynamic relationship (i.e., agency theory, stewardship theory) between corporate governance characteristics and firm performance. Therefore, we extend the study because CEO as the primary decision-maker in companies could deviate from the optimal decisions (i.e., maximizing the value of the shareholders) and thus damage firm value. This research examines whether board governance moderates the relationship between CEO experience and firm performance rather than only focusing on the direct impact on firm performance.

3.2.3 Agency Theory

CEO decisions and actions in terms of CEO characteristics (i.e., CEO experience) could be affected by the corporate board, by only attaching importance to the demographically based preferences and dispositions (Hambrick and Mason, 1984). Existing literature related to upper echelons theory stresses the effect of top executives, particularly CEOs, on corporate strategy and performance, whereas it disregards the corporate governance mechanism that firms establish. Specifically, managers will not necessarily act in the best interests of the shareholders and may be detrimental to maximize shareholders' return on their investment, particularly under conditions of poor firm performance (Filatotchev & Nakajima, 2010; Jensen & Meckling, 1976), which may lead to big loss instead of expected value gain (Bosse and Phillips, 2016).

In the literature, agency problems are some of the main factors explaining why firm decisions (e.g., investment, finance) based on CEO perception may deviate from its optimal level (Jiang et al., 2011), particular when there is high uncertainty in the business environment. Recent studies have begun to investigate how corporate governance adapts to environmental changes to maintain firms' survival and recovery. Hence, a related question is whether a company's board moderates the relationship between CEO characteristics and firm performance and whether they play the same role during stable and turbulent economic times.

According to agency theory, effective corporate governance mechanisms can question management decisions resisting management pressure and evaluate CEO behavior for monitoring. As such, board governance with monitoring function is critical to ensure CEO to make strategic decisions by mitigating managerial discretion in terms of their conflict of interests, instead of pursuing self-interest (Bosse and Phillips, 2016; Guariglia and Yang, 2016). On the other hand, stewardship theory demonstrates that board governance structure with advising function helps CEOs make high quality decisions due to superior knowledge from board members.

3.2.4 Stewardship theory

Stewardship theory holds that performance variations arise from whether the structural situation in which the executive is located facilitates effective action. CEOs must devise, communicate, and coordinate complex and varying strategic decisions and actions in the context of uncertain and volatile environment with diverse information, as well as leverage knowledge, experience and talent stocks and practice on the basis of both internal and external constraints (Carpenter et al., 2004). The issue becomes whether the firm board governance structure helps the executive to formulate and implement plans for good firm performance (Donaldson 1985). Because board directors with specialized and superior knowledge about corporate operation, strengths, weaknesses or debate alternative strategies to critically analyses and improve the quality of decisions made by CEO.

In terms of the role of the CEO, board structure will assist them to attain superior performance by their firms to the extent that the CEO exercises complete authority over the company and that their role is unambiguous and unchallenged (Donaldson and Davis, 1991). As exogenous shocks greatly change the whole business environment, it is essential to understand which role of board governance plays more significant role in firm performance before and after the shocks.

3.3 Research Questions

Based on Hambrick and Mason (1984) framework, we develop our framework from an empirical point of view, presented in **Figure 3-2**. The financial crisis of 2008 was a big disruption since the Great Depression of the 1930s. Consequently, firms have to reset their strategy in short order to sustain or improve firm performance in the aftermath of the financial crisis, such as changes in organizational structure, changes in financing and investment (Nohria & Wohlgezogen, 2010). Essentially, such things completely changed in 2008, and then show greater differences of business environment before and after the financial crisis of 2008. In this diagram, financial crisis of 2008 as a huge external shock forced firms to make strategic choices different from pre-crisis period even if firms have the same CEO characteristics, and thus eventually affect firm performance, which extends upper echelons theory within the given contextualization of the crisis. Managerial discretion is an efficient enabler of upper echelons theory (Hambrick and Mason 1984), whereas existing corporate governance help mitigate managerial decision discretion by implementing monitoring function (Fama & Jensen, 1983) and empower to managers by implementing advising function (Carpenter et al., 2004). Therefore, we extend Hambrick and Mason (1984) framework by bringing into agency theory and stewardship theory in which board governance plays different moderating role in the impact of CEO characteristics on firm performance differently before and after the crisis. This is what we are therefore studying.

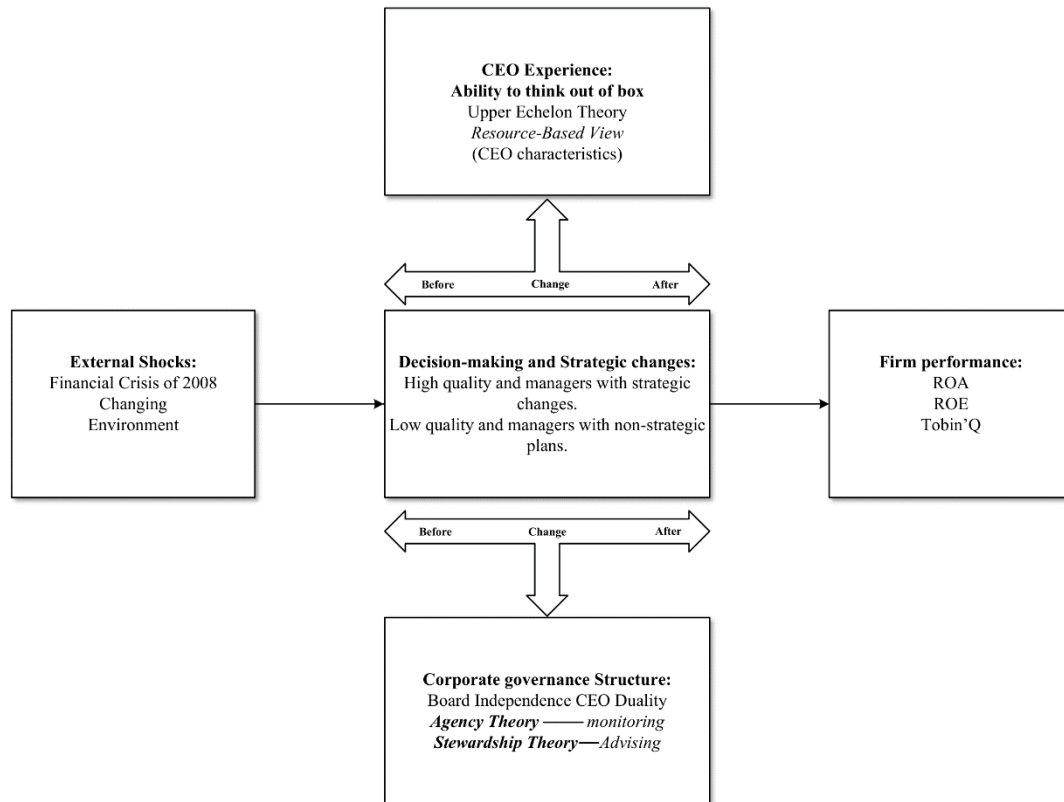


Figure 3-2 Simplified framework of upper echelons theory, agency theory or stewardship, and performance before and after crisis.

According to resource-based view, CEOs, as intangible resource of companies, have different types of prior experience (e.g., different knowledge and skills), which could lead companies make different strategies, and thus different performance of firms. Therefore, this research would answer a big question whether firm -specific knowledge/ industry -specific knowledge is more or less important. There is a debate on the relationship between CEO firm experience influence the development of dynamic capabilities, dependent on environmental conditions (Driesch et al., 2015; Rodenbach & Brettel, 2012). We, therefore, argue that a lack of outside experience is a barrier to understand other industry. Even competitors in the same industry would affect if they had wide view to make decision in a complex managerial decision-making environment. As the exogenous shocks could increase turnover rates, there is a need to investigate which type of CEO experience leads to better firm performance adapting to both stable and turbulent periods.

CEO is accountable for firm performance (Finkelstein et al., 2009), responsible for selecting and managing internal resources (Flynn & Staw, 2004), and make decisions about where to allocate resources (Porter, 1980; Louca, Petrou & Procopiou, 2019). Although there has been extensive research over the last decades examining the performance consequences of CEO age (Barker& Mueller, 2002; Serfling, 2014), CEO tenure (Barker& Mueller, 2002; Simsek, 2007), CEO compensation (Brick, Palmon & Wald, 2006) and CEO gender (Khan & Vieito, 2013; Sun & Zhou, 2021), I attach importance to CEO experience in this research due to the following reasons. First, there is broader discourse in strategic management on executive work experiences (Finkelstein, Hambrick, & Cannella, 2009). Second, CEO experience is related to whether executives exhibit biases in decision making that reflect the perspectives of the business (Li & Patel, 2009). Third, experience with the goals, rewards, and methods of a particular functional area causes CEOs to perceive and interpret information in ways that suit and reinforce their functional training, firm- and industry conditions (Barker& Mueller, 2002). The exogenous shocks result in an uncertain and complex economic environment, which makes firms attach importance to their ability of information collection and processing. Therefore, we focus on the impact of CEO experience on firm performance.

Existing literature has a debate on the relationship between outside CEO succession and firm performance (Finkelstein et al., 2009; Georgakakis & Ruigrok, 2017; Karaevli, 2007; Zhang & Rajagopalan, 2010). However, research on CEO inside vs. outside experience has been very limited. There is a need to investigate the conditions under which firms can reap benefits from CEO inside experience and external experience by considering the organizational-, and environmental-level factors. On the one hand, to improve organizational outcomes in the face of increasingly turbulent environments, CEOs with diverse work experiences are in increasingly high demand to deal with uncertainty and complexity by seeking new opportunities (Custódio et al., 2013; Lazear, 2012; Li and Patel, 2019; Murphy & Zabojsnik, 2007).

On the other hand, some scholars attach importance to CEO outside experience, as they believe general managerial skills may be more important than his firm-specific skills (Murphy and Zabochnik, 2004, 2007). One conclusion from this line of research is that outside successor is preferred when there is a need for a new direction in hope of improved performance. As firms are hiring and firing outsider CEOs at an increased rate, extant research shows outside CEOs' impact on firm performance vary from positive to negative (Karaevli, 2007; Wang & Murnighan, 2013). Recent research on 'stability and change' shows that poor performance provides an unstable internal context with limited financial resources together with tight controls from the board of directors that prevent the anticipated informational advantages of CEO with outside experience from materializing (Zhang and Rajagopalan, 2004), and restricts the outsider CEO's ability to promote adaptation and renewal (Hambrick and Finkelstein, 1987; Karaevli and Zajac, 2013, p. 1268). Hence, in addition to the different impact of CEO experience on firm performance, such inconsistency suggests us to investigate how inside and outside experience of CEO matter differently before and after exogenous shocks.

Moreover, existing literature found that there is positive, negative and no relationship between corporate governance in terms of board size, board independence, busy directorship and CEO duality and firm performance (e.g., Bhatt and Bhatt, 2017). From the findings of the literature, there were conflicting and inconsistent results for the relationship between various characteristics of board governance and firm performance. Corporate boards are expected to provide strategic advice to managers to help achieve their profit maximization goals (Pearce and Zahra, 1992; Pugliese et al., 2009), or monitor managers to reduce agency problems (e.g., Jiang et al., 2011).

The above trends are unsettling given the lack of clear theoretical predictions and mixed empirical evidence on the performance. The research question can help to explain why some firms perform better than others in terms of their CEO experience and board governance under different environments. Additionally, existing research on board governance took

managerial ability as unobserved heterogeneity factors among firms. On the other hand, some literature sheds some light on this important issue in board governance in order to explain why boards of directors would hire an outsider with or without previous CEO experience (Elsaid, 2011). In order to address the gap, we investigate whether the moderating effect of board governance on the relationship between CEO experience and firm performance.

As noted, this is how I bring together CEO experience and corporate governance literature, which has not been analyzed by the literature of exogenous shock but internal bad performance of firms. Existing literature has examined the relationship between corporate boards and firm performance in specific settings, such as CEO turnovers (Eisfeldt & Kuhnen, 2009; Weisbach, 1988), acquisitions (Cotter, Shivdasani, & Zenner, 1997), and corporate restructuring (Perry & Shivdasani, 2005). Those studies focus on a specific period of various firm-specific performance shocks, which might not be exogenous (Francis, Hasan & Wu, 2012). Further, existing literature on the impact of financial crisis mostly focuses on the impact of corporate governance on firms' financial performance before or during the financial crisis (e.g. Abdullah, 2004; Aebi, Sabato and Schmid, 2012; Erkens et al., 2012), the influence of financial crisis on financing and investment policies of firms during the crisis (e.g. Campello et al., 2010; Dubin et al., 2010; González, 2016; Kahle and Stulz, 2013), the effect of the financial crisis on intra-firm liquidity provision (e.g. Garcia-Appendini and Montoriol-Garriga, 2013). However, none of them investigate how different kinds of CEO experience affect firm performance differently before and after the crisis and the moderating effect of board governance structures on the relationship.

3.4 Hypotheses development

Following the upper echelon theory (Hambrick & Mason, 1984) and adopting the resource-based view (Barney, 1992), CEO experience are acknowledged to be significant determinants of a large range of corporate strategic decision making, such as firm investment policy (Malmendier and Tate, 2005), acquisition or diversification decisions, dividend policy (Bertrand & Schoar, 2003), and capital structure decisions (Malmendier et al., 2011). Besides,

CEO experience reflects skills, competencies, distinctive worldviews, and networks as well as the ability to process complex and dynamic information, which could be a source of competitive advantage and thus better firm performance because they are valuable, rare, and inimitable (Carpenter et al., 2001; Daily et al., 2000). Exogenous shocks require CEOs make complex decisions with incomplete information and leadership skills to deal with corporate problems in the turbulent business environment, such as pursuing resource reallocation (Khanna, Jones and Boivie, 2014) and overcoming these constraints (Lorsch and Khurana, 1999). Therefore, we argue CEO experiences play an essential role in fostering the adaptation and thus improve firm performance, particularly in the changed business environment (Hannan and Freeman, 1977; Papadakis & Barwise, 2002).

Unlike the relatively stable business environment in pre-shock period, firms' situations greatly change in the post-shock period as follows: (i) The whole business environment changed; (ii) internal and external constraints of companies changed; (iii) new opportunities/threats occurred. Therefore, CEO experience may play different role in the decision-making process and thus firm performance before and after the crisis due to the different opportunities and threats between stable and turbulent environment. As previous literature generates conflicting predictions, this study investigates the relationship under specific contextualization---i.e., pre-, and post-shock period.

I draw on the large M&A literature that does not focus on the post-M&A internal processes and focuses instead on the relationship between firm and deal characteristics as well as corporate governance of the acquiring firms and post-integration change in performance of these firms (Capron and Guillén, 2009; Golubov and Xiong, 2020; Laabs and Schiereck, 2010). In keeping with the M&A literature, I make the reasonable assumption that, following a major disruption, a 3-year period is used to make strategic changes to a company's focus, such that seize and transform in Teece's framework is achievable within a 3-year period. We, therefore, use the post-crisis period (2011-2019) to investigate the impact of CEO outside

experience and board governance on firm performance because 3 years immediately after the crisis (2009-2011), defined as post-crisis1, is too volatile for analysis.

3.4.1 CEO experience and firm performance before and after the crisis

CEOs with outside experience seek to combine inter-firm and inter-industry experiences driven by their varied achievements within different firms or industries but might have difficulties in aligning with these with firm-specific resources (Li and Patel, 2019; Powell, 1992). Outside experienced CEO may struggle to effectively manage the firm's intricate dynamics and distinct culture (Haleblian & Finkelstein, 1999), which may lead to ineffective communication and collaboration (Finkelstein, Hambrick & Cannella, 2009). Shallower firm-specific human and social capital (Kang & Snell, 2009), as well as limited knowledge of the internal context and organizational resources, can lead such CEOs to ineffectively resource allocation, such as allocate more resource to non-strategic realms (Li and Patel, 2019). Lacking familiarity with a firm's internal workings can impede their ability to make informed decisions and understand the complicated needs of the company (Haleblian & Finkelstein, 1999). CEOs with outside experience are more likely to take premature actions rather than well thought-out changes in strategy (Gabarro, 1987), due to lacking firm-specific skills and suffering pressure from the board of directors to improve performance.

Furthermore, outside CEOs perceived as lacking firm/industry-specific knowledge and experience may face difficulties in maintaining competitiveness and accessing valuable resources. This can lead to lower staff morale, reduced confidence in the firm's leadership, a loss of vital partnerships and business opportunities, and eventually poor performance (Haleblian & Finkelstein, 1999; Hambrick & Cannella, 2009). Overall, CEOs with outside experience lacking a deep understanding of the firm's core competencies and competitive landscape are more likely to hinder strategic decision-making and effective implementation, leading to poor performance in a stable environment.

While CEOs with inside experience, in general, are more likely to get out of trouble by reusing strategies, network connections, and firm-specific knowledge (Eesley & Roberts, 2012). CEOs with inside experience allow them to accumulate tacit knowledge of firms' resource and capabilities⁶, which may offer required skills to effectively and efficiently manage and allocate those resources and capabilities (e.g., financial resource, human resource) (Acquaah, 2012; Kor, 2003). Such CEOs are more likely to efficiently align the external environment and the internal context (e.g., available resources) in focal firms and thus improve firm performance (Wang & Murnighan, 2013). In a stable environment, CEOs are more likely to be risk-averse and thus settle within the comfort zone (Lichtenthaler and Muethel, 2012), particularly if their firms perform well. Since they wish to avoid the possibility of losing the gain that they believe they are benefiting from (McKinley et al., 2014). Firms may perform better when there are fewer rival companies near their position (Ross, 2014).

H1a. CEO outside experience is negatively related to firm performance in a stable business environment.

However, exogenous shocks could change the business environment, which could make CEOs situated in an uncharted terrain and suffer greater risks in the more competitive environment because prior experience of CEO cannot adapt to current circumstance. Contrary to the stable business environment, exogenous shocks require CEOs' fast and frequent decision-making under market conditions that information becomes obsolete at a faster rate and the consequences of lost opportunities due to delayed decisions become more severe (Christie et al., 2003). Additionally, resource availability, particularly financial constraints, increases competition and new market opportunities for firms' survival and recovery compared with stable environment (Christie et al., 2003). CEOs with inside experience do not improve firm performance when firms are under poor performance that require strategic

⁶ Resource and capability include firm's product and service, human resource availability, manufacturing capability, technology and so on (Kor, 2003).

change because they strongly commit to the status quo and initiate fewer strategic changes (Finkelstein et al., 2009; Kesner & Sebor, 1994; Zhang & Rajagopalan, 2010).

Once the business environment is changed, CEOs with outside experience are expected to draw on their various experiences to manage uncertainty and complexity (Lazear, 2012; Lia and Patelb, 2019). In addition, they are more likely to approach problems with different perspectives and look at firms with fresh eyes and open mind to drive essential transformation and make far-seeing strategic decisions and actions regarding future moves of companies (Crossland, Zyung, Hiller, & Hambrick, 2014; Custódio, Ferreira, & Matos, 2017; Day & Schoemaker, 2005; Finkelstein et al., 2009). CEOs with outside experience are more likely to help firms manage the complexity of post-crisis recovery and long-term success by signaling a commitment to bold and necessary changes and enhancing stakeholders' confidence and trust (Fich & Shivdasani, 2006). This is because outside experienced CEOs can identify new opportunities, renew competitive advantage, employ their external networks and relationships to access resources, attract talent, and develop collaborative relationships, which can be essential in rebuilding and repositioning the companies in the post-crisis period (Zajac & Westphal, 2004).

IBM is the example of a particular company that fierce competition made its stock price reach the lowest point since 1983. The CEO of IBM, Lou Gerstner, recognized that (Information and Communication Technology) ICT industry would be services-led instead of technology-led in the future and thus seized the opportunity to make system integration driven by customer demands (Dittrich et al., 2007; Leavy, 2004). In order to achieve strategic changes, IBM took its existing competencies in technology and quality to enhance the capability to learn how to better serve the customers and to exit hardware technology and finally sold its PC business to Lenovo in 2005 (Hamel, 2000; Jetter, Satzger, & Neus, 2009). Thus, IBM successfully transformed themselves from a great product company to a domain service company that would focus on solving customers' problems with their technology advantages.

CEOs' prior experience cannot adapt to current circumstances and thus strategic change is required. Accordingly, firms that are willing to take risks for strategic changes are more likely to perform better (Zhao and Zhu, 2017), particularly in the turbulent environment full of severe competitiveness. CEO with outside experience who has a relatively short-learning curve, may be able to address the problems that created the poor performance. Furthermore, CEOs with outside experience usually gain greater expertise over time with firm-specific knowledge to enhance their environmental fit (Garicano & Rossi-Hansberg, 2006; Tushman & O'Reilly, 2013), and facilitate recovery from the disruption drawing on their broader strategic repertoire to seek out opportunities (Custódio et al., 2013; Gilson & Vetsuypens, 1993; Murphy & Zabochnik, 2007).

H1b. CEO outside experience is positively related to firm performance when the business environment has changed following a shock.

3.4.2 Board governance and firm performance before and after the crisis

The executives are responsible for the day-to-day operations, whereas the supervisory board members appoint, monitor, and advise the executives (Balsmeier, Buchwald & Stiebale, 2014). CEOs make corporate decisions and take actions for firm performance in terms of their experience. However, these decisions and actions may deviate from the optimal choice and boards could affect corporate behaviour by implementing either monitoring or advising functions. Boards of directors could recognize grandiose resource reallocation actions and identify whether the CEO did not come up with practical solutions and did not use resources as expected. For example, they could quickly figure out whether the corporate investment resource reallocations match up with previous firm allocations or not. An effective board is at the center of the debate on corporate governance (Babatunde and Olaniran, 2009). Effective board governance must balance the roles of shareholders, board directors and managers, in order to meet all of its financial commitments and other obligations to a broad array of shareholders.

Board governance plays a crucial role in shaping up a firm as also to make it competitive (Iwasaki, 2008; Ehikioya, 2009) and there is no one-size-fits-all approach to achieving effective governance (Bhagat and Bolton, 2008; Black et al., 2014). The underlying cause of a crisis in firms is the weak ownership supervision, particularly insufficient autonomy of the supervisory board” (Ježak 2010, pp. 51-63). Therefore, supervisory boards play a crucial role in maintaining its efficiency and reducing information asymmetry, especially in terms of preventing, identifying, and overcoming challenged situations. Agency theory emphasizes the monitoring function of corporate board in the presence of agency conflict associated with the separation of ownership and control. Since managers do not bear the full costs of their decisions, they may deviate from the value maximizing behavior to enhance their private benefits (Balsmeier, Buchwald & Stiebale, 2014).

The boards are responsible to monitor, discipline and remove ineffective management teams, to ensure that managers pursue the interests of shareholders (Guest, 2009). Owners of the company monitor the performance of managers to ensure that they use their delegated power to generate the highest possible returns for the owners. Managers may pursue private gains at the expense of shareholders, such as utilizing free cash flows for non-optimal projects rather than redistributing them to shareholders (Jensen, 1986), or reject profitable investment projects (Goergen & Renneboog, 2001). Monitoring function of corporate board ensures that strategic decisions are in alignment with the firm's long-term goals and interests (Hermalin & Weisbach, 2011; Kiel & Nicholson, 2003). This helps avoid managerial opportunism and myopic perspectives, decrease the possibility of value-destroying activities, and encourage the allocation of resources towards value-enhancing opportunities (Bebchuk, Cohen, & Ferrell, 2009; Kiel & Nicholson, 2003), particular in a relatively stable environment---i.e., pre-crisis period. Furthermore, an effective board with diverse expertise can identify and evaluate risks, develop risk-reducing strategies, and ensure adequate controls are in (Gomez-Mejia et al., 2019).

H2a. Board governance is positively related to firm performance by playing the monitoring role in a stable business environment.

However, exogenous shocks as a sudden and unpredictable event, are extremely challenging for companies to adjust their optimal board governance structures in response to a future downturn (Liu, Uchida & Yang, 2012). Besides, exogenous shocks force companies to reevaluate operations for efficiency. The changed environment caused by exogenous shocks make both CEOs and boards situated in an uncharted terrain, leaving them uncertain about the appropriate course of action. The uncertain and volatile conditions challenged the ability of the CEOs and shareholders to gather resources and develop strategies to allow companies to respond to the exogenous shock and therefore, focus on the survival and recovery of the firm (Aldamenet al, 2020). The circumstance may lead to reducing conflicts of interest and strengthening their commitment to firm goals, ultimately lowering agency costs. In other words, the exogenous shock to the competitive environment reduces agency costs (Yang & Zhao, 2014). Therefore, the monitoring role of a board is less important in post-crisis.

On the other hand, exogenous shocks that increase competition and brings about new market opportunities magnifies the information benefits of board governance (Yang & Zhao, 2014). First, competition and new market opportunities increase the value of information that is more costly to acquire and transfer and thus generates larger and more sustained rents of information (Jensen and Meckling, 1995). Moreover, new market opportunities under intensified competition require fast and frequent decision-making as under these market conditions information becomes obsolete and out of date at a faster rate, which leads to opportunities lost due to delayed decisions become more severe (Christie et al., 2003; Yang & Zhao, 2014).

Effective board governance develops an innovative and adaptable culture that improves firm performance. Boards play an essential role in fostering organizational learning and strategic agility, both of which are essential for navigating dynamic business environments (Daily et al., 2012). Exogenous shocks require firms to quickly respond to the challenged environment by reacting more quickly to new information and thus make quick and efficient decisions.

Board of directors are more likely to promote effective information exchange and reach an agreement quickly with better communication and coordination (Finkelstein & Hambrick, 1996; Jensen, 1993; Lipton and Lorsch 1992; Mehran et al., 2011). Board directors with more knowledge, experience and network provide firms with great access to important resources, suppliers and customers to the company (Booth & Deli, 1995), opportunities to cooperate with other firms (Koenig et al., 1979), and information on business practices (Donaldson and Davis, 1991).

Well-governed firms are regarded as less risky and more trustworthy by investors, leading to enhanced confidence of investors, and attracting capital (Coles et al., 2008). This allows firms to obtain funds for investments, innovation, and expansion, strengthening their ability to seize new opportunities and achieve growth. Effective board governance could promote long-term strategic thinking and value creation, as boards have a wide set of skills, expertise, networks, and experiences that can provide valuable insights, information and resources and drive management to adopt a broader viewpoint (Fama & Jensen, 1983). In the uncertain environment, internal and external limitations firms face, and economic downturn may alter corporate behavior in the aftermath of exogenous shocks. Thus, shareholders could enhance scrutiny and foster managers to make strategy more cautious and effectively by providing high quality advice and resources under the high risk of bankruptcy or great potential loss (Sanders, 2001).

In brief, during what is considered a "normal" period, agency costs are presumably higher, and thus the board plays an important role in monitoring from the perspective of agency theory. However, in times of turbulence, other roles that a board may have such as providing access to networks, information, and resources, as well as signaling good governance, may become more crucial. Consequently, the connection between board effectiveness in the agency theory sense and firm performance may change. We, thus, develop below hypothesis:

H2b. Board governance is negatively related to firm performance when the business environment has changed following a shock.

3.4.3 Board governance moderating role in the impact of CEO experience on firm performance

Prior research from “upper echelon” perspective argues that the preferences for corporate strategies differ depending on the governance position in which the CEO characteristics are observed (Jensen and Zajac, 2004). Governance mechanisms vary across firms and evolve over time (Hermalin and Weisbach, 1998; Nelson, 2005). Board governance as a mechanism setting constraints on CEOs and shareholders, as CEO bargain with shareholders to determine how to allocate firm values based on CEOs’ perceived ability such as CEO experience. The processes that board monitor management's activities (i.e., CEO decisions and actions), determine the firm strategy, or secure major external resources for firms (Macus, 2008). Board governance is significant when board members approach communications and discussions with an owner’s mind-set and with the goal of helping management to broaden its thinking by considering new, even unexpected perspectives. These management scholars document that the board's influence on firm performance depends on both the incentives and the abilities of board members, and the choices a firm face in terms of the costs and benefits of different board structures (Raghavan, Ernest & Zampelli, 2016). CEOs’ impact on firm performance depends on CEOs’ skills, knowledge, experience and risk-taking attitudes.

Board directors behave as a check and balance on the CEO's decisions, ensuring the alignment of decisions with its stakeholders' best interests. Board directors decrease the possibility of value-destroying activities, excessive risk-taking, and unethical behavior (Jebran, Chen & Cai, 2022), by monitoring and constraining the CEO's decision-making, particularly outside CEOs. Because CEOs with outside experience, due to their lack of firm-specific expertise and the pressure from board of directors' performance expectations, are more likely to take premature actions for firm strategic decisions (Elasid et al., 2011; Gabarro, 1987). The boards, therefore, prevent the outside experienced CEOs from making decisions that depart from the established strategic framework that improve firm performance, by setting explicit expectations and strategic boundaries, monitoring, and

challenging the decisions of outside experienced CEOs (Ravasi & Zattoni, 2006). Specifically, boards can constrain CEOs with outside experience to make excessive diversification, risky investments, or strategies that deviate from the firms' core competencies. Information asymmetries that intensify agency problems to pursue their private interest (Morgan, 2002), particularly during stable period. Board of directors can access information about the CEO's capacity to manage the environment and achieve better performance and to create long-term value for shareholders in terms of the monitoring function. We, therefore, argue that CEOs with outside experience may not know a particular industry or firm well in a normal period, while a vigilant board may help reduce the negative impact of CEOs with outside experience by effectively managing CEOs who make decisions deviate from optimal level in terms of agency conflicts (Jiang et al., 2011; Raheja, 2005). Effective board in the perspective of agency theory primarily focus on monitoring and constraining the CEO's decisions and actions and thus improve firm performance in stable period.

H3a. The relationship between CEO outside experience and firm performance is positively moderated by board governance in a stable environment.

However, the volatile environment in the aftermath of shocks makes true signals with a lot of noise, because the torrent of trends, ideas and information may make CEOs aware of what matters more difficult than ever before. CEOs cannot scan every aspect of firms and their external environment and can only selectively perceive the phenomenon and process and interpret information based on cognitive bias and values (Hambrick and Mason, 1984). Thus, the outside knowledge and experience of CEOs may not help companies anymore in the turbulent environment. Great volatility and uncertainty lead to a much worse situation in post-crisis. As a result, not only does the outside experience of CEOs not help in any way, but also leaves the board uncertain about the appropriate course of action. Thus, it is difficult for the board to monitor CEOs in such bad situations.

In addition to monitoring function in terms of agency theory, board of directors could bring multiple perspectives to advise management on strategic decisions and thus firm survival

according to stewardship theory (Cook and Burrell, 2013; Goodstein et al., 1994; Naseem, 2019). A well-governed firm encounters clear expectations for CEOs, offers fair compensation, and opportunities for growth in their careers, motivating them to contribute their best efforts and align their interests with shareholders (Adams et al., 2016). Thus, board governance mechanisms help attract and maintain outstanding executives, due to increased trust to CEOs, particularly in the turbulent environment with great uncertainty that make both CEOs and boards in an uncharted terrain. Board directors with diverse expertise skills and knowledge provide valuable insights and strategic advice to CEOs. Overall, corporate boards are more likely to enable CEOs to identify potential risks and challenges associated with exogenous shocks by assessing diverse external resources and information (Bhagat and Huyett, 2013; Dowell, Shackell and Stuart, 2011; Lehn, Sukesh, and Zhao 2004; Zona, Gomez-Mejia and Withers, 2018). Working collaboratively with the CEO enables for the exchange of knowledge, information, ideas, best practices, and innovative ideas, which promotes organizational learning, adaptation, and the constant improvement of strategy, particularly in the post-crisis period with great uncertainty and complexity (Coles, Daniel and Naveen, 2008; Datta et al., 2020). Furthermore, effective collaboration between the board and CEO requires mutual trust, open communication, and shared goals, which can lead to better decision-making, strategic operation, and thus firm performance (Mustakallio, Autio, & Zahra, 2004). Therefore, we develop the following Hypothesis:

H3b. The relationship between CEO outside experience and firm performance is negatively moderated by board governance when the business environment has changed following a shock.

3.5 Data and Methodology

3.5.1 Sample and Main variables

3.5.1.1 Sample

The study is based on annual data on U.S. publicly traded firms available on Standard and Poor's Compustat-North America database and BoardEx, over the period of before (2000-

2007), crisis (2008), immediately after crisis (2009-2011)⁷ and after (2012-2019) the financial crisis. The data covers CEO experience, corporate governance, and financial information. As Compustat covers the operations, market and financial conditions of firms in North America, and its firm-level microdata is widely used in the literature (Lu, Wang & Lee, 2013). Besides, we obtain detailed executive and director status data from BoardEx to generate firm-level corporate governance measures related to CEO and board characteristics (Tian and Twite, 2011), which is the leading database on board composition of publicly traded firms and covers approximately 10,000 firms in nearly 50 countries (Erkens et al., 2012). Finally, we use CIK code to match firms across Compustat database and BoardEx database (Fang et al., 2018; Meyer-Doyle et al., 2019).

The empirical analysis is focused on all industries, excluding financial firms (SIC codes 6000 to 6999) and utilities (SIC codes 4900 to 4949), because high leverage in non-financial firms indicates distress but normal in financial firms and utility firms have much closer linkage to the state (DeAngelo et al., 2004; Fama and French, 2001; Gatchev et al., 2009; Serfling, 2014). We deleted all those firms for which CEO experience, board governance and financial data was not available during sample period. The selection criteria resulted in a reduced sample size of 2402 firms. In order to keep the same number of observations for different variables to meet the requirements of analysis, our final sample constituted 36125 firm-year observations (2402 firms: 2402 firm in post-crisis and 2402 in pre-crisis period). We use Fama French industry classification for 17 industry portfolios based on its four-digit SIC code at that time (Quah, Haman & Naidu, 2021; Samuel et al., 2017; Walthoff-Borm, Vanacker & Collewaert, 2018). The distribution of all firms across industries was presented in Table 2. This tells us that in the sample, 1286 of the firms are food industry (3.56%) and 1331 of the firms are Mining and Minerals industry (3.68%), 2134 of the firms are Oil and Petroleum Products industry (5.91%) and 665 of the firms are Textiles, Apparel & Footware

⁷ Financial crisis began in September 2008 with the sudden bankruptcy of Lehman Brothers (Gregoriou, 2009). M&A literature suggests that firms take a 3-year adjustment process (t+1, t+3) immediately after the announcement of M&A in year t and focus on performance immediately after the adjustment process in year t+4, because a 3-year window allows us to capture the full impact of reconfiguration activity (Kaplan, 1989; Maksimovic et al., 2013; Golubov and Xiong, 2020). Drawing on the M&A literature, we make a reasonable assumption that following a disruption, in the case of financial crisis of 2008, a company will take 3 years to make adjustment during 2009-2011.

industry (1.84%), 803 of the firms are Consumer Durables industry (2.22%) and 909 of the firms are Chemicals industry (2.52%), 1633 of the firms are Drugs, Soap, Prfums, Tobacco industry (4.52%) and 1638 of the firms are Construction and Construction Materials industry (4.53%), 428 of the firms are Steel Works Etc industry (1.18%) and 400 of the firms are Fabricated Products industry (1.11%), 6105 of the firms are Machinery and Business Equipment industry (16.90%) and 607 of the firms are Automobiles industry (1.68%), 1741 of the firms are Transportation industry (4.82%) and 2446 of the firms are Retail Stores industry (6.77%), 13999 of the firms are Other industry (38.75%) for a total of 2402 firms, 36125 observations.

Table 3-1.Sample firms selection criteria.

Sample Selection Criteria	Total Number of Companies
Firms in all Industries during 2000-2019	22975
Firms excluding Utilities and financial industries during 2000-2019	14476
Firms excluding companies missing data for either pre-crisis or post-crisis period ⁸	2421
Firms excluding missing specific years data of CEO experience, corporate governance, and financial variables during sample period (Pre-and Post-crisis period)	2402

Table 3-2.Distribution of firms across industries.

Fama-French Industry Code (17 industries)	Freq.	Percent	Cum.
Automobiles	607	1.68	1.68
Chemicals	909	2.52	4.2
Construction and Construction Materials	1638	4.53	8.73

⁸ Board Ex database has a large number of missing data related to CEO and board characteristics when merged with COMPUSTAT. As my research is focus on the difference between pre- and post-crisis during 2000-2019, I only keep firms with both pre-and post-crisis period data.

Consumer Durables	803	2.22	10.95
Drugs, Soap, Prfums, Tobacco	1,633	4.52	15.47
Fabricated Products	400	1.11	16.58
Food	1286	3.56	20.14
Machinery and Business Equipment	6105	16.90	37.04
Mining and Minerals	1331	3.68	40.73
Oil and Petroleum Products	2,134	5.91	46.63
Other	13,999	38.75	85.38
Retail Stores	2,446	6.77	92.16
Steel Works Etc	428	1.18	93.34
Textiles, Apparel & Footware	665	1.84	95.18
Transportation	1741	4.82	100.00
Total	36,125	100.00	

3.5.1.2 Main variables

The firm performance, CEO experience, board governance, and control variables are discussed in detail in the following sections. All variables measurement and data sources are provided in Table 2.

3.5.1.3 Dependent variable

In our study, firm performance measured by ROA and ROE (accounting measure), Tobin's Q (market measure) as an alternative measure. ROA is measured as earnings before interest and tax divided by total assets, ROE is measured as earnings before interest and tax divided by common equity. Tobin Q is measured as market value of assets divided by the book value of assets. This is because corporate governance is perceived differently by insiders (management) and outsiders (investors), as suggested by Black et al. (2006, p. 370). For insiders, corporate governance is a mechanism for measuring the efficiency of the firms' management team i.e., firm profitability. (Maher & Andersson, 1999). Whereas corporate

governance can be a mechanism to overcome problems of underinvestment associated with opportunistic behaviors and in encouraging active co-operation amongst stakeholders to ensure the long-term profitability of the company for outsiders (Maher & Andersson, 1999). The accounting measures focus on wealth effects of corporate governance,⁹ which is the priority of managers, whereas Tobin Q represents financial valuation of corporate governance by investors (Al Matari et al., 2014).

In addition, ROA and ROE as accounting-based profitability ratio measure the efficiency with which corporate assets and shareholders' investments are managed is crucial to basic financial survival (Chaganti and Damanpour, 1991). However, accounting profit ratios from the balance sheet are affected by accounting practice such as different methods applied to valuations of tangible and intangible capital due to goodwill, amortization and depreciation over time (Demsetz and Villalonga, 2001; Fuhrmann, 2018), which cannot perfectly measure firms' actual financial status. Besides, Tobin's Q, are commonly used in finance literature to indicate firms' future potential investment opportunities and performance, but it distorts performance comparisons of firms that rely in differing degrees on intangible capital because it emphasizes firm's future revenue from investments made only in tangible capital (Demsetz and Villalonga, 2001). Therefore, I would like to use Tobin's Q as an alternative measure of firm performance to operate the empirical approach because of the critical role of growth in firm profit and success.

3.5.1.4 Independent variable

In my research, I consider both CEO inside experience (same company) and outside experience (different company). Keil, Lavie and Pavićević (2021) state that a long experience makes a CEO have encountered typical executive problems and learned from their solutions, which could improve effectiveness of CEO's decisions. In addition, executive experience is more relevant than low-level management or nonmanagerial positions (Fondas & Wiersema,

⁹ The wealth effect of corporate governance means the accountability of senior management to shareholders to maximize shareholder wealth through allocative, productive and dynamic efficiency i.e., the objective of the firm is to maximize profits (Maher & Andersson, 1999).

1997; Michel & Hambrick, 1992), because executives are more likely to participate in strategic and corporate-wide decision-making and problem solving that resemble the current CEO role (Aguilar, 1967). Therefore, we focus on executive experience¹⁰, defined as experience in high-level managerial positions. Zhu, Hu and Shen (2020) measured a new CEO's prior other board experience as the total number of years he or she served as a director at other firms during the 10 years prior to becoming the CEO. Therefore, we measured CEO (outside) experience as dummy variable: 1 if (s)he was in executive roles (CEO, COO, MD etc) at a different firm (within the same industry or at a different industry¹¹) during the previous 10 years, 0 otherwise (Hamori & Koyuncy, 2015; Zhu, Hu and Shen, 2020). An alternative measure is 1 if (s)he was CEO, COO, MD etc at a firm in a different industry during the previous 10 years, 0 otherwise for robustness check. Using this 10-year window allowed us to both capture sufficient variation in the CEOs' prior experience and ensure that their experience was reasonably recent and relevant (Zhu, Hu & Shen, 2020). For CEO (outside) experience, we collected data on the start and end dates of each CEO experience as well as their sectors in terms of Director ID. Further, I use CEO outside industry experience as an alternative measure. Bailey and Helfat (2003) suggest that an outsider CEO with a different industrial background faces a greater risk of adverse selection. This is because the board of directors typically lacks adequate and sufficient information about the best-managed companies in a different industry, in contrast to the knowledge they possess about firms within their own industry.

CEOs with internal experience are more likely to be familiar with firms and easily to integrate in organization associated with better internal process (Friedman & Saul, 1991; Zhang & Rajagopalan, 2004), while CEOs with external experience could process more external knowledge and information and are better equipped to expand firm resource base,

¹⁰ According to Keil, Lavie and Pavićević (2021), we define executive experience as the CEO whose previous job title indicated a high-level managerial position such as "CEO," "executive chairman," "vice president (VP)," "executive vice president (EVP)," "senior vice president (SVP)," "managing director (MD)," and "head of a division," or if the word "chief," such as in "chief financial officer (CFO)" or "chief operations officer (COO)" (Cannella & Hambrick, 1993; Keck & Tushman, 1993)

¹¹ Different industry: we distinguish it based on 2-digit SIC unmatched industry (Hamori & Koyuncy, 2015)

foster innovation (Menon & Pfeffer, 2003; Wiersema, 1992). Generally, more experience can make CEO better understand the market and customers' needs (Von den Driesch et al., 2015). Inconsistent findings suggest a need to investigate the conditions under which firms can reap benefits from both internal and external experience considering the individual-, organizational-and environmental-level factor (Finkelstein et al., 2009).

In this study, board governance variables include board size, board independence, busy directorship and CEO duality (Bhatt & Bhatt, 2017; Tian and Twite, 2011; Trana & Turkiela, 2020). *Board size* is a significant resource for firms to link with external environment, measured as the total number of board members sitting on the board. (Hillman et al., 2000). *Independent board of directors*, as the bridge between managers, shareholders, stakeholders and the outside world, play the core in internal governance mechanism for monitoring and advising. We measure board independence as the proportion of independent directors, simply the number of independent directors divided by the total number of directors (Ramdani and Witteloostuijn, 2010). *Busy directorship* is the extent to which directors who sit on multiple boards related to outside connections, measured as the proportion of directors with three or more directorships to total number of directors on board (Elyasiani and Zhang, 2015; Fich and Shivdasani, 2006). *CEO duality* is another important variable of board characteristic, as 80% of U.S. companies have such leadership structure (Brickley et al., 1997). It is operationalized as a binary variable, in which the chief executive officer (CEO) and the board chair are the same person equals 1, otherwise 0 (Bebchuk and Cohen, 2005; Francis et al., 2011; Liu, Wei and Xie, 2014).

Since here is no one-size-fits-all approach to achieving effective governance (Bhagat and Bolton, 2008; Black et al., 2014). To observe the governance quality of sample firms, I use a comparative approach to construct Corporate Governance Index (CGI)¹² to clearly distinguish board governance effectiveness, referring to the very recent research by Farooq, Noor and Ali (2022), Bhatt & Bhatt (2017), Nazir (2015) and Varshney et al. (2012). I

¹²¹² The approach to construct Corporate Governance Index refer to the existing literature (Guest, 2009; Martynova and Renneboog, 2010)

created a scale based on the four board dimensions as follows: Each variable of board characteristics used was assigned scores in the construction of the board governance index. A score of 1 is assigned to board size over industry average, otherwise a score of 0, by setting the benchmark using the average board size of sample firms within industry based on two-digit SIC code (Guest, 2009). I assign a score of 1 if board independence is more than 50%¹³ indicating good monitoring function of board, and 0 if it is fewer than 50%. A score of 1 is assigned if busy directorship is less than 50% indicating good monitoring function of board, and 0 if it is more than 50%. As CEO duality implies bad monitoring function, a score of 1 is assigned to the chief executive officer (CEO) and the board chair are the different persons, and 0 if CEO and board chair are the same person (Bebchuk and Cohen, 2005; Francis et al., 2011). Finally, we sum up the value of the 4 elements of board governance index. Firms with a higher board governance index would be considered to have better governance practices than the ones with a lower index. Specifically, the higher the board governance index, the better the monitoring function. Even though the simple index may not reflect the impact of individual governance parameter, it does help to distinguish the firms with strong governance mechanism and those with weak mechanism (Bhatt & Bhatt, 2017).

3.5.1.5 Control Variable

This research control general firm characteristics that could affect firm performance. There are several firm-specific factors that are known to have a significant impact on firm performance, namely firm size, firm age, leverage, year and industry. Specifically, firm size is measured by the logarithm of total assets (Mitton, 2002; Singla and George, 2013). Log transformation not only leads to easy interpretation of results, but it also makes the distribution of the data closer to a normal distribution (Ehie & Olibe, 2010), which means the changes in the logarithm domain represent relative percentage changes in the original metric. Since firm size associates with the fact that larger firms are more likely to access a plenty of resources (e.g., financial resources and managerial resources) with less cost due to fewer information asymmetries, facilitates greater investments (Singla & George, 2013). On the

¹³ We suppose 50% is the cut-off point to construct board governance index.

other hand, larger firms may relatively reduce firm investment because of the difficulty to find profitable investment opportunities in proportion to their current asset (Gonzalez, 2016). Besides, we control the variable firm age (AGE), measured as firm age as the time between its going public and the present time (Filatotchev et al., 2006; Johnson et al. 2016; Kieschnick & Moussawi, 2018). A firm's age represents the resources that firms accumulate over time and the difficulties related to compressing the time required, which thus reflects the path dependency of these resources that could affect firm investment activities (Singla & George, 2013). Moreover, old firms have greater ability and strategic freedom than young firms (Duysters & Hagedoorn, 2002).

Leverage is measured as the ratio of total debt to total assets to take into account the capital structure differences influencing the performance of firms (Singla & George, 2013), which is a proxy for financial constraints of firms, which can restrict CEOs' decision making and strategic options (Vincente-Lorente, 2001). Firms with low tangibility are more likely to have difficulties to access external funds due to the low collateral value of their assets, and encounter information asymmetries with outside investors, leading to higher costs of fund raising (Hovakimian, 2009; Tran, 2020).

Significantly, given the role of CEO could entail different decisions to make and different problems to solve, we also control prior CEO tenure that can enhance CEO's skills and the quality and reliability of decision-making (Day and Lord, 1992; Priem, 1994). CEOs tend to learn quickly and take more risks during their early tenure, and they espouse new initiatives and expand their knowledge and skill repertoires along with tenure progresses (Wu, Levitas, and Priem, 2005), whereas CEOs myopically commit to obsolete paradigms, tend to risk averse and adapt less to the rapidly changing external environment (Miller, 1991; Luo, Kanuri & Abdraws, 2014). Therefore, we measure prior CEO experience as total number of years CEO has spent in CEO positions in both same and different companies during that CEO's career (Keil, Lavie and Pavićević, 2021). Prior CEO tenure acts as a proxy for CEOs' knowledge, learning, power, and impact within the firm and outside the firm (Hambrick,

2007; Simsek, 2007). CEO tenure is measured as the number of years for which the firm's CEO has been in the position within the firm (Herrmann and Datta, 2002, 2006; Hsua, Chen & Cheng, 2013; Souder et al., 2012), which can help identify if the given firm has one stable CEO or continually changed CEOs. Besides, a CEO's age could imply the experience and knowledge required for the job, which is measured as the number of years from the date of birth (Wu, Li, Ying&Chen, 2018). CEO gender took the value 1 for a female CEO and 0 for a male CEO (Wu, Li, Ying&Chen, 2018). CEO compensation is measured as the sum of salary, bonus, and stipends (Chen, Liu, & Li, 2010; Firth et al., 2007).

Table 3-3. Variable description.

Variables	Measurement	Literature support	Data Source
Dependent Variables			
ROA	Earnings before interest and tax divided by total asset	Detthamrong, Chancharat & Vithessonthic, 2017; Hermann & Datta, 2006; Brick, Palmonand & Wald, 2006;	Compustat
ROE	Earnings before interest and tax divided by common equity	Detthamrong, Chancharat & Vithessonthic, 2017; Hermann & Datta, 2006; Brick, Palmonand & Wald, 2006	Compustat
Tobin'Q	The market value of assets divided by the book value of assets	Vintila et al., 2015	Compustat
Independent Variables			
CEO Experience_Outsider1	1 if (s)he was in executive roles (CEO, COO, MD etc) at a different firm (within the same industry or at a different industry) during the previous 10 years, 0 otherwise	Hamori & Koyuncy, 2015; Zhu, Hu and Shen, 2020	Board Ex
CEO Experience_Outsider2	1 if (s)he was CEO, COO, MD etc at a firm in a different industry during the previous 10 years, 0 otherwise	Hamori & Koyuncy, 2015; Zhu, Hu and Shen, 2020	Board Ex

Board Governance Index	Board governance score is based on board size, board independence, busy directorship and CEO duality. The index ranges from a feasible low of 0 to a high of 4; a high score is associated with good monitoring function.	Bhagat and Bolton, 2008, 2017; Guest, 2009; Martynova & Renneboog, 2010	Board Ex
Board Size	The total number of board directors	Hillman et al., 2000; Zona, Zattoni & Minichilli, 2013	Board Ex
Board Independence	The number of independent directors divided by the total number of directors	Ramdani & Witteloosetuijn, 2010	Board Ex
Busy Directorship	The proportion of directors with three or more directorships to total number of directors on board	Elyasiani & Zhang, 2015; Fich & Shivdasani, 2006	Board Ex
CEO Duality	The CEO and the board chair are the same person equals 1, otherwise 0	Bebchuk & Cohen, 2005; Francis et al., 2011; Liu, Wei & Xie, 2014	Board Ex

Control Variables

Prior CEO tenure	Total number of years CEO has spent in CEO positions in both same and different companies during that CEO's career	Keil, Lavie and Pavićević, 2021	Board Ex
CEO tenure	The number of years for which the firm's CEO has been in that position	Herrmann and Datta, 2002, Herrmann and Datta, 2006; Hsua, Chen&Cheng, 2013	Board Ex
CEO Age	CEO age was measured as the number of years from the date of birth	Herrmann and Datta, 2002, Herrmann and Datta, 2006; Hsua, Chen&Cheng, 2013	Board Ex
CEO Gender	Dummy variable equals to 1 for a female CEO and 0 for a male CEO	Hanousek, Shamshur& Tresl, 2019; Wu, Li, Ying&Chen, 2018	Board Ex
CEO compensation	The sum of salary, bonus, and stipends	Chen, Liu, & Li, 2010; Firth et al., 2007; Kato & Long, 2006; Wang & Xiao, 2011	Board Ex
Firm size	The natural logarithm of a firm's total asset	Mitton, 2002; Singla & George, 2013	Compustat

Firm age	firm age as the time between its going public and the present time (also in years)	Filatotchev et al., 2006; Johnson et al. 2016; Kieschnick & Moussawi, 2018	Compustat
Leverage	Long-term debt plus debt in current liabilities divided by total asset	Ghosh & Jain, 2000 ; Aivaziana, Geb & Qiu, 2005 ; Chava & Roberts, 2008 ; Chen et al., 2010.	Compustat
Tangibility	Tangibility is asset tangibility measured by net fixed assets divided by total assets.	Hovakimian, 2009 ; Tran, 2020	Compustat

3.5.2 Data description

Descriptive statistics for firm performance, CEO experience, corporate governance and control variables and sample size for the full sample period (2000-2019) are presented in Table3-4. The mean value for our key explanatory variable CEO Outsider1 and CEO Outsider2 is 0.49 and 0.34 respectively, with a maximum value of 1 and minimum value of 0. This provides insights about the preference of firms regarding CEOs with outside experience or inside experience by the US listed companies. The average Board Governance Index (BGI) of the US listed companies is 2.56 and the maximum BGI is 4. The mean value of leverage of US firms is 0.47, which suggests the proportion of debt in their capital structure.

According to the statistics on CEO outside leadership experience, 56.44% firms had CEOs with outside experience in post-crisis1 and this figure rose to 59.21% in the post-crisis2 period, while only 44.06% of firms had CEOs with external experience in pre-crisis period. This indicates firms prefer to have CEOs with outside experience in the post-crisis compared with the pre-crisis. This is consistent with my intuition that CEOs with outside experience are more able to think out of the box to initiate strategic change in the post-crisis period better for firm survival and recovery, but maybe a weakness for firms in the pre-crisis in terms of agency problems. Besides, 52.26% of highly financial constrained firms had CEO outside experience, which indicates that firms with high financial constraints are more likely to have CEO s with outside experience. Furthermore, 57.97% of low bankruptcy possibility firms had

CEOs with outside experience and only 9.18% of medium bankruptcy possibility firms had CEOs with outside experience, which indicates firms under low bankruptcy possibility are more likely to have CEOs with outside experience.

Table 3-4. Data descriptive statistics.

This table presents descriptive statistics of our main variables. The descriptive statistics were presented further for full sample, pre-crisis and post-crisis sub samples. Pre-crisis period covers 2000 to 2007, post-crisis1 period covers 2009-2011 and post-crisis2 period covers 2012 to 2019. The table contains the sample CEO experience, board governance, other characteristics of CEOs and characteristics of firms used in the study. The results are based on a sample of 2,402 firms and 36,107 firm years from 2000 to 2019 due to data limitation (missing value).

Variable	Obs	Mean	S.D.	Min	Median	Max
ROA	36107	0.00	0.31	-2.02	0.07	0.35
ROE	36107	-0.03	2.63	-311.13	0.06	34.68
Tobin Q	36107	3.01	59.09	0	1.11	5452.5
CEO Outsider1	36107	0.49	0.50	0	0	1
CEO Outsider2	36107	0.34	0.47	0	0	1
Board Governance Index	36107	2.56	0.84	0	3	4
CEO Tenure	36107	7.41	7.07	0	5.4	60.7
Prior CEO tenure	36107	9.40	7.67	0	7.8	60.7
CEO Age	36107	56.45	8.21	28	56	95

CEO Gender	36107	0.03	0.17	0	0	1
CEO Compensation	30,998	2541.79	6791.531	0	0	37864
Firm Size	36107	6.42	2.24	0.00	6.53	13.61
Firm Age (IPO)	36107	58.70	48.43	0	25	119
Leverage	36107	0.47	18.98	0	0.18	3465
Tangibility	36107	0.26	0.24	0	0.17	0.99

Table 3-5 presents the variation of firm performance, CEO experience, board governance, firm characteristics, financial constraints, and strategic decisions between pre- and post-crisis through equity of mean and medians test. This study uses a 20-year period spanning the global financial crisis of 2008 presenting significant time series evidence of the relationship between pre- and post-crisis. Descriptive statistics of the data classified into pre-crisis (2000–2007) and post-crisis (2012-2019). The differences between pre- and post-crisis reflect the severe impact of the crisis and speed of recovery of different firms in the selected industries. While comparing the average values for variables is common in the literature (e.g., Erkens et al, 2012), we test the equity of means between pre- and post-crisis using t-test (mean-comparison tests) for all variables. However, as the equity of means requires specific distribution, it is clearly shown that the distribution of assumptions is not valid from some distribution of variables. Because the equity of means test has to work under certain assumptions about the distribution, they are not working appropriately. Therefore, we also conduct the equity of medians by non-parametric test, which does not require the particular assumption and more meaningful to estimate the difference between pre- and post-crisis.

Table 3-5. Equity of mean and median between pre-crisis and post-crisis period.

Variable	Mean			Median		
	Pre-crisis	Post-crisis	P-value	Pre-crisis	Post-crisis	P-value
Firm Performance						
ROA	0.0123	-0.2360	0.0000	0.0814	0.0645	0.0000
ROE	0.0487	-0.1035	0.0000	0.0675	0.0609	0.0000
Tobin Q	2.0852	4.2891	0.0077	1.2956	1.0841	0.0000
CEO Experience						
CEO Experience Outsider1	0.3762	0.5523	0.0000	0	1	0.000
CEO Experience Outsider2	0.256	0.3723	0.0000	0	0	0.000
CEO Tenure (same company)	6.4083	8.1955	0.0000	4.6	6	0.000
CEO Prior Tenure	7.5278	10.8752	0.0000	5.9	9.9	0.000
CEO Age	55.0373	57.7697	0.0000	55	57	0.000

CEO Gender	0.9796	0.961	0.0000	0		0.000
CEO Education	0.4355	0.4705	0.0000	0	0	0.000
Board Governance						
Board Size	8.3815	8.2627	0.0000	8	8	0.004
Board Independence	0.6830	0.7702	0.0000	0.7143	0.8000	0.000
Busy Directorship	0.4350	0.4146	0.0000	0.4643	0.4939	0.000
CEO Duality	0.5678	0.3928	0.0000	1	0	0.000
Board governance Index	2.3836	2.7128	0.000	2	2	0.000
Firm Characteristics						
Firm Size	6.3834	6.6043	0.0000	6.4204	6.807	0.000
Firm Age (IPO)	53.6580	63.6522	0.0000	18	28	0.000
Leverage	0.2440	0.6955	0.0858	0.1601	0.2113	0.000
Capital Expenditure	0.0546	0.0462	0.0000	0.0345	0.0283	0.000
Z-score	5.3313	-49.3442	0.0006	3.7809	2.9838	0.000
Financial Constraints						
KZ-Index	0.5040	2.5687	0.0278	0.4441	0.4181	0.039
Payout Ratio	0.4232	0.3923	0.8838	0.0412	0.1357	0.000
Tangibility Ratio	0.2555	0.255	0.8634	0.1839	0.1641	0.000
Investment Strategy						
R&D	0.1081	0.1165	0.6468	0.0342	0.0306	0.004
M&A	3.2961	3.7803	0.0000	3.4266	3.9399	0.000
Divestment (Sale of Property)	0.0045	0.0055	0.5373	0	0	0.000
Total Investment	0.1584	0.1885	0.2106	0.0974	0.0818	0.000
Executive Pay						
Total Pay	3179.6640	3102.521	0.7045	0	0	0.000
Equity Fraction	0.6561	0.8500	0.0000	0.7617	0.9011	0.000
Short-term payment Fraction	0.3090	0.1242	0.0000	0.2118	0.0858	0.000

Note:

(1). Two tailed t-tests (mean-comparison tests) of the difference between the pre-crisis means and post-crisis means were conducted.

- (2). Nonparametric test (K-sample equity-of-medians test) of the difference between the pre-crisis medians and post-crisis medians were conducted.
- (3). *p-value indicates statistical significance for the null-hypothesis that difference = Mean/Median (post-crisis) - Mean/ Median (pre-crisis) =0.
- (4). This table demonstrates whether firm performance, CEO experience and corporate governance variables were quite different between pre-crisis and post-crisis for the selected industries.
- (5) In addition to median in pre-and post-crisis, the table also presents the percentage of firms *greater than median* " () " in the post-crisis period and post-crisis period.

Prior research has commonly captured performance using accounting measures of financial performance (Ehikioya, 2009), market performance (e.g., Borisova and Brown, 2013; Himmelberg et al., 1999). In terms of *firm performance* variables, we test different measures of firm performance including profitability (ROA and ROE), and market performance (Tobin'Q). According to the performance value presented in Table 5, there is significant difference of ROA and ROE between pre- and post- crisis period, with the mean (medians) of 0.0123 (0.0814) and -0.2360 (0.0645) respectively, 0.0487 (0.0675) and -0.1035 (0.0609). Financial performances of firms were severely affected by the financial crisis of 2008 in terms of lower ROA and ROE in post-crisis period than pre-crisis period. In addition, there is significant difference of Tobin's Q in the pre-and post-crisis period with the mean (medians) of 2.0852 (1.2956) and 4.2891 (1.0841) respectively, which indicates higher growth opportunity in post-crisis period in terms of average Tobin's Q but lower Tobin's Q in post-crisis in terms of medians. Firms have more growth opportunities in post-crisis than pre-crisis period due to firms' efforts to recover from the crisis. In particular, global financial crisis of 2008 shocked the core global financial system and thus had a widespread effect on the global economy, resulting in huge reduction in credit available, huge reduction in customer demands, decrease in employment, and important move towards creating cost efficiencies within the firms, reducing shareholder value and lowering return on investments (Stiglitz, 2009). Therefore, we get the expected results of firm performance from value of the equity of means (medians) test.

CEO experience includes CEO internal experience (i.e., CEO firm experience) and CEO external experience (i.e., Outsider1_CEO experience outside firms, and Outsider2_CEO experience outside industry). The experience values show that there is significant difference of CEO experience in the pre- and post-crisis. CEO Outsider1 with the mean (medians) of 0.3762 (0) and 0.5523 (1), which indicates that firms preferred CEOs with outside experience in post-crisis period compared with pre-crisis period. We use alternative measure CEO outside industry experience (i.e., CEO outsider2) with the mean (medians) of 0.256 (0) and 0.3723 (0), which indicates CEO outside2 with medians of 0¹⁴ (i.e., inside experience in same companies) but higher percentage of firms *greater than median* in the post-crisis period 25.75% compared with pre-crisis period 14.63%. Therefore, more firms have CEOs with outside experience in the post-crisis period compared with pre-crisis period. Additionally, CEO age, CEO tenure and CEO prior tenure are all higher in post-crisis than pre-crisis. Firms preferred to assign CEOs with higher education in post-crisis than pre-crisis. In terms of CEO gender, female CEOs are more acceptable in post-crisis than pre-crisis.

Board governance values indicate improvements in the quality of corporate governance structure in the pre- and post-period as follows. **First**, board size with mean (medians) of 8.3815 (8.0000) and 8.2627 (8.0000) in the respective pre- and post- crisis periods. According to average board size, firms with smaller board size in post-crisis than pre-crisis. Whereas as higher percentage of firms *greater than median* in the post-crisis period 43.05% compared with pre-crisis period 44.79%, which indicates that firms with smaller board size for better monitoring in the post-crisis period compared with pre-crisis period. **Second**, board independence with mean (medians) of 0.6830 (0.7143) and 0.7704 (0.8000) in the respective pre- and post- crisis periods, which indicates that firms with higher board independence in the post-crisis period compared with pre-crisis period. **Third**, busy directorship with mean

¹⁴ As CEO experience is measured as dummy variable, 0 means CEO with experience within same company, 1 means CEO with experience in different companies. In order to compare the change of CEO external experience, we have to obtain the percentage of firms in terms of CEO external experience greater than median for both pre- and post-crisis period and identify if the percentage is more than 50% or not.

(medians) of 0.4350 (0.4286) and 0.4146 (0.4286) in the respective pre- and post- crisis periods but lower percentage of firms greater than median in the post-crisis period 46.43% compared with pre-crisis period 49.39%, which indicates that firms with lower busy directorship in the post-crisis period compared with pre-crisis period. **Fourth**, CEO duality as a dummy variable shows significant difference between pre- and post-crisis with mean (medians) of 0.5678 (1) and 0.3928 (0), which indicates firms with less CEO duality in post-crisis period than pre-crisis period. Firms attach great importance to the monitoring function of the board in the post-crisis period. Fifth, Board Governance Index as a dummy variable shows significant difference between pre- and post-crisis with mean (medians) of 2.3836 (2) and 2.7128 (2), which indicates firms with high board effectiveness in post-crisis period than pre-crisis period. Overall, there are certain changes in board governance in the post-crisis period compared with pre-crisis, which indicates support for the outcome model.

For *financial constraints*, we expect that firms have higher incentives to make changes when they are under high degree of financial constraints after the crisis. There is a significant difference of leverage between pre- and post-crisis, with the mean (medians) of 0.2440 (0.1601) and 0.6955 (0.2113). Firms have higher leverage in post-crisis, which indicates firms face more financial constraints in post-crisis than pre-crisis. Besides, there is a significant difference of Z-score¹⁵ between pre- and post-crisis with the mean (medians) of 5.3313 (3.7809) and -49.3442 (2.9838), which indicates that there is a higher probability of bankruptcy for firms in pre-crisis than post-crisis. Moreover, we use three different measures for the degree of firm financial constraints, including Kaplan-Zingales index (Bhagat et al., 2005; Duchin et al., 2010), Payout ratio (Almeida, Campello, and Weisbach, 2004), and Tangibility (Gonzalez, 2016; Rajan and Zingales, 1995). The financial constraints values indicate that a higher degree of financial constraints in the post-crisis period than pre-crisis

¹⁵ Z-score indicates if a company is heading for bankruptcy. Investors attach importance to the Altman's Z-score related to their decisions on whether to buy or sell a company's stock, depending on the assessed financial strength. A Z-score that is lower than 1.8 means that the company is in financial distress and with a high probability of going bankrupt; a score of 3 and above means that the company is in a safe zone and is unlikely to head for bankruptcy. A score of between 1.8 and 3 means that the company is in a grey area and with a moderate chance of filing for bankruptcy.

period. First, the KZ index is significantly different with the means (median) of 0.5040 and 2.5687 in respective pre-and post-crisis, which indicates firms face greater external financial constraints in post-crisis than pre-crisis. Whereas in the equity of median test, KZ index is significantly different with median of 0.4441 and 0.4181 in respective pre-and post-crisis. Second, payout ratio is significantly different between pre-and post-crisis in the equity of median test with medians of 0.0412 and 0.1357, but insignificantly different in the equity of mean test between pre- and post-crisis with mean of 0.4232 and 0.3923. Despite the payout ratios of companies are related to firm dividends in terms of firm performance, firm may payout relatively less to maintain most of internal funds for their investment (Bhagat et al., 2005). Third, tangibility with medians of 0.1839 and 0.1641 in the respective pre- and post-crisis periods, which indicates that firms with higher degree of financial constraints in the post-crisis period. Firms with lower tangibility have difficulty in external financing because asymmetric information makes external financing more costly, especially for risky investments (Myers and Majluf, 1984). This results in the expectations that companies was under great financial constraints after the crisis. Overall, certain changes occurred in the financial constraints of firms.

Strategic decisions are proxied by M&A, Sales of assets, R&D, Advertisement expenditure and Sales of investment. In the equity of mean test, none of these strategic decisions is significantly different in the pre- and post-crisis, except for M&A with mean of 3.2961 and 3.7803 in pre- and post-crisis respectively. While in the equity of median test, R&D, M&A, divestment (sale of asset) and total investment show significant difference between pre- and post-crisis with the medians of 0.0342 and 0.0306, 3.4266 and 3.9399, 0 (48.09%) and 0 (42.63%)¹⁶, and 0.0974 and 0.0818 in pre- and post-crisis period, respectively. The results show that except for M&A, R&D, divestment, and total investment are all declined in the post-crisis period than pre-crisis period. Although R&D can truly improve efficiency, R&D with high risks, low success rates, long period to achieve benefits and increased cost,

¹⁶ Percentage of firms greater than median in pre- and post-crisis period

particularly the respective costs of failed investment projects leading to the high out-of-the-pocket costs (Schuhmacher et al., 2016). Overall, there are certain changes in corporate investment between pre- and post-crisis, whatever R&D to improve product innovation, M&A to increase market power or divestment to reduce the unprofitable investment for sustained competitiveness. Meanwhile, there is no significant difference of R&D investment between pre-and post-crisis.

3.5.3 Methodology

In this research, we hope to compare the impact of CEO experience on firm performance, in two different economic contexts: before and after the global financial crisis. Therefore, we test the hypotheses in these two periods. In terms of the equity of mean and median test, we expect that the impact of CEO experience shows significant difference between pre- and post-crisis period. Firstly, the equation system is regressed in an economic growth period using data from 2000 to 2007. Given that our data set is panel data, we use panel estimation. With Hausman's specification test, it was found that the fixed effect model is more appropriate model than random effect model. Hence, to estimate the model, we use fixed effects estimator. Secondly, I analyze the hypotheses in a recovery period after the global financial crisis: especially we focus on 2012-2019, since firms all face tough circumstance and more volatile business environment for survival in the immediate aftermath of the financial crisis (2009-2011).¹⁷ According to the existing literature on firm performance before and during financial crisis (Campello et al. 2010; Ferrero-Ferrero et al., 2012; Johnson et al., 2000; Erkens, Hung & Matos, 2012), we take pre-crisis period as sanity check for post-

¹⁷ We draw on the large M&A literature that does not focus on the post-M&A internal processes and focuses instead on the relationship between firm and deal characteristics as well as corporate governance of the acquiring firms and post-integration change in performance of these firms (Capron and Guillén, 2009; Golubov and Xiong, 2020; Laabs and Schiereck, 2010). In keeping with the M&A literature, I make the reasonable assumption that, following a major disruption, a 3-year period is used to make strategic changes to a company's focus, such that seize and transform in Teece's framework is achievable within a 3-year period. However, it is possible to vary this window during an empirical exercise to examine whether the results are sensitive to the choice of this window.

crisis period. Therefore, we carry out the regression model with post-crisis dummy variables to identify the difference.

Although CEO experience in the same company may have a short cycle for adaptation to rapidly adjust to the strategic needs of a firm, CEO experience in different industries or firms could promote the development of diverse cognitive maps that provide various interpretations of problems and solutions (Walsh, 1988). CEOs with outside industry experience are easier to monitor, since board members are more likely to better evaluate strategic actions against their own firm- and industry-specific knowledge (Adams, Hermalin, & Weisbach, 2010; Li & Patel, 2019). As the financial crisis of 2008 has greatly changed the business environment, CEOs with outside industry experience are better able to adapt to the changing environment, because of their lower commitment to past firm strategies (Hambrick, Geletkanycz, & Fredrickson, 1993) and strategic change. Based on their ability to draw on these experiences and make divergent strategic diagnoses, CEOs with outside industry/firm experience could better fulfill their entrepreneurial roles than CEOs with firm experience (Dutton & Duncan, 1987). Therefore, we select CEO external experience outside firms in the baseline model. Due to the effective integration/ alignment of internal resource and intra- industry information processing and strong ties, we use the CEO experience outside industry as an alternative measure of CEO external experience for robustness check.

In this research, we estimate the following baseline model to assess the impact of CEO experience and corporate governance on firm performance. In addition, we include industry dummy variables¹⁸ to control for industry effects under fifteen industries. Therefore, fourteen dummies are constructed. Finally, we use year dummy variables in the model to capture the regulation effects. Baseline estimations (OLS) are conducted by the following equation for the industry and year-fixed effects model:

¹⁸¹⁸ Industry Classification Benchmark (Fama French based on four-digit SIC code) is adopted to categorize the sample firms under 17 industries.

$$\begin{aligned}
\text{Firm Performance}_{i,t} &= \beta_1 + \beta_2 \text{CEO outside experience} + \beta_3 \text{Board governance index} \\
&+ \beta_4 \text{Post} - \text{crisis1} + \beta_5 \text{Post} - \text{crisis2} \\
&+ \beta_6 (\text{CEO outside experience} * \text{Post} - \text{crisis1}) \\
&+ \beta_7 (\text{CEO outside experience} * \text{Post} - \text{crisis2}) \\
&+ \beta_8 (\text{Board governance index} * \text{Post} - \text{crisis1}) \\
&+ \beta_9 (\text{Board governance index} * \text{Post} - \text{crisis2}) + \beta_{10} X_{i,t} + \gamma_i + \varepsilon_{i,t}
\end{aligned}
\tag{Eq. (3-1)}$$

where dependent variable is the firm performance, which is measured using both accounting-based measures (ROA and ROE) and market-based measure (Tobin Q); Post-crisis1 is a dummy variable that take the value 1 for the time period Post-crisis is between 2009 and 2011 and zero otherwise; Post-crisis2 is a dummy variable that take the value 1 for the time period Post-crisis is between 2012 and 2019 and zero otherwise (Pre-crisis as P_0 indicates the time period is between 2000 and 2007), referring to Chen (2014) who investigates CEO experience over the three years preceding the 2008 financial crisis (2005-2007) and the three years following the financial crisis (2009-2011). $X_{i,t}$ are control variables: other CEO characteristics including CEO tenure, Prior CEO tenure, CEO age, CEO gender and CEO compensation, and firm characteristics including firm size, firm age, leverage, tangibility. γ_i is the fixed effect, including year-fixed effect and industry-fixed effect. $\varepsilon_{i,t}$ is error item.

$$\begin{aligned}
\text{Firm Performance}_{i,t} &= \beta_1 + \beta_2 \text{CEO outside experience} + \\
&\beta_3 \text{Board governance index} + \beta_4 \text{Post} - \text{crisis1} + \beta_5 \text{Post} - \text{crisis2} + \\
&\beta_6 (\text{CEO outside experience} * \text{Post} - \text{crisis1}) + \beta_7 (\text{CEO outside experience} * \text{Post} - \\
&\text{crisis2}) + \beta_8 (\text{Board governance index} * \text{Post} - \text{crisis1}) + \\
&\beta_9 (\text{Board governance index} * \text{Post} - \text{crisis2}) + \beta_{10} (\text{CEO outside experience} * \\
&\text{Board governance index}) + \beta_{11} (\text{CEO outside experience} * \text{Board governance index} * \\
&\text{Post} - \text{crisis1}) + \beta_{12} (\text{CEO outside experience} * \text{Board governance index} * \text{Post} - \\
&\text{crisis2}) + \beta_{13} X_{i,t} + \gamma_i + \varepsilon_{i,t}
\end{aligned}
\tag{Eq. (3-2)}$$

The key variables of interest are the triple-difference interaction term: CEO outside experience * Post-crisis * Board Governance (in Eq. (2)). We measure board governance using board governance index with the value 1-4, where the higher the BGI, the better the monitoring function of the boards, otherwise advising function of the boards. The interaction

terms capture how CEOs with outside experience and board governance work together to affect changes in firm performance before and after the financial crisis. β_2 and β_7 indicates the impact of CEO outside experience on firm performance in pre- and post-crisis, respectively. I report my estimation results in *Section 3.6 Result and Discussion*.

As the variables under consideration are of an endogenous nature, the values of the board governance variable are widely influenced by the past performance of the company, which is a case of the dynamic endogeneity¹⁹ (Wintoki et al., 2012). Raheja (2005) and Harris and Raviv (2008) argue that past performance directly affects the firm's information environment, potential profits, and the opportunity cost of outside directors, all of which are characteristics that may have impact on the optimal board governance structure. Unobservable heterogeneity is a source of endogeneity if there are unobservable factors that could influence performance and explanatory variables. OLS estimation completely ignores unobserved heterogeneity and could yield biased and inconsistent results (Maddala and Lahiri, 2009). Whereas fixed effect (FE) estimation eliminates the time-invariant variable problems, specifically CEO itself is time-invariant if there is no change during the time period, and other unobservable heterogeneity (Wintoki et al., 2012).

Board structure, as key aspects of corporate governance, is dynamically endogenous with respect to firm performance, as it allows past and current realizations of board structure influence current firm performance. (Wintoki, Linck & Netter, 2012). Companies choose their board structure in any period with the goal of achieving a specific degree of performance in that period, and while board structure may influence firm performance. In this scenario, board governance and firm performance are simultaneously determined, and both OLS and fixed-effects models are biased. While Generalized Methods of Moments (GMM)

¹⁹Dynamic endogeneity which would arise from the possibility that contemporaneously observed governance variables are not strictly exogenous since current corporate governance is likely to depend on past realizations of performance.

estimation techniques could potentially eliminate all the sources of endogeneity²⁰ by requiring much more plausible sequential exogeneity (Wintoki, 2007). Therefore, the dynamic generalized method of moments model (GMM) is used to address panel data (i.e., dynamic endogeneity bias), using instrument variables which in the regressions should be correlated with corporate governance, but do not have a direct relationship with performance (Aggarwal et al., 2009; Akbar et al., 2016). We treat all variables, except the year dummy, firm age, firm size, industry dummy and CEO outside experience, as endogenous. This allows the use of instruments for all explanatory variables, which are not strictly endogenous and are thus treating those as predetermine (i.e., firm size, firm age, leverage, tangibility, CEO compensation), and performance variable (ROA, ROE, and Tobin's Q).

3.6 Empirical Results and Discussion

In this study, I undertake various regression diagnostics test to check for the different estimation problems like multicollinearity and heteroskedasticity. The variance inflation factor (VIF) was calculated for each independent variable and is less than 10, indicating that there is no multicollinearity issue (David et al., 1998).

In this section, I present the estimation results of the impact of CEO experience variable, board governance, and their interactions on firm performance measures. At the first stage, I report results of baseline model (model 1_OLS model) for the impact of both CEO outside experience and corporate governance on the indicators of firm performance adding the pre- and post- crisis contrasts, controlling other CEO characteristics, firm characteristics, year and industry effect. At the second stage, we report the results of model 2_FE model for the impact of both CEO external experience and board governance, add the pre- and post- crisis contrasts. In the third stage, we use triple interactions by considering the interaction between CEO external experience and board governance, and then adding the pre- and post- crisis

²⁰ Endogeneity encompasses measurement errors, omitted variables/selections and simultaneity.

contrasts, in Mode 3_OLS. In the fourth stage, we use triple interactions by FE estimation. In the fifth stage, we use GMM model to deal with endogeneity issue (i.e., reverse causality between corporate governance and firm performance). Finally, we do robustness checks with different measures of firm performance and CEO outside experience.

The analysis is carried out to examine the impact of CEO outside experience and board governance on firm performance (i.e., ROA), and the results are reported in **Table3-6**. OLS and fixed-effects estimates in Colum (1) and (2) show that CEO outsider experience has a significantly negative effect on firm performance in pre-crisis(-0.0223, t-statistics=-4.59) using OLS and (-0.0111, t-statistics=-2.73) in FE, but insignificantly positive or significantly positive impact in post-crisis (0.0005, t-statistics=0.07) using OLS and (0.0091, , t-statistics=1.94) in FE. These results support my Hypothesis 1 and is consistent with a number of prior research including Finkelstein, Hambrick and cannella (2019), Friedman and Saul (1991) and Zhang and Rajagopalan (2004), due to CEOs with outside experience lacking familiarity of firms and ineffective integration of incumbent Top Management Team (TMT), and with limited knowledge of organizational context and resources in stable period. Whereas the result in turbulent environment is consistent with prior studies, including Crossland et al., (2014), Fich and Shivdasani (2006), and Zajac and Westphal (2004). These studies emphasize that CEOs with outside experience are more likely to repositioning the companies in post-crisis with fresh eyes and open mind for bold changes and enable companies to align with the changed environment and achieve better firm performance (Hambrick&Schechter, 1983; Haveman, 1992; Zajac &Kraatz, 1993). When dealing with GMM model it shows that there is insignificant impact of CEO outside experience on firm performance in post-crisis because of the turbulent environment with great volatility and difficult-to-predict discontinuities (Haleblian &Finkelstein, 1993). In other words, CEO with outside experience is less able to use new knowledge and manage change effectively in terms of information processing and decision-making capabilities of firms and thus does not help firm performance (Ahuja & Katila, 2001; Zhang &Rajagopalan, 2010).

Regarding board governance, OLS regression results show that board governance index positively affect firm performance in pre-crisis (0.0072, t-statistics=2.63) that is consistent with both my expectation that monitoring function of board matter more in stable period and prior studies, including Bebchuk, Cohen and Ferrell (2009), and Hermalin and Weisbach (2011). Whereas board governance index positively affects firm performance (0.0163, t-statistics=4.18) in post-crisis, because board of directors, with diverse experience, expertise and perspectives in decision making in other organizations, can provide expertise and judgement concerning strategic decision-making in the changing business environment (Hendry & Kiel, 2004; Hillman, Cannella & Paetzold, 2002). However, FE estimates suggest that board governance index insignificantly positive affect board governance (0.0019, t-statistics=0.70) in post-crisis, which indicates monitoring function of board governance does not help firm performance in post-crisis period consistent with the exiting research by Yang and Zhao (2014). While corporate governance negatively affects firm performance (0.0040, t-statistics=-1.89) in pre-crisis because overemphasis on monitoring regarding agency theory can prevent managers from taking risks for innovation and seeking new growth opportunities as the focus of stable environment is to maintain status quo (Ashwin, Krishnan & George, 2015). This is consistent with the exiting literature argues that governance controls may not work effectively for all companies, whereas the environment in which a company operates is greatly related to the efficiency of board governance (Hutchinson & Gul, 2004). When dealing with endogeneity issue, the results show that board governance has no direct impact on firm performance both pre- and post-crisis, consistent with the exiting literature (Mohd Ghazali, 2010; Rodriguez-Fernandez et al., 2014) found no significant relationship between corporate governance and firm performance.

I first consider the interaction between CEO external experience and board governance, and then add the pre- and post- crisis contrasts by triple interaction for Hypothesis 3. Board governance index positively moderate the relationship between CEO experience and firm

performance in post- crisis (0.0217, t-statistics=2.80) but insignificant in pre-crisis. The results indicate CEOs with outside experience and corporate boards are more likely to work collaboratively due to increased trust to CEOs in the turbulent environment full of uncertainty and complexity. However, GMM estimation suggests that board governance index positively moderate the relationship between CEO experience and firm performance in pre- crisis (3.1373, t-statistics=-1.66) but insignificantly moderate the relationship in post-crisis. Board governance as an array of constraints on CEOs and shareholders as they bargain to determine how firm value will be allocated (Hutchinson & Gul, 2004). As CEO with outside experience does not know a particular industry or firm well enough in a normal period, a vigilant board are able to monitor CEOs effectively. Therefore, board effectiveness could reduce the negative effect of CEOs with outside experience on firm performance. However, in post-crisis, the environment with great volatility and uncertainty does not only make outside experience and knowledge of CEOs does not help firm performance. Meanwhile, the board does not know what the correct course of action is due to the changed environment, which leads to the insignificant moderating effect of board governance. The finding is consistent with Coles et al. (2001), who argue that boards as passive instruments who are loyal to the managers who select them, lack knowledge of the company, and rely on top executives for information.

Table 3-6. The Effect of the CEO Outside Experience and Board Governance on Firm Performance (ROA).

Panel A:	OLS	FE	OLS	FE	GMM
Firm Performance---ROA			(Triple)	(Triple)	(Triple)
	(1)	(2)	(3)	(4)	(5)
L. ROA					0.5406***
					0.1580
CEO Outsider1	-0.0223*** (0.0049)	-0.0111*** (0.0041)	-0.0304** (0.0139)	-0.0017 (0.0106)	-7.8119* (4.6856)
Post-crisis1 (2009-2011)	-0.1058*** (0.0167)	0.1354* (0.0712)	-0.0691*** (0.0213)	0.1454** (0.0718)	-2.4026 (2.3106)
Post-crisis2 (2012-2019)	-0.1409*** (0.0159)	0.2095* (0.1186)	-0.1061*** (0.0188)	0.2135* (0.1189)	-3.2448 (2.0535)
CEO Outsider1*Post-crisis1	0.0093 (0.0081)	0.0179*** (0.0054)	-0.0511** (0.0255)	-0.0021 (0.0172)	6.2877 (4.9276)
CEO Outsider1*Post-crisis2	0.0005 (0.0066)	0.0091* (0.0047)	-0.0593*** (0.0209)	-0.0009 (0.0148)	7.7592 (4.7565)

Board Governance Index (BGI)	0.0072***	-0.0040*	0.0058	-0.0022	-1.3206
	(0.0028)	(0.0021)	(0.0037)	(0.0028)	(0.8302)
BGI*Post-crisis1	0.0213***	-0.0009	0.0069	-0.0052	0.9924
	(0.0048)	(0.0032)	(0.0072)	(0.0048)	(0.9382)
BGI*Post-crisis2	0.0163***	0.0019	0.0036	5.37e-06	1.3132
	(0.0039)	(0.0027)	(0.0056)	(0.0039)	(0.8388)
CEO Outsider1*BGI			0.0032	-0.0039	3.1373*
			(0.0054)	(0.0040)	(1.8848)
CEO Outsider1*BGI*Post-crisis1			0.0235	0.0081	-2.5448
			(0.0097)	(0.0065)	(1.9778)
CEO Outsider1*BGI*Post-crisis2			0.0217***	0.0041	-3.1267
			(0.0077)	(0.0055)	(1.9125)
CEO Characteristics					
CEO Tenure	0.0049***	-0.0003	0.0048***	-0.0003	-0.0023
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0028)
CEO Prior Tenure	-0.0020***	0.0005	-0.0019***	0.0005	0.0031
	(0.0004)	(0.0003)	(0.0004)	(0.0003)	(0.0025)

CEO Gender	-0.0217**	0.0060	-0.0216**	0.0059	-0.0207
	(0.0086)	(0.0081)	(0.0086)	(0.0081)	(0.0223)
CEO Age	0.0013***	-0.0005**	0.0013***	-0.0005**	0.0015
	(0.0002)	(0.0002)	(0.0002)	(0.0002)	(0.0011)
CEO Compensation (Pay)	-5.43e-06***	-2.22e-09	-5.42e-06***	2.47e-09	-2.50e-06**
	(2.58e-07)	(2.71e-07)	(2.58e-06)	(2.71e-07)	(9.95e-07)
<i>Firm Characteristics</i>					
Firm Size	0.0744***	0.0926***	0.0743***	0.0926***	0.0351***
	(0.0008)	(0.0019)	(0.0008)	(0.0019)	(0.0113)
Firm Age (IPO)	-0.00005	-0.0189***	-0.00005	-0.0189***	-0.0001
	(0.00003)	(0.0064)	(0.00003)	(0.0064)	(0.0001)
Leverage	-0.0010***	-0.0003***	-0.0010***	-0.0003***	-0.0118
	(0.00007)	(0.00005)	(0.00007)	(0.00005)	(0.0137)
Tangibility	0.0321***	-0.0489***	0.0315***	-0.0491***	-0.0184
	(0.0092)	(0.0123)	(0.0092)	(0.0123)	(0.0315)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	30,873	30,868	30,873	30,868	28,128

R Squared	0.3403	0.7468	0.3410	0.7468	
Number of firms	2,102	2,102	2,102	2,102	2.097
AR (2) test (p-value)					0.127
Sargan test of over-identification (p-value)					1.000
Diff-in- Sargan test of Exogeneity (p-value)					0.820

Note:

(1). These are fixed effects regressions that control for unobserved and time-invariant firm characteristics. The values within parentheses are standard errors. ***, ** and * indicate significance at the 1%, 5% and 10% levels.

(2). AR (2) IS test for second order serial correlation in the first difference residuals, under the null of no serial correlation. Hensen test of overidentification is under the null that all instruments are valid. Diff-in-Hansen test of exogeneity is under the null that instruments used for equations in levels are exogenous. “****”, “***”, “**” represent significance at the 1%, 5% and 10% level, respectively.

(3) This table represents the results of static and dynamic model using ROA as firm performance. Industry dummies are included in the OLS and GMM regression, whereas the year dummies are included in all the regressions.

The OLS analysis is carried out to examine the impact of CEO experience and board governance on firm performance (i.e., ROE), and the results are reported in **Table 3-7**. OLS and fixed effects estimate in Column (1) and (2) show that CEO outside experience insignificantly affect ROE. When we add interactions between CEO experience and board governance and deal with endogeneity issue in model 5_GMM, CEO outside experience has a negative effect on firm ROE in pre-crisis but insignificant in post-crisis. These results support my Hypothesis 1 robust with firm performance measured as ROA. This finding is similar to those obtained by prior research including (Cao, Maruping & Takeuchi, 2006; Lavie & Pavićević, 2021; Li and Patel, 2019; Zhu, Hu & Shen, 2020), which argue that in pre-crisis CEO outsider with less rich and reliable information and knowledge of the company and thus cannot better embedded in the companies and provide efficient application of CEOs skills, views and networks that can contribute to the efficient running a company or external environment management.

Regarding board governance, OLS regression results show that board governance positively affect firm performance ROE in post-crisis (0.0790, t-statistics=1.81) robust with by ROA but insignificant in pre-crisis. Boards are able to provide the CEOs with access to critical resources in order to achieve firms' objectives (Fama & Jensen, 1983). While OLS, FE and GMM estimation with triple interaction in column (3)-(5) show that board governance has no effect on firm performance (i.e., ROE) consistent with firm performance measured by ROA.

Regarding interaction terms between CEO experience and corporate governance, and then add the pre- and post- crisis contrasts in Column (3) and column (4) board governance index positively moderate the relationship between CEO experience and firm performance in post-crisis (0.02186, t-statistics=2.51) but insignificant in pre-crisis. While GMM estimation in column (5) indicates that board governance positively moderates the relationship between CEO experience and firm performance in pre- crisis but insignificant in post-crisis (Coles et al., 2001), robust with ROA.

Table 3-7 The Effect of the CEO Outside Experience and Board Governance on Firm Performance (ROE)

Panel A:	OLS	FE	OLS	FE	GMM
Firm Performance---ROE			(Triple)	(Triple)	(Triple)
	(1)	(2)	(3)	(4)	(5)
L. ROE					-0.3381** (0.1666)
CEO Outsider1	0.0114 (0.0546)	-0.0006 (0.0697)	0.0232 (0.1559)	0.0055 (0.1816)	-221.3834* (133.6024)
Post-crisis1 (2009-2011)	0.0270 (0.1883)	-1.0996 (1.2205)	-0.0040 (0.2395)	-1.1719 (1.2297)	-101.3738* (61.4750)
Post-crisis2 (2012-2019)	-0.3788** (0.1790)	-2.4196 (2.0322)	-0.0480 (0.2351)	-2.1153 (2.0361)	-91.2834 59.6365
CEO Outsider1*Post-crisis1	0.0461 (0.0910)	0.1005 (0.0925)	0.0922 (0.2873)	0.2357 (0.2954)	226.917* (135.5477)
CEO Outsider1*Post-crisis2	-0.0183 (0.0737)	0.0360 (0.0805)	-0.6088*** (0.2351)	-0.4767* (0.2534)	206.1439 (132.7984)
Board Governance Index (BGI)	0.0093 (0.0310)	-0.0067 (0.0362)	0.0120 (0.0411)	-0.0051 (0.0477)	-39.6671 (24.5071)

BGI*Post-crisis1	-0.0271	-0.0405	-0.0155	-0.0077	41.3877*
	(0.0539)	(0.0552)	(0.0808)	(0.0829)	(25.1304)
BGI*Post-crisis2	0.0790*	0.0648	-0.0440	-0.0423	37.4394
	(0.0437)	(0.0466)	(0.0624)	(0.0672)	(24.4076)
CEO Outsider1*BGI			-0.0057	-0.0070	89.0384*
			(0.0605)	(0.0685)	(53.7326)
CEO Outsider1*BGI*Post-crisis1			-0.0180	-0.0533	-91.3497*
			(0.1087)	(0.1117)	(54.5627)
CEO Outsider1*BGI*Post-crisis2			0.2186**	0.1907**	-83.5821
			(0.0870)	(0.0936)	(53.5065)
CEO Characteristics					
CEO Tenure	0.0091**	0.0088	0.0085*	0.0082	-0.1167
	(0.0044)	(0.0066)	(0.0044)	(0.0066)	(0.0751)
CEO Prior Tenure	2.98-e-06	0.0027	0.0004	0.0028	0.1223*
	(0.0040)	(0.0059)	(0.0040)	(0.0059)	(0.0677)
CEO Gender	0.0064	0.0551	0.0078	0.0498	-0.4225
	(0.0966)	(0.1385)	(0.0966)	(0.1385)	(0.6282)

CEO Age	0.0003 (0.0023)	-0.0074* (0.0038)	0.0003 (0.0023)	-0.0073* (0.0038)	0.0169 (0.0263)
CEO Compensation (Pay)	-7.71e-06*** (2.90e-06)	-1.26e-06 (4.64e-06)	-7.73e-06*** (2.90e-06)	-1.20e-06 (4.64e-06)	-0.00002 (0.00003)
<i>Firm Characteristics</i>					
Firm Size	0.0916*** (0.0093)	0.3325*** (0.0328)	0.0910*** (0.0093)	0.3344*** (0.0328)	0.0260 (0.1469)
Firm Age (IPO)	-0.0002 (0.0004)	0.0890 (0.1096)	-0.0002 (0.0004)	0.0881 (0.1096)	-0.0018 (0.0030)
Leverage	-0.0018** (0.0008)	0.0002 (0.0009)	-0.0017** (0.0008)	0.0002 (0.0008)	-0.4619 (0.5175)
Tangibility	0.1572 (0.1034)	1.1375*** (0.2110)	0.1539 (0.1034)	1.1350*** (0.2110)	1.1718 (0.8190)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	30,873	30,868	30,873	30,868	2,8128
R Squared	0.0098	0.1187	0.0102	0.1189	
Number of firms	2,102	2,102	2,102	2,102	2.097

AR (2) test (p-value)	0.107
Sargan test of over-identification (p-value)	1.000
Diff-in-Sargan test of Exogeneity (p-value)	0.389

Note:

(1). These are fixed effects regressions that control for unobserved and time-invariant firm characteristics. The values within parentheses are standard errors. ***, ** and * indicate significance at the 1%, 5% and 10% levels.

(2). AR (2) IS test for second order serial correlation in the first difference residuals, under the null of no serial correlation. Hensen test of overidentification is under the null that all instruments are valid. Diff-in-Hansen test of exogeneity is under the null that instruments used for equations in levels are exogenous. “***”, “**”, “*” represent significance at the 1%, 5% and 10% level, respectively.

(3) This table represents the results of static and dynamic model using ROE as firm performance. Industry dummies are included in the OLS and GMM regression, whereas the year dummies are included in all the regressions.

3.7 Robustness Checks

3.7.1 Alternative measure of firm performance---Tobin's Q

Tobin's Q as the most common market measure is used is used in exiting literature (Fallatah & Dickins, 2012; Kiel & Nicholson, 2003). Therefore, this research also uses Tobin's Q to measure firm performance for robustness check.

The OLS analysis is carried out to examine the impact of CEO experience and board governance on firm performance (i.e., Tobin's Q), and the results are reported in **Table 3- 8**. OLS and fixed-effects estimate in Colum (1) and (2) show that CEO outside experience positively affect firm performance in post-crisis (4.4902, t-statistics=3.00) in OLS and (3.6978, t-statistics=2.40) in FE, but insignificant in the pre-crisis. These findings are in line with those of Lia and Patelb (2019) and Custódio, Ferreira and Matos (2017) suggesting that CEO outside experience are more likely to help firms adapt to the environment with great uncertainty and complexity due to their ability to make a wide range of strategies. While in pre-crisis this finding is consistent with Goergen and Renneboog (2001) that agues CEOs do not take risks for potential profitable projects to avoid poor performance and job losing due to current net income. When we add interactions between CEO experience and board governance and deal with endogeneity issue in column (3) and (4), the result shows that CEO outside experience positively affect firm performance in post-crisis because such CEOs are able to think out of box and bring fresh perspectives for strategic changes, but negatively affect firm performance in the pre-crisis due to agency problems and lack familiarity of firms. The findings are almost consistent with baseline model and support Hypothesis 1.

Regarding board governance, the full model of OLS estimation with triple interactions show that board governance has no direct impact on firm performance in both pre- and post-crisis. FE estimation shows consistent results. According to Ganguli and Agrawal (2009) and Wahla, Shah, and Hussain (2012), Tobin's Q is a measure of organisational performance that

is based on the fact that it is a market-based measure of performance that is also future-oriented. As a result, it reflects the present value of future cash flows based on both current and future information. The result is robust with firm performance measured as ROA and ROE.

Regarding interaction terms between CEO experience and corporate governance, and then add the pre- and post- crisis contrasts in Column (3) and column (4) board governance index negatively moderate the relationship between CEO experience and firm performance in post-crisis (-11.0049, t-statistics=-6.24) but insignificant in pre-crisis. As boards do not know what is going right in post-crisis, monitoring function of boards may can discourage the effectiveness of CEO outside experience in driving firm performance by initiating innovation strategy for growth opportunity in post-crisis full of uncertainty. The result is consistent with the argument of prior research, including Coles et al. (2001), and Hutchinson and Gul, (2004). While GMM estimation in column (5) indicates that board governance positively moderates the relationship between CEO experience and firm performance in pre- crisis but negatively moderates the relationship in post-crisis, robust with ROA and ROE.

Table 3-8 The Effect of the CEO Outside Experience and Board Governance on Firm Performance (Tobin's Q)

Panel A:	OLS	FE	OLS	FE	GMM
Firm Performance--Tobin's Q			(Triple)	(Triple)	(Triple)
	(1)	(2)	(3)	(4)	(5)
L. Tobin's Q					-0.4749*** (0.1510)
CEO Outsider1	-0.1387 (1.1079)	-1.4512 (1.3360)	-0.1381 (3.1626)	-5.3099 (3.4786)	-904.7683* (500.9556)
Post-crisis1 (2009-2011)	0.3724 (3.8229)	40.8819* (23.3837)	-0.5250 (4.8571)	41.0849* (23.5517)	83.5659 (358.2238)
Post-crisis2 (2012-2019)	16.0037*** (3.6349)	84.9451** (38.9360)	-0.7828 (4.2885)	72.1099* (38.9934)	-418.8444 (241.4102)
CEO Outsider1*Post-crisis1	0.4301 (1.8469)	0.0048 (1.7713)	2.1171 (5.8262)	0.2975 (5.6568)	47.4951 (61.1375)
CEO Outsider1*Post-crisis2	4.4902*** (1.4957)	3.6978** (1.5428)	34.2951*** (4.7680)	26.4720*** (4.8524)	979.9168** (494.2095)

Board Governance Index (BGI)	0.0003	0.1401	-0.0458	-0.5954	-146.6227
	(0.00006)	(0.6930)	(0.8340)	(0.9138)	(95.7377)
BGI*Post-crisis1	-0.0168	0.0929	-0.0406	-0.0488	-30.1122
	(0.6288)	(1.0573)	(1.6384)	(1.5869)	(144.4278)
BGI*Post-crisis2	-5.8903***	-4.9151***	0.3317	-0.2273	168.0418*
	(0.8876)	(0.8936)	(1.2665)	(1.2872)	(98.3131)
CEOOutsider1*BGI			0.0438	1.7600	362.1779*
			(1.2280)	(1.3116)	(201.3006)
CEOOutsider1*BGI*Post-crisis1			-0.6534	-0.1840	-27.0661
			(2.2044)	(2.1390)	(243.7491)
CEOOutsider1*BGI*Post-crisis2			-11.0049***	-8.6267***	-389.489**
			(1.7639)	(1.7929)	(199.0923)
<i>CEO Characteristics</i>					
CEO Tenure	0.0590	0.4743***	0.0911	0.4939***	-0.5142
	(0.0889)	(0.1268)	(0.0890)	(0.1269)	(0.3454)
CEO Prior Tenure	-0.2691***	-0.6318***	-0.2909***	-0.6329***	0.4044
	(0.0815)	(0.1128)	(0.0815)	(0.1128)	(0.3697)

CEO Gender	-0.4655 (1.9610)	-3.8587 (2.6537)	-0.5318 (1.9588)	-3.6403 (2.6528)	-4.3381 (3.3980)
CEO Age	-0.0127 (0.0465)	0.0065 (0.0724)	-0.0149 (0.0464)	0.0015 (0.0724)	0.3147 (0.1962)
CEO Compensation (Pay)	0.0003*** (0.00006)	0.00006 (0.00009)	0.0003*** (0.00006)	0.00006 (0.00009)	0.0003** (0.0001)
<i>Firm Characteristics</i>					
Firm Size	-2.2070*** (0.1889)	-2.7710*** (0.6282)	-2.1760*** (0.1887)	-2.8442*** (0.6281)	-3.6026 (0.9739)
Firm Age (IPO)	0.0176** (0.0073)	-3.6154* (2.1001)	0.0174** (0.0072)	-3.5863* (2.0991)	0.0099 (0.0158)
Leverage	0.1952*** (0.0159)	0.1366*** (0.0166)	0.1915*** (0.0159)	-0.1345*** (0.0165)	2.2321* (1.1759)
Tangibility	-0.0624 (2.0991)	-17.6407*** (4.0419)	0.1175 (2.0969)	-17.4824*** (4.0404)	-6.4287 (5.2028)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	30,873	30,868	30,873	30,868	28,128

R Squared	0.0229	0.2256	0.0253	0.2264	
Number of firms	2,402	2,402	2,402	2,402	2097
AR (2) test (p-value)					0.204
Sargan test of over-identification (p-value)					0.136
Diff-in- Sargan test of Exogeneity (p-value)					0.541

Note:

(1). These are fixed effects regressions that control for unobserved and time-invariant firm characteristics. The values within parentheses are standard errors. ***, ** and * indicate significance at the 1%, 5% and 10% levels.

(2). AR (2) IS test for second order serial correlation in the first difference residuals, under the null of no serial correlation. Hansen test of overidentification is under the null that all instruments are valid. Diff-in-Hansen test of exogeneity is under the null that instruments used for equations in levels are exogenous. “***”, “**” ; “*” represent significance at the 1%, 5% and 10% level, respectively.

(3) This table represents the results of static and dynamic model using Tobin’s q as firm performance. Industry dummies are included in the OLS and GMM regression, whereas the year dummies are included in all the regression.

3.7.2 Endogeneity issue

Endogeneity is a significant problem in empirical corporate finance research, which aims to understand the causes and effects of financial decisions. This is due to the fact that it is typically challenging to find exogenous factors or natural experiments to identify the relationships being investigated. Regarding the conflicted results in existing literature on the relationship between corporate governance and firm performance, there is endogenous issue, and the regression results are highly sensitive in terms of using estimation technique (Bhagat and Bolton, 2002). In order to compare to previous research and highlight the potential problems from ignoring the reverse causality issue between board governance and firm performance (e.g. performance drives governance), we use several alternative specifications and estimation techniques for analysis purposes, including fixed-effect model and generalized method of moments (GMM), which effectively mitigates the issues of endogeneity caused by reverse causality and simultaneity bias.

3.7.2.1 Generalized Moment of Method (GMM)

In order to curtail the endogeneity issue which exists between the corporate governance and firm performance, we use GMM model for robustness check. Further, the Arellano-Bond Dynamic regression also reduces the issue of unobservable heterogeneity. Above mentioned Model 5 of **Table 3-6, 3-7 and 3-8** present the GMM regression model results. As the GMM estimation takes the lag performance into consideration, this research also uses both OLS and fixed effects model to estimate relationship in above mentioned Model 3 and Model 4 of the three tables.

3.7.3 Alternative measure of CEO outside experience

Regression results in Table 3-6, 3-7 and 3-8 use CEO outsider₁ measured as 1 if (s)he was CEO, COO, MD etc at a firm in a *different company either same industry or different industry* during the previous 10 years, 0 otherwise. To do robustness check, this study also define CEO outsider₂ as 1 if (s)he was CEO, COO, MD etc at a firm in a *different industry* during the previous 10 years, 0 otherwise.

The results provided by OLS estimations present in **Table 3-9** using ROA as firm performance. CEO with outside industry experience positively affect firm performance in post-crisis but negatively affect firm performance in pre-crisis, which supports Hypothesis 1. Besides, OLS estimation shows that board governance positively affects firm performance in both pre-and post-crisis. While GMM estimation shows that board governance has no direct impact on firm performance. The results are robust with CEO outside firm experience impact on ROA. Furthermore, when adding triple interactions, OLS estimation shows that board governance positively moderates the relationship between CEO outside experience and firm performance both pre- and post-crisis, which indicates board work collaboratively together with outside experienced CEOs that does not reject Hypothesis 3. Whereas GMM estimation suggests that board governance positively moderate the relationship between CEO outside experience and firm performance in pre-crisis period but insignificant in post-crisis period. The results are robust with CEO outside firm experience.

The results provided by OLS estimations present in **Table 3-10** using ROE as firm performance. The impact of CEO with outside industry experience insignificantly affects firm performance both in pre- and post-crisis. When adding triple interactions, GMM estimation shows that CEOs with outside experience negatively affect firm performance in post-crisis but positively affect firm performance in pre-crisis. This result is consistent with prior literature, including Friedman and Saul (1991) and Zhang and Rajagopalan (2004). CEOs

with outside experience have ability to think out of box for strategic change to adapt to the changing business environment but it may take long time to achieve benefits and require high initial investment, which may lead to negative short-term performance. Besides, all estimations show that board governance insignificantly affect firm performance in both pre- and post-crisis. Furthermore, when adding triple interactions, OLS, FE and GMM estimation shows that board governance positively moderate the relationship between CEO outside experience and firm performance in post-crisis but insignificant of negatively moderate the relationship in pre-crisis. which indicates board work collaboratively with outside (industry) experienced CEOs in post-crisis due to increased trust. The results contrasted with CEO outside firm experience.

The results provided by OLS estimations present in **Table3-11** using Tobin's Q as firm performance. The impact of CEO with outside industry experience positively affects firm performance in post-crisis but insignificant in pre-crisis. After dealing with endogeneity issue, CEO outside experience negatively affect firm performance due to agency problems in post-crisis, but positively affect firm performance by initiating strategic change in the post-crisis. The results are robust with CEO outside firm experience and support Hypothesis1. Besides, OLS and FE estimation shows that board governance negatively affect firm performance in post-crisis, while board governance effect insignificant in pre-crisis. The results indicate monitoring function of board matters more in pre-crisis period, while boards may play advising or other roles in post-crisis full of uncertainty and support Hypothesis 2. Furthermore, when adding triple interactions, board governance negatively moderates the relationship between CEO outside experience and firm performance in the post-crisis but positively moderates the relationship in the pre-crisis, which is robust with CEO outside firm experience impact on Tobin's Q.

Table 3-9 The Effect of the CEO Outside Experience and Board Governance on Firm Performance (ROA)

Panel A:	OLS	FE	OLS	FE	GMM
Firm Performance---ROA			(Triple)	(Triple)	(Triple)
	(1)	(2)	(3)	(4)	(5)
L. ROA					0.5490*** (0.0562)
CEO Outsider2	-0.0236*** (0.0052)	-0.0168*** (0.0043)	-0.0601*** (0.0147)	-0.0014 (0.0113)	-2.3260* (1.4139)
Post-crisis1 (2009-2011)	-0.1065*** (0.0166)	0.1375* (0.0712)	-0.0734*** (0.0192)	0.1429** (0.0715)	-0.8274 (0.5944)
Post-crisis2 (2012-2019)	-0.1490*** (0.0158)	0.2086* (0.1186)	-0.1231*** (0.0174)	0.2174* (0.1187)	-0.4587 (0.5083)
CEO Outsider2*Post-crisis1	0.0112 (0.0084)	0.0212*** (0.0056)	-0.0557** (0.0260)	0.0049 (0.0175)	3.0602** (1.4833)
CEO Outsider2*Post-crisis2	0.0190*** (0.0069)	0.0190*** (0.0050)	-0.0398* (0.0217)	-0.0056 (0.0154)	1.7830 (1.4169)

Board Governance Index (BGI)	0.0073***	-0.0040*	0.0025	-0.0020	0.2623
	(0.0028)	(0.0021)	(0.0033)	(0.0025)	(0.2088)
BGI*Post-crisis1	0.0211***	-0.0008	0.0087	-0.0030	0.3374
	(0.0048)	(0.0032)	(0.0062)	(0.0042)	(0.2421)
BGI*Post-crisis2	0.0159***	0.0020	0.0072	-0.0014	0.1771
	(0.0039)	(0.0027)	(0.0048)	(0.0034)	(0.2083)
CEO Outsider2*BGI			0.0151***	-0.0064	0.9355*
			(0.0057)	(0.0043)	(0.5680)
CEO Outsider2*BGI*Post-crisis1			0.0252***	0.0068	-1.2238**
			(0.0098)	(0.0066)	(0.5958)
CEO Outsider2*BGI*Post-crisis2			0.0198**	0.0098*	-0.7366
			(0.0080)	(0.0057)	(0.5698)
<i>CEO Characteristics</i>					
CEO Tenure	0.0054***	-0.0003	0.0053***	-0.0003	0.0009
	(0.0004)	(0.0004)	(0.0004)	(0.0004)	(0.0008)
CEO Prior Tenure	-0.0023***	0.0004	-0.0023***	0.0004	-0.0001
	(0.0004)	(0.0003)	(0.0004)	(0.0003)	(0.0006)

CEO Gender	-0.0216** (0.0086)	0.0059 (0.0081)	-0.0212** (0.0086)	0.0059 (0.0081)	-0.0013 (0.0097)
CEO Age	0.0013*** (0.0002)	-0.0005* (0.0002)	0.0013*** (0.0002)	-0.0005* (0.0002)	0.0004 (0.0004)
CEO Compensation (Pay)	-5.40e-06*** (2.58e-07)	-8.03e-10 (2.71e-07)	-5.36e-06*** (0.258e-07)	5.74e-09 (2.71e-07)	-1.90e-06*** (3.88e-07)
<i>Firm Characteristics</i>					
Firm Size	0.0745*** (0.0008)	0.0927*** (0.0019)	0.0743*** (0.0008)	0.0927*** (0.0019)	0.0332*** (0.0037)
Firm Age (IPO)	-0.00005 (0.00003)	-0.0190*** (0.0064)	-0.00005 (0.00003)	-0.0191*** (0.0064)	-8.19e-06 (0.00005)
Leverage	-0.0010*** (0.00007)	-0.0003*** (0.00005)	-0.0010*** (0.00007)	-0.0003*** (0.00005)	-0.0214*** (0.0050)
Tangibility	0.0316*** (0.0092)	-0.0488*** (0.0123)	0.0321*** (0.0092)	-0.0488*** (0.0123)	-0.0028* (0.0137)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	30,873	32,868	30,873	32,868	28,128

R Squared	0.3399	0.7469	0.3414	0.7469	
Number of firms	2,102	2,102	2,102	2,102	2,097
AR (2) test (p-value)					0.239
Sargan test of over-identification (p-value)					0.426
Diff-in- Sargan test of Exogeneity (p-value)					0.148

Note:

(1). These are fixed effects regressions that control for unobserved and time-invariant firm characteristics. The values within parentheses are standard errors. ***, ** and * indicate significance at the 1%, 5% and 10% levels.

(2). AR (2) IS test for second order serial correlation in the first difference residuals, under the null of no serial correlation. Hensen test of overidentification is under the null that all instruments are valid. Diff-in-Hansen test of exogeneity is under the null that instruments used for equations in levels are exogenous. “***”, “**”, “*” represent significance at the 1%, 5% and 10% level, respectively.

(3) This table represents the results of static and dynamic model using ROA as firm performance. Industry dummies are included in the OLS and GMM regression, whereas the year dummies are included in all the regression.

Table 3-10 The Effect of the CEO Outsider2 and Board Governance on Firm Performance (ROE)

Panel A:	OLS	FE	OLS	FE	GMM
Firm Performance---ROE			(Triple)	(Triple)	(Triple)
	(1)	(2)	(3)	(4)	(5)
L. ROE					-0.2433* (0.1280)
CEO Outsider2	-0.0271 (0.0587)	-0.0367 (0.0739)	-0.0348 (0.1659)	-0.0806 (0.1928)	175.7581* (104.3453)
Post-crisis1 (2009-2011)	0.0398 (0.1866)	-1.0986 (1.2202)	0.0158 (0.2159)	-1.1759 (1.2253)	59.4791 (39.7656)
Post-crisis2 (2012-2019)	-0.3710** (0.1781)	-2.4231 (2.0321)	-0.1417 (0.1957)	-2.2067 (2.0343)	56.2420 (35.7207)
CEO Outsider2*Post-crisis1	0.0490 (0.0948)	0.1370 (0.0965)	0.1026 (0.2919)	0.3642 (0.3004)	-185.8504* (110.4112)
CEO Outsider2*Post-crisis2	-0.0266 (0.0780)	0.0566 (0.0855)	-0.6190** (0.2446)	-0.4209 (0.2637)	-176.7020* (103.3474)

Board Governance Index (BGI)	0.0084	-0.0067	0.0078	-0.0117	22.5168
	(0.0310)	(0.0362)	(0.0372)	(0.0432)	(14.7933)
BGI*Post-crisis1	-0.0256	-0.0386	-0.0166	-0.0010	-24.188
	(0.0539)	(0.0552)	(0.0694)	(0.0711)	(16.2346)
BGI*Post-crisis2	0.0796*	0.0655	-0.0050	-0.0033	-22.9357
	(0.0437)	(0.0466)	(0.0543)	(0.0583)	(14.6359)
CEO Outsider2*BGI			0.0030	0.0140	-70.6831*
			(0.0646)	(0.0730)	(41.9370)
CEO Outsider2*BGI*Post-crisis1			-0.0212	-0.0905	74.7757*
			(0.1103)	(0.1133)	(44.3905)
CEO Outsider2*BGI*Post-crisis2			0.2174**	0.1745*	71.1057*
			(0.0646)	(0.0974)	(41.6287)
CEO Characteristics					
CEO Tenure	0.0074*	0.0080	0.0071*	0.0075	0.0612
	(0.0043)	(0.0065)	(0.0043)	(0.0065)	(0.0468)
CEO Prior Tenure	0.0012	0.0031	0.0013	0.0032	-0.0447
	(0.0040)	(0.0059)	(0.0040)	(0.0059)	(0.0327)

CEO Gender	0.0079 (0.0043)	0.0521 (0.1385)	0.0096 (0.0966)	0.0530 (0.1385)	0.1378 (0.4582)
CEO Age	0.0002 (0.0023)	-0.0075** (0.0038)	0.0002 (0.0023)	-0.0074* (0.0038)	-0.0131 (0.0187)
CEO Compensation (Pay)	-7.71e-06*** (2.90e-06)	-1.24e-06 (4.64e-06)	-7.58e-06*** (2.90e-06)	-1.14e-06 (4.64e-06)	-8.05e-07 (0.00002)
<i>Firm Characteristics</i>					
Firm Size	0.0912*** (0.0093)	0.3328*** (0.0328)	0.0903*** (0.0093)	0.3334*** (0.0328)	0.0673 (0.0891)
Firm Age (IPO)	-0.0002 (0.0004)	0.0893 (0.1096)	-0.0002 (0.0004)	0.0879 (0.1096)	0.0010 (0.0024)
Leverage	-0.0017** (0.0008)	0.0002 (0.0009)	-0.0016** (0.0008)	0.0002 (0.0009)	-0.0619 (0.1010)
Tangibility	0.1561 (0.1034)	1.1331*** (0.2109)	0.1563 (0.1034)	1.1351*** (0.2109)	-0.0696 (0.7286)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	30,873	32,868	30,873	32,868	28,128

R Squared	0.0098	0.1187	0.0102	0.0189	
Number of firms	2,102	2,102	2,102	2,102	2,102
AR (2) test (p-value)					0.101
Sargan test of over-identification (p-value)					0.987
Diff-in- Sargan test of Exogeneity (p-value)					0.910

Note:

(1). These are fixed effects regressions that control for unobserved and time-invariant firm characteristics. The values within parentheses are standard errors.

***, ** and * indicate significance at the 1%, 5% and 10% levels.

(2). AR (2) IS test for second order serial correlation in the first difference residuals, under the null of no serial correlation. Hensen test of overidentification is under the null that all instruments are valid. Diff-in-Hansen test of exogeneity is under the null that instruments used for equations in levels are exogenous.

“***”, “**”, “*” represent significance at the 1%, 5% and 10% level, respectively.

(3) This table represents the results of static and dynamic model using ROA as firm performance. Industry dummies are included in the OLS and GMM regression, whereas the year dummies are included in all the regression

Table 3-11 The Effect of the CEO Outsider2 and Board Governance on Firm Performance (Tobin's Q)

Panel A:	OLS	FE	OLS (Triple)	FE	GMM
Firm Performance--				(Triple)	
Tobin's Q	(1)	(2)	(3)	(3)	(4)
L. Tobin's Q					0.0189 (0.0264)
CEO Outsider2	-0.3695 (1.1911)	-2.1342 (1.4159)	-0.7386 (3.3604)	-8.1372** (3.6904)	-530.822* (310.4943)
Post-crisis1 (2009-2011)	0.4597 (3.7875)	41.1653* (23.3767)	-0.2193 (4.3735)	40.6684* (23.4520)	153.9784 (96.6563)
Post-crisis2 (2012-2019)	16.1682*** (3.6148)	85.2877** (38.9309)	0.0068 (3.9635)	71.3998* (38.9364)	22.4093 (43.6770)
CEO Outsider2*Post-crisis1	0.4583 (1.9235)	-0.1132 (1.8496)	2.4639 (5.9137)	0.9217 (5.7491)	216.4124 (406.7853)
CEO Outsider2*Post-crisis2	5.9386*** (1.5841)	5.1912*** (1.6376)	47.8833*** (4.9539)	38.5284*** (5.0467)	533.6577* (313.1313)

Board Governance Index (BGI)	-0.0233 (0.6287)	0.1377 (0.6929)	-0.0988 (0.7544)	-0.6973 (0.8263)	-60.0359 (39.0832)
BGI*Post-crisis1	-0.4070 (1.0933)	0.0806 (1.0569)	-0.0973 (1.4054)	0.0180 (1.3614)	16.7551 (53.4576)
BGI*Post-crisis2	-5.8341*** (0.8872)	-4.8782*** (0.8935)	0.1537 (1.0998)	-0.1501 (1.1150)	67.3332* (40.0728)
CEO Outsider2*BGI			0.1650 (1.3091)	2.7149* (1.3969)	212.2832* (124.8807)
CEO Outsider2*BGI*Post-crisis1			-0.7937 (2.2337)	-0.5213 (2.1688)	-90.9375 (162.1123)
CEO Outsider2*BGI*Post-crisis2			-15.4374*** (1.8835)	-12.6068*** (1.8633)	-213.249* (125.616)
CEO Characteristics					
CEO Tenure	0.0631 (0.0868)	0.4829*** (0.1252)	0.0819 (0.0866)	0.5045*** (0.1252)	-0.0633 (0.1063)
CEO Prior Tenure	-0.2752*** (0.0807)	-0.3686*** (0.1126)	-0.2855*** (0.0805)	-0.6339*** (0.1125)	0.0449 (0.1428)

CEO Gender	-0.6555 (1.9612)	-3.9486 (2.6537)	0.0819 (0.0866)	-3.9871 (2.6511)	-1.3526 (2.0217)
CEO Age	-0.0141 (0.0465)	0.0062 (0.0723)	-0.0136 (0.0464)	-0.0012 (0.0722)	0.1539* (0.0881)
CEO Compensation (Pay)	0.0003*** (0.00006)	0.00006 (0.00009)	0.00026*** (0.00006)	0.00005 (0.00009)	0.0001 (0.0001)
<i>Firm Characteristics</i>					
Firm Size	-2.1841*** (0.1890)	-2.7356*** (0.6285)	-2.1176*** (0.1887)	-2.7870*** (0.6279)	-0.7346 (0.5613)
Firm Age (IPO)	0.0176** (0.0073)	-3.6362* (2.0999)	0.01670** (0.0072)	-3.5597* (2.0978)	0.0026 (0.0086)
Leverage	0.1946*** (0.0159)	0.1362*** (0.0166)	0.1875*** (0.0159)	0.1320*** (0.0165)	7.8178*** (2.3400)
Tangibility	-0.0796 (2.0992)	-17.5172*** (4.0411)	-0.0971 (2.0946)	-17.5723*** (4.0371)	-0.2486 (2.4294)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	30,873	32,868	30,873	32,868	28,128

R Squared	0.0232	0.2258	0.0277	0.2274	
Number of firms	2,402	2,402	2,402	2,402	2097
AR (2) test (p-value)					0.275
Sargan test of over-identification (p-value)					0.966
Diff-in- Sargan test of Exogeneity (p-value)					0.685

Note:

(1). These are fixed effects regressions that control for unobserved and time-invariant firm characteristics. The values within parentheses are standard errors.

***, ** and * indicate significance at the 1%, 5% and 10% levels.

(2). AR (2) IS test for second order serial correlation in the first difference residuals, under the null of no serial correlation. Hensen test of overidentification is under the null that all instruments are valid. Diff-in-Hansen test of exogeneity is under the null that instruments used for equations in levels are exogenous.

“***”, “**”, “*” represent significance at the 1%, 5% and 10% level, respectively.

(3) This table represents the results of static and dynamic model using Tobin’s q as firm performance. Industry dummies are included in the OLS and GMM regression, whereas the year dummies are included in all the regression.

3.8 Conclusion

Empirical literature either in strategic leadership literature or board governance research focuses a great deal of attention on the determinants of firm performance (Bhagat & Bolton, 2019; Hamori & Koyuncu, 2015; Khatib & Nour, 2021; Zhang & Rajagopalan, 2010). However, there is limited research regarding the association between firm performance and both CEO outside experience and board governance. This study compares the different impact of CEO outside experience and board governance on firm performance between pre-crisis and post-crisis. I also explored how board governance moderates the relationship between CEO outside experience and firm performance.

I find that CEOs with outside experience damage firm performance (ROA, ROE) in pre-crisis but insignificant in post-crisis. This finding supports the notion that CEOs with outside experience lack deeper knowledge of core competencies, familiarity of firms and ineffective integration of incumbent Top Management Team in a stable environment. In post-crisis, CEOs have no idea with the correct course of actions in the challenged business environment due to great uncertainty and volatility. Additional tests show that CEOs with outside industry experience enhance firm performance in post-crisis compared with CEOs with outside firm experience, since such CEOs with more diverse background, broader experience and knowledge are more able to think out of box for strategic change with the board support in turbulent environment. Besides, board governance has no direct impact on firm performance both pre- and post-crisis. However, board governance positively moderates the relationship in pre-crisis, as boards monitor CEOs to mitigate agency problems. Whereas board governance insignificantly moderates the relationship in post-crisis. Since boards lack the information, knowledge, and expertise required to carry out their monitoring due to the volatile and noisy environment that interferes with the CEO's capacity to absorb information and make decisions. Our main finding has implications for the board of directors when appointing a CEO. While it may be detrimental to have CEOs with outside in normal business environment

(e.g., Finkelstein, Hambrick & cannella, 2019; Zhang & Rajagopalan, 2004), boards should be aware that such damage is mitigated following the crisis. The turbulent environment leads to difficult-to-predict discontinuities (Haleblian & Finkelstein, 1993), which makes it more difficult for CEOs to reposition their companies for firm survival and recovery, even they are clueless as to the best course of action because of the great noise. Hence, it may be neither beneficial nor harmful to have an outside experienced CEOs in post-crisis. Besides, the findings of the study have important implications for managers and policymakers to succeed in quick recovery after major exogenous shocks, such as COVID-19 pandemic. The study shows that efforts need to be made to strengthen the board-related corporate governance mechanism and the turnover of CEOs to help firms better adapt to the changing economic environment and turn threats into opportunities by make strategic changes and thus outperformance.

This study is limited by data source, the analysis was restricted to the number of CEO demographic characteristics variables based on secondary archived data as certain CEO characteristics require further information by interview. Second, the study is restricted to the U.S firms. Therefore, cross-country research can also be conducted to compare corporate governance and managerial quality across countries. Future researcher shall collect primary data by interviews or survey to further identify the relationship.

4. Chapter 4 Empirical Chapter 2

Corporate Investment during Severe Disruption: CEO Experience and Board Governance impact before and after Global Financial Crisis

Abstract

This research examines how corporate investment and CEOs outside experience and board governance influence corporate investment and how this influence differs between a "normal" period and in the aftermath of a major crisis that significantly alters the business environment within which firms operate, using Financial Crisis of 2008 as an exogenous shock. I find that firms with outside experienced CEOs are more likely to invest less in capital expenditure but invest more in R&D for strategic changes to improve competitiveness in post-crisis. Whereas CEOs with outside experience invest more in capital expenditure but invest less in R&D/total investment due to agency problems in pre-crisis. Furthermore, board governance positively moderates the relationship between CEO outside experience and corporate investment (i.e., capital expenditure) in post-crisis but negatively moderates the relationship in pre-crisis. Conversely, board governance negatively moderates the relationship between CEO outside experience and total investment/R&D in post-crisis but positively affects the relationship in pre-crisis. Additional test with sub-sample analysis indicates that these results for total investment are largely driven by firms with low financial constraints and low bankruptcy possibility. While capital expenditure is greatly driven by low financial constrained firms and high bankruptcy possibility firms, the results for R&D are greatly driven by high financial constrained firms and low bankruptcy possibility firms. The findings imply that CEOs with outside experience are more influential in firms with financial constraints, while board governance matters more in firms at higher risk of bankruptcy.

4.1 Introduction

An outside CEO magnifies both the positive and negative outcomes related to firm strategic changes (Zhang & Rajagopalan, 2010). Strategic decisions about investment have long been a focus of attention. According to financial research (e.g., Campello, Graham, & Harvey, 2010; Kahle & Stulz, 2013), companies reduced their investments in physical capital in response to the credit crisis (i.e., their capital expenditures)²¹. Hence, firms face great challenges to obtain competitive advantage and sustain their business in the complex and turbulent economic

²¹ The finance literature also emphasizes the credit supply channel as a key mechanism explaining how the financial sector collapse led to a contraction in lending (e.g., Ivashina & Scharfstein, 2010; Santos, 2011) and eventually the decline in physical investment.

environment. Besides, management literature (e.g., Barney, 1991; Flammer & Ioannou, 2021) identified that innovative capabilities, stakeholders' relationship as key strategic resources that enable firms to generate long-term value. Sustained competitive advantage (SCA) requires firms to identify or sense opportunities and threats and reposition or refocus their available firm-level resources to create or renew VRIN resources that could be best suited for the changing business environment. Accordingly, an important question of how companies adjusted their investments in all of their strategic resources to maintain their competitiveness when the cost of debt skyrocketed becomes crucial in order to sustain their competitiveness (Flammer & Ioannou, 2021). The extreme nature of exogenous shocks (i.e., GFC of 2008) forces companies to reconsider and reshape their strategic investments in order to ensure their survival and recovery from the crisis.

To sustain competitive in the long run, firms have to sustain competitive advantage vis-à-vis other firms and that this competitive advantage stems from ownership of tangible and intangible assets, particularly VRIN resources in terms of RBV. VRIN resources can facilitate or limit the decision of firm market entry and the profits firm expected (Barney, 2001), which indicates that certain strategic investment (e.g., R&D investment, M&A) is required to modify VRIN resources to adapt to the changing environment. This is because the existing bundles of specific resources is not enough to keep SCA under the rapidly and unpredictably changing market (Eisenhardt and Martin, 2000; Teece et al., 1997).

Meanwhile, resources are input of production related to product market competition, which affects firms' incentives to invest in new resources that can reduce cost and improve quality (e.g., Grahovac & Miller, 2009; Makadok, 2010; Chatain & Zemsky, 2011). Technical progress is built into physical capital, as changes in the quality of the production process's inputs can be used to describe technical change and productivity. Therefore, firm resource endowments and the reconfiguration and integration of resources play crucial role in determining firm value-creating investment behaviors (Keil, 2004; Lichtenstein & Brush,

2001). Because the different value of complementary resources and their allocations may lead to the changes to corporate investment (Shrader & Simon, 1997).

From dynamic capability (DC) perspective, firms sense opportunities and threats and seize business opportunities through integrating and reconfiguring the resource to match the market change and gain SCA (Eisenhardt & Martin, 2000; Teece, 2007). Besides, the competitive advantage of firms comes from DC related to high performance routines that could result from firm internal operation, firm's managerial processes and positions (Teece and Pisano, 1994). CEOs appear to be the most influential person in terms of fostering and deploying DCs because they are usually in the best position to shape organizational outcomes (Chatterjee, Hambrick, 2007, Classen et al, 2012, Hiller, Hambrick, 2005). Therefore, in this chapter we will focus on firms are adaptative in what way in terms of different CEO experience. In the context of the global financial crisis of 2008, we examine how CEO experience shapes firms' fate in terms of corporate investment before and after the GFC and how this, in turn, affects firms' resilience to exogenous shocks.

Variance in expectations about the value of the controlled resources for strategy implementation, or intrinsic features of the resource endowments lead to high heterogeneity of strategies returns and firm performance (Barney, 1986; Peteraf, 1993). DC emphasizes SCA through internal knowledge creation routines (e.g., Helfat, 1997; Henderson & Cockburn, 1994; Rosenkopf & Nerkar, 1999), external resource accessing routines, such as alliance and acquisition, to acquire new resources (e.g., Capron, Dussauge, & Mitchell, 1998; Gulati, 1999), and exit routines by getting rid of resources that cannot maintain competitive advantages for firms anymore (Sull, 1999a, 1999b). Capabilities, complex bundles of skills and collective knowledge (Krasnikov & Jayachandran, 2008; Teece, Pisano & Shuen, 1997) play crucial role in enabling firms to effectively perform value-creating tasks in the dynamic environment (Lee, Lee & Garrett, 2019). As executives are directly involved in formulating corporate strategies (Ingley & Walt, 2002; Westphal & Fredrickson, 2001), a burgeoning

stream of research that builds on the upper-echelons perspective (Hambrick & Mason, 1984) suggests that the immense variance in corporate investment reflects the heterogeneity in corporate executives' motives (Chin, Hambrick, & Treviño, 2013; Petrenko, Aime, Ridge, & Hill, 2016). Because CEOs are the primary influence on companies' financing and investment decisions, CEO attitudes toward firm and marketing prospects could affect their firms' strategy and leverage levels, which then can affect a firm's sensitivity to a crisis (Ho, Huang, Len & Yen, 2016). In other words, how efficient firms use their resources, skills and capabilities to gain competitive advantages depends on CEOs' decision-making and action-taking in terms of CEO characteristics.

As companies' impact of CEOs is especially crucial in the changing environment (Driesch, Costa, Flatten & Brettel, 2015), I investigate the impact of CEO experience on corporate investment decisions. CEO experience influence the way they define problems, process information and make strategic choices (Gurithe & Datta, 1997; Hitt and Ireland, 1985; Walsh, 1988). In this research, we investigate the different importance of CEO inside and outside experience in terms of the definition of a person as an 'outsider' is idiosyncratic to companies and industries (Friedman and Singh, 1989; Guthrie et al., 1991; Guthrie & Datta, 1997). In this research, the results show that the impact of CEO outside experience and corporate governance on corporate investment change between pre- and post-crisis (2009-2011). Further the changed impact between pre-and post-crisis show great difference when I use different mechanism---i.e., financially constrained and unconstrained firms, high bankruptcy possibility and low bankruptcy possibility firms.

Our research contributes to the literature in three ways. First, as a result of relevant cause-effect relationships are often unknown and unavailable when environment with high uncertainty (Finkelstein, Hambrick, 1996, Kaplan, 2008), CEO experience and personality influence their own decisions and thus also their companies' strategic decisions according to UET (Driesch, Costa, Flatten & Brettel, 2015). According to Adner and Helfat (2003), Hiller

and Hambrick (2005) and Simsek et al. (2010), CEO experience is assumed to influence a company's ability to identify and seize opportunities and thus essentially affect the firm DCs. My key theoretical contribution is the examination of how DCs originate on the individual level and build a bridge between the DCs and UET and Agency theory (Stewardship theory). The key feature in my model is that CEO experience will enhance the corporate investment if CEOs think out of box to adapt to the challenging environment. However, if the CEO pursue their private interest when implement corporate investment, CEO experience did not have an effective and efficient impact but increase agency costs, especially in a high turbulent environment. We thus conduct a comprehensive analysis of the impact of CEOs on DCs (e.g., R&D) by taking CEO experience and board governance into consideration (Hambrick & Mason, 1984).

Second, different types of CEO experience have different advantages and better adapt to specific situations of firms referring to Empirical Chapter 1 and could also affect CEO attitude to risk-taking behaviours when make decisions on corporate investment. The CEO with different type of experience may implement corporate investment decision in an opportunistic manner due to insufficient monitoring and/or incentives (Jensen and Meckling, 1976). This explains why previous studies (Lee et al., 2012), Ung et al., 2016, 2018) emphasize that agency cost as a reason of the strategy implementation failure due to CEO self-interest. In combining UET and agency theory, I argue that CEOs will make better corporate investment due to two factors: outside experienced CEO and low agency cost. Therefore, this research adds to the strategic management literature in CEO experience and corporate investment by investigating whether and how board governance moderates the impact of CEO experience on different types of corporate investment (i.e., capital investment, total investment, and R&D).

Third, as scholars were unable to explicitly test and distinguish the mechanisms suggested in their research. Financial crisis as a major exogenous shock to provide deeper understanding

of board governance structure (monitoring function/ advising function) affect corporate investment when there is different CEO experience before and after the crisis. Since firms are more vulnerable when a credit boom followed by the global financial crisis, which may make CEOs make decision and act differently in terms of firm board governance mechanisms, financial constraints status, firm performance and economies prior to the crisis compared with these in post-crisis period. Therefore, we investigate whether CEO outside /inside experience affect corporate investment and the moderating role of board governance in terms of exogenous shock (i.e., global financial crisis of 2008) and if there are any changes in the relationship between pre- and post-crisis. Recent studies on organizational crises acknowledge the significance of CEOs in crisis situations (Bavik et al., 2021; Bundy et al., 2017; James et al., 2011), but emphasize the topic only peripherally or take a limited focus. Additionally, the two literature streams of strategic leadership and organizational crisis have developed isolate with only a few recent exceptions (such as König et al., 2020). This research addresses this fragmentation with a systematic, exploratory literature review that comprehensively spans the research streams on strategic leadership (Finkelstein et al., 2009), corporate governance (Bhagat & Bolton, 2008) and organizational crises (Pearson et al., 2007) and guides future research.

4.2 Literature Review

4.2.1 Theoretical Background

In Empirical Chapter 1, we investigate the determinants on firm performance. CEO's strategic investments as the likely driver of firm performance (Shi, Connely, Mackey & Gupta, 2019), we will investigate the determinants on corporate investment in Empirical Chapter 2. Corporate investment as one of strategic choices could be influenced by the personal background and prior experience of CEOs, particularly made under conditions of information overload and ambiguity. Therefore, we also use resource-based view (RBV), Upper Echelon Theory (UET) and Agency theory (Stewardship Theory) in this empirical chapter, referring to Empirical Chapter 1--- Literature Review part.

4.2.2 Corporate Investment

4.2.2.1 Background - Investment

In the first empirical chapter, I have explored whether and how CEO experience and the moderating effect of board governance affect firm performance, whereas in this chapter, I am exploring how these two things affect strategic investments (in VRIN resources and to reorient the focus of companies after a shock/crisis) that underpin firm performance (Shi, Connelly & Mackey, 2019).

CEOs, as the key strategic leader, have the core task of signal detection (Pearson and Clair, 1998), resource allocation under high levels of uncertainty and extreme time constraints (Bower and Gilbert, 2005), and contact with internal and external stakeholders. Different CEO experience may predict different preferences for corporate strategies, which vary significantly depending on the governance position (Jensen & Zajac, 2004). Corporate investments are designed to grow the companies based on important commitment of firm resources (Connelly, Tihanyi, Certo, & Hitt, 2010; Shi, Connelly, Mackey & Gupta, 2019; Hoskisson, Hitt, Johnson, & Grossman, 2002). Corporate investments are supposed to sustain competitive advantage, as they are also difficult to implement and reverse (Hambrick, Cho, & Chen, 1996). Particularly, although strategic investments can contribute to firms' long-term benefits, it could also tend to cause short-term constraints²², such as capital or resources associated with the investments, making companies unable to dynamically respond to environmental change (Shi, Connelly, Mackey & Gupta, 2019).

²² Firms tended to minimize firm expenses and save more money. Therefore, companies that can generate more outputs by consuming fewer resources in terms of their CEOs' managerial ability, typically CEO experience (Demerjian et al., 2012), are more likely to recover faster and even boom from the disruption caused by exogenous shocks.

4.2.2.2 Types of Corporate Investment

CEOs have varieties of corporate investment choices at their disposal to bring about quick growth for companies. In other words, CEO managerial ability signals firms' investment decision-making and implementation (Gan, 2019). Prior studies focus on the determinants of corporate innovation, such as financial constraints (Czarnitzki and Hottenrott, 2009), economic policy environment (Bhattacharya, Hsu, Tian and Xu, 2017; Xu, 2020), internal corporate strategy by upper management (Qian, Cao and Takeuchi, 2013). Besides, Villalonga and McGahan (2005) investigate how firms choose among acquisitions, alliances as part of their corporate strategies, and divestitures when they decide to expand or contract their boundaries. Cassiman and Veugelers (2006) investigate innovation Strategy among internal R&D and external Knowledge Acquisition. To support operations through investment in develop new technology, improve facilities and equipment, and expand capacity, CEOs are more likely to engage in the following domain approach: R&D, M&A, business expansion and capital expenditures (Shi, Connely, Mackey & Gupta, 2019; Zhu & Chen, 2015).

The main measure of investment includes capital investment and on-capital investment (Biddle et al., 2009). CEOs who grow their firms via R&D (Shinkle & McCann, 2014) for innovation either new product or improved production process. (Honoré, Munari & Potterie, 2015; Shi, Connely, Mackey & Gupta, 2019). Other CEOs who choose M&A because this type of investment can bring the firm into new product or geographic markets, acquire new resources (e.g., technology), or neutralize the competition (Haleblian, Devers, McNamara, Carpenter, & Davison, 2009). Besides, M&A as external investment and capital expenditure as internal investment are the options of CEOs, because they are similar ways to increase assets base and production capacity of companies in response to growth opportunity (Andrade and Stafford, 2004; Elnahas & Kim, 2017). However, CEOs treat M&A and capital expenditure with different attitudes in terms of incentives, uncertainty and information

asymmetry in the environment surrounding M&A (Harford and Li, 2007). Furthermore, divestment can help improve firms' competitive position in the external environment and achieve firms' optimal structural arrangement by sell-off corporate asset and a business unit (Brauer, 2006; Kolev, 2016). In other words, divestment can help improve firm efficiency and environment adaptability. Instead of separately investigating these components of investment (e.g., R&D), we investigate total investment in this research because a risk-neutral CEOs are more likely to diversify their overall investment across firms (Honoré, Munari & Potterie, 2015). *Total investment* is the sum of capital expenditures, R&D expenditures, and acquisitions minus sales of PPE, scaled by lagged total assets. (Biddle, Hilary & Verdi, 2009), which can take several types of investment into consideration at once.

Above mentioned types of investment are all corporate investment to grow firms. Given that capital expenditures and R&D all involve difficult-to-reverse capital outlays aimed at firm growth, we investigate them separately as corporate-level strategic investments (Shi, Connelly & Mackey, 2019). However, M&A and divestment is less likely to occur frequently for each firm compared with R&D and capital investment that can occur more frequent. Due to the limited pre-crisis and post-crisis sample years, we only study capital expenditures separately, total investment, and R&D in this research. The two main factors affect the choice and subsequent success of investment is CEO experience and agency problem (board governance), referring to agency problems as explanations for the unsuccessful investment, such as acquisitions (Baxamusa & Jalal, 2016; Han et al., 2016).

4.2.2.3 *CEO Experience and Corporate Investment*

Studies in the upper echelon's literature have consistently demonstrated that top management's experience predicts the possibility and content of major strategic changes either investment or financing decisions (Finkelstein and Hambrick, 1996). There are only recently have a handful of studies support this view by recognizing that managers play an economically significant role on their firms' choices in terms of financing and investment

activities and performance (Andreou, Philip, & Robejsek, 2016; Bloom, Bond & Reenen, 2007; Choi, Han, Jung, & Kang, 2015; Demerjian, Lev, & McVay, 2013; Francis, Ren, Sun, & Qiang, 2016). We extend this literature, particular the research done by Andreou, Karasamani, Louca and Ehrlich (2017), by using the global financial crisis of 2008 as a natural experiment setting to investigate the impact of CEO (outside and inside) experience on different types of corporate investment.

Corporate investment either investment level or investment efficiency generally capture both firm- and CEO-specific efficiency driver (Gan, 2019). CEOs are heterogeneous entity, which imply a role for CEO-specific impact on economic outcomes, which is investigated in empirical chapter 1. Managerial styles in terms of CEO characteristics vary across CEOs. Some scholars argue that outside CEOs with fresh perspective, novel knowledge and skills (Harris and Helfat, 1997; Zhang and Rajagopalan, 2004), typically, initiate change and determine the new strategic direction for their firm (Finkelstein et al., 2009; Miles et al., 1978; Grimm and Smith, 1991; Zhang & Rajagopalan, 2004, 2010). Whereas fewer studies suggest that insider CEOs vary in their propensity to initiate strategic change (Bigley & Wiersema, 2002; Shen & Cannella, 2002). Particularly, Zhu, Hu and Shen (2020) find that some of new inside CEOs make more changes than others, even if a large stream of research argue that new insider CEOs tend to make less strategic changes than new outsider CEOs. Since a company's strategic divergence might not be all that risky because it learns from and copies the concurrent strategies of its industry peers, when overall competitive environment of an industry may change (Zhang & Rajagopalan, 2010).

Although most exiting literature define outside CEOs as those hired from outside the firm and inside CEOs as those promoted from within the firm (e.g., Zhang & Rajagopalan, 2010), this research is focusing on the ability of an outside CEO to think outside the box in the aftermath of a crisis and thus define an outside CEO as one who has experience of working in another industry. This is because the crisis caused the great destruction and require a higher

level of strategic changes. Due to the emergence of disruptive new technologies or significant industry consolidation due to the crisis, the overall competitive environment of an industry may occasionally change. As a result, many firms in the industry may alter their patterns of resource allocation in important strategic dimensions. A company with a high level of strategic shift diverges significantly from both its own prior experience and the industry's dominant trend (Zhang & Rajagopalan, 2010).

Brockman, Lee and Salas (2016) find that neither insider nor outsider can be a reliable substitute for a specialist's skills nor a generalist's skills. Generalist skills include an executive's overall leadership and strategic acumen, intelligence, and judgment, because those are most easily transferable and applicable across industries and firms (Quigley, Hambrick, Misangyi & Rizzi, 2019). Industry-specific human capital refers to one's capabilities that are transferable across companies in a specific industry, but not outside of it, including one's in-depth knowledge of certain technological, marketplace, and regulatory regimes. When a board appoints an outside CEO, the logic—whether explicit or implicit—is that firm-specific skills are less valuable or necessary than broader industry-wide or generic executive skills (Quigley, Hambrick, Misangyi & Rizzi, 2019). Also, from the standpoint of human capital, boards hire outside CEOs when they think that none of the inside leaders are a good fit for the needs of the company (Bailey & Helfat, 2003). Even if outside CEOs lack firm-specific or industry-specific knowledge, they are less likely to be cognitively wedded to the firm's historical and current profile because they tend to be more open-minded than insiders (Bailey & Helfat, 2003; Karaevli, 2007; Karaevli & Zajac, 2013). Furthermore, high-ability managers are those who have general abilities (Mishra 2014; Cheng et al. 2020).

Therefore, changes in investment policy depends on management's role in the investment process (Weisbach, 1995). Even if all investment decisions are value-maximizing, one might expect a change in investment policy due to different CEOs with different sets of skills, knowledge, ability, talent, quality, or reputation, that may cause managers to perceive and

interpret information in different ways and influence corporate decision-making (Andreou, Karasamani, Louca and Ehrlich, 2017). Some less capable CEOs may ignore their private information about payoff and make decisions consistent with previous managers to avoid punishment for their investment decisions by shareholders and markets (Gan, 2019; Scharfdtein & Stein, 1990). Such CEOs lead to inefficient investment decision-making, and thus lead to low recovery and competitive advantages. Significantly, less able CEOs without sufficient knowledge, skills and capability reflected by their experience are more likely to fail to anticipate changes in firms, trends and movements in industries and economic environment accurately (Gan, 2019).

Furthermore, Andreou, Karasamani, Louca and Ehrlich (2017) found that higher managerial ability contributed to the capacity of firms to secure more financing during the crisis, which in turn enabled them to pursue more investment opportunities. More capable CEOs tend to be more knowledgeable about their business in terms of their experience, resulting in better judgments and estimations about business model and strategy, a better understanding of technology and industry trends (Demerjian et al., 2012, 2013). Therefore, firms with higher managerial ability are expected to align resources well with the environment (i.e., financial crisis of 2008) in which they operate, resulting in better firm performance by facilitating a series of investments for growth opportunities, especially when there are limited resources (e.g., difficult external financing) caused by financial crisis. CEOs are expected to foresee and evaluate the future benefits from new assets and research inputs and thus improve firm performance (Goodman et al., 2013).

In brief, CEOs with different abilities and various skill sets could in turn influence CEOs evaluations and perceptions of business environment and potential investment opportunities (Gan, 2019). Overall, CEO strategic view, accurate evaluation on the value of investment opportunities, and identification on investment best fitting the needs of their companies play critical role in efficient corporate investment (Goodman et al., 2013). Therefore, we will

investigate whether inside/outside experience of CEOs matter differently between pre- and post-crisis, and whether the different situations of economies caused by GFC and different impact of CEO experience could lead to different corporate investment pre- and post-crisis.

The agency theory model acknowledges that CEOs have some preferences in a company to change policies and promote managerial opportunistic, but this model does not consider the unique characteristics of CEOs (Bamber et al., 2010; Naheed, Jawad, Naz, Sarwar & Naheed, 2021). Numerous academics have refuted this idea and examined how managers' diverse qualities affect their strategic decisions (Bamber et al., 2010; Chemmanur et al., 2010; Francis et al., 2016; Holcomb et al., 2009). Gan (2018) finds that managerial ability ²³helps with overcoming the two sources of investment inefficiency: over- and under-investment. Andreou, Karasamani, Louca and Ehrlich (2017) investigate the role of managerial ability in mitigating or exacerbating the impact of the crisis on the scale of corporate investment efficiency, which remains agnostic as to whether the positive impact of managerial ability on corporate investment is also present during normal times or when such negative shocks are temporary. But the present study addresses this research gap by answering the question of how CEO experience may influence strategic decisions under different regimes such as pre- and post-crisis periods that remains largely unexplored.

There will be great trust crisis and professional risk to CEOs once the high-risk investment fails (Alchian & Demsetz, 1972). CEOs willingness to take risks is affected by regulatory requirement, incentive pay and monitoring (Ang, Lauterbach, & Schreiber, 2001; Dong & Gou, 2010). Internal governance where the self-serving actions of CEOs are restricted by the potential reaction of subordinates, can reduce agency problems and ensure that companies have significant value, while external governance can complement internal governance and improve efficiency (Acharya, Myers & Rajan, 2011). Therefore, we also attach importance to

²³ Managerial ability as knowledge, skills and competencies, experience, as well as traits and other interpersonal characteristics (Gillen and Carroll 1985; Boyatzis and Renio Case 1989; Holcomb et al. 2009; Khan et al. 2009; Sahin 2011), a range of problem-solving skills to deal with complex situations (Scholefield, 1974).

board governance mechanisms of companies to deal with agency problems and whether it contributes to ensuring the success of corporate investment.

Some literature investigates the relationship between CEO characteristics (e.g., CEO origin, CEO tenure, CEO age, CEO education) and investment (Bertrand & Schoar, 2003; Herrmann & Datta, 2006; Cummings & Knott, 2018; Luo, Kanuri & Andrews, 2014; Wiersema & Zhang, 2011) but less focus on CEO experience. Furthermore, even though some literature has studied CEO experience impact on corporate investment (e.g., Herrmann & Datta, 2006; Hu & Liu, 2015), these literatures do not categorize experience of CEOs as inside experience and outside experience and identify their distinct impact. Moreover, recent literature has investigated whether characteristics and competencies of managers such as ability, talent, quality or reputation influence corporate decision-making (e.g. Bertrand and Schoar, 2003 ; Chang, Dasgupta, and Hilary, 2010) and some focus on the impact of managerial ability on crisis-period corporate investment (e.g. Andreou, Karasamani, Loucaa& Ehrlichd, 2017; Nguyen, Nguyen& Yin, 2015), but not focus on CEO experience during both pre- and post-crisis period. Therefore, this research investigates whether CEO outside /inside experience affects firm's investment decisions in terms of exogenous shock.

4.2.2.4 CEO Experience, Board Governance and Corporate Investment

Performance pressures might force managers to reduce profitable long-term investments in favour of short-term investments offering immediate results (Honoré, Munari & Potterie, 2015; Stein, 1988). This is because the quality and economic potential of R&D investments are difficult for external investors or capital markets to evaluate, which make managers prefer to focus on short-term investment. As long-term investment and short-term investment are alternative choices for CEOs, they may not choose the optimal investment type in terms of agency problems. In addition, CEOs who are more risk-averse are less likely to invest in R&D, even if the investment is more profitable. Thus, they prefer to reduce the R&D investment particularly suffering from the crisis under the environment full of uncertainty, to

improve short-term performance and avoid the risks from R&D investments. If such CEOs have more discretionary power, firms may suffer from suboptimal strategies and get loss due to their drop of risky but profitable investments opportunities as they want (Delcours, 2007; Dong & Gou, 2010).

Companies with stronger managerial ability (i.e., outside CEO experience) are expected to align resources better with the environment in which they operate, leading to greater internal profitability (Andreou et al., 2017). Managerial abilities, particular CEOs, could lead to distortions in corporate investment decisions (Malmendier & Tate, 2005). Investment distortions include asymmetric information between firm insiders and the capital market (Myers and Majluf, 1984) in terms of CEO experience and the conflicted interest between managers and shareholders regarding corporate governance (Jensen and Meckling, 1976; Jensen, 1986).

To better prepare for the post-shock era, CEOs have to do more than fine-tune their daily tasks as the normal period, such as rethink how they operate, and even why they exist (Hatami & Segel, 2021). In other words, CEOs need to step back, and consider a broader perspective that may related to certain characteristics of CEOs----i.e., inside, or outside experience. CEOs typically have a negative attitude toward R&D and tend to reduce R&D spending to boost immediate financial performance and lower the risks associated with R&D activities (Baysinger & Hoskisson, 1989; Dong & Gou, 2010; Hoskisson et al., 2002). Whereas CEOs who are too focused on financials, growth, or expansion may take on risk that kills their long-term success (Nauck et al., 2021). CEOs who are unwilling to take sufficient risk will not respond or innovate quickly to meet the changing circumstances.

However, board governance can contribute a strong and material impact on managers' efforts to make value-enhancing investments (Masulis, Wang & Xie, 2007), by promoting the optimal allocation of firm resources and monitoring managerial decisions and actions. On the

one hand, board governance mechanism is able to reduce the agency cost by mitigating information asymmetries and allowing transparency (Kahveci & Wolfs, 2019). On the other hand, although CEOs determine new corporate strategies, board of directors could provide different strategic viewpoints to enhance corporate competitiveness in terms of strengthening their decisions and activities (Kahveci & Wolfs, 2019; Sarbah & Xiao, 2015). Board of directors in this condition will concern more with the long-term development of firms and may have a positive impact on the corporate R&D investment (Dong & Gou, 2010).

Corporate governance mechanisms could be related to investment efficiency by mitigating under-/over-investment determined by CEOs (Biddle et al., 2009; Jensen, 1986). When corporate investment is high, directors can access more information about the CEO's activity and intention for the firm, so they can forego financial controls in favor of trying to evaluate the potential shrewdness of the investments (Baysinger, Kosnik, & Turk, 1991; Shi, Connely, Mackey & Gupta, 2019). Prior literature studies the determinants of investment decisions (e.g., Edusei-Mensah, 2015; Mutswenje & Jagongo, 2014; Ninh et al., 2007). Some literature investigates investment decisions taking economic aspects into consideration (Ariful et al., 2015; Khan et al., 2015). Existing literature also examine the impact of corporate governance on corporate investment (Ben Kwame Agyei-Mensah, 2021; Nguyen and Dong, 2013; Ruiz-Porras & Lopez-Mateo, 2011). Enhancing the quality of board governance enable firms to make investment in a timely and accurate manner (Azeez, 2015; Bhagat & Bolton, 2008, 2019). Therefore, we investigate if board governance can moderate the relationship between CEO experience and corporate investment pre- and post-crisis.

4.3 Research Questions and Theoretical Framework

The disruptive environment caused by GFC of 2008 require great level of strategic change for adaptation. CEOs with outside experience are more likely to engage in a variety of strategic and organizational reconfigurations (Quigley, Hambrick, Misangyi & Rizzi, 2019). The company's bold thinking and novel strategic choices enable the firm to align with the

environment, which addresses the importance of CEOs to think out of the box due to their open mind. In addition, some literature focus on the effect of insiders/outside on firm performance (e.g., Keil, Lavie & Pavićević, 2021; Zhu and Shen, 2016) and CEO turnover to achieve expected performance level of firms related to strategy formulation and implementation (Agrawal, Knoeber & Tsoulouhas, 2006; Guthrie & Datta, 1997; Zhu, Hu & Shen, 2020). Some scholars investigate CEO experience (i.e., general experience and functional experience) on firm performance (Hamori & Koyuncu, 2015; Li & Patel, 2019). However, there is less literature attach importance to the corporate investment.

CEOs with different experience may have different attractiveness under given opportunities in terms of different information collecting and processing ability. Subsequently, some firms prefer to extend markets may change M&A, divestment, while some firms prefer organic growth, such as R&D, capital investment. The research answers the question why firms adjust their corporate strategy differently when confronted with different aggregate of uncertainty following an exogenous shock, whether they become more adaptive but more inward looking or even more market-oriented outward looking. Besides, the research shall answer the question whether outside experience, i.e., think out of box, help CEOs to adapt to the changed environment. Therefore, this research proposes to investigate the following research questions as below:

- a). Whether and how CEO experience contribute to corporate investment practices when companies operate in an environment either stable (pre-crisis) or disrupted (post-crisis)?
- b). Whether and how board governance contributes to corporate investment practices when companies operate in an environment either stable (pre-crisis) or disrupted (post-crisis)?

c). Whether and how board governance indirectly affects corporate investment by moderating the relationship between CEO experience and corporate investment in an environment either stable (pre-crisis) or disrupted (post-crisis)?

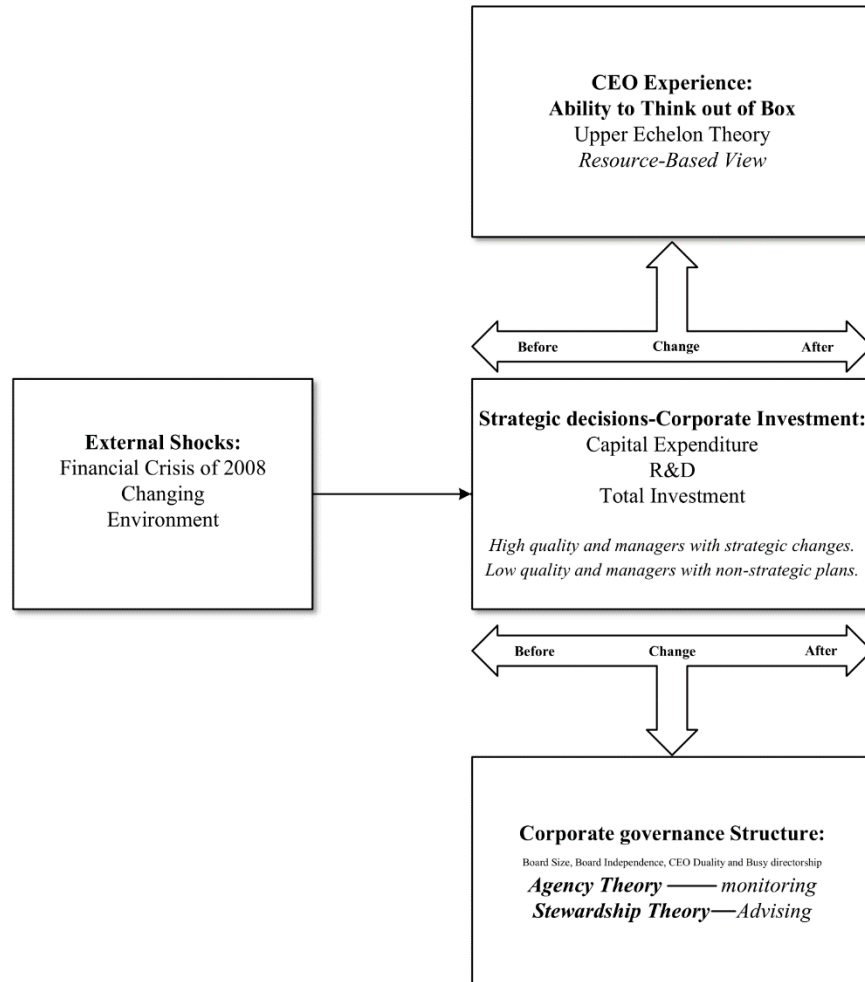


Figure. 3. Simplified framework of upper echelons theory, agency theory or stewardship, and corporate investment before and after crisis

4.4 Hypotheses Development

4.4.1 CEO experience and corporate investment before and after the crisis

When it comes to investment decisions, CEOs have the power to decide whether to invest in routine projects or risky innovative projects. First, CEOs can interpret the complexed firm performance in terms of their access to bonds of information and ability to process the information (Shi, Connelly & Mackey, 2019) and thus make corporate investment decisions.

Well-designed CEO incentive schemes (i.e., CEO experience) play essential role in encouraging corporate investment and thus enhancing firms' long-term competitiveness (Lin et al., 2011). CEOs with different experience view future prospects differently, impacting their judgments, confidence, and risk preferences. Additionally, managers with different experience have diverse skill sets, shaping how they view and evaluate potential investment opportunities. Therefore, I argue that CEOs with inside and outside experience will exhibit different investments practices.

The ability of outside experienced CEOs to initiate strategic change could rely on the discretion and support boards give, and the availability of financial resources (Karaevli & Zajac, 2013). There is a greater probability that outside experienced CEOs with changing initiatives would encounter resistance or receive less support from companies. Because board directors show less trust in CEO with outside experience, particularly in stable environment, increasing board oversight and supervision of the outside experienced CEO's strategic changes (Karaevli & Zajac, 2013). This may prevent successful change effort to some extent. Furthermore, the resistance of top executives is a big problem for an outsider CEO's plans for strategic change. In this case, CEOs with outside experience are more likely to make firm situations more stable before trying to challenge the strategic status quo in pre-crisis (Karaevli, 2007).

To make efficient corporate investment, firms should strengthen their capital structure to finance good investment opportunities when it appears (Verdi, 2006). CEOs with outside experience are more and less likely to pursue specific types of investments (e.g., capital expenditures, R&D), even total investment. Firms with a great number of antitakeover provisions are more likely to increase their capital investments (Harford, Mansi & Maxwell, 2008). Besides, capital investment projects have to be carefully evaluated because they require large amounts of cash to be raised and invested and determine whether the company is profitable in the future (Watson and Head, 2016). Corporate investment such as R&D, as

difficult-to-reverse capital outlays (Shi, Connelly & Mackey, 2019), plays important role in developing new products and processes and boosting productivity growth and sustainability (Driver and Guedes, 2012). However, R&D is generally a very risky investment activity (Holmstrom, 1989), because it may not achieve the desired outcomes (i.e., new products or new process) or the desired outcome by an expected date of time, such as high sunk cost and long payoff due to economic and technical reasons (Baker & Muellers, 2002; Driver and Guedes 2012; Lin et al., 2011; Lv et al. 2019). While CEOs make investment decisions in terms of total investment taking both buy decisions and sell decisions into consideration (Xie, 2015). CEOs with outside experience tend to reduce abnormal total investments in stable period. Because they may lack the comprehensive industry knowledge and deep understanding of the firm specific conditions that inside experienced CEOs possess. This can make them more risk-averse when it comes to making substantial investments, as they may not have the same level of confidence in their ability to navigate the nuances of the business.

Overall, CEOs with outside experience are more cautious and more risk-averse than CEOs with inside experience (John & Litov, 2010). Thus, they are more willing to adopt safe or conservative investment policies that improve the firm's operational efficiency and cost management and achieve financial outcomes, instead of pursuing risky but growth-oriented investments. Since CEOs with outside experience do not have enough knowledge of industry/firm and networks, which may make people inside the company not support such CEOs.

However, financial crises lead to real effects on corporate investment in terms of the volatile business environment presented in exiting literature (Campello, Graham, & Harvey, 2010). Firms tend to significantly reduce investment when faced with limited financial resources in the aftermath of crisis full of uncertainty (Lamont, 2012). As investing in capital expenditure requires large amount of cash and the difficulties of external financing, CEOs with outside experience tend to reduce capital expenditure. Internal resources in the form of cash reserves

could lessen the decrease in corporate investment (Duchin et al., 2010). Besides, exogenous shocks mitigate agency problems due to both CEOs and owners struggle to survive in the turbulent environment, CEOs with outside experience are less likely to pursue self-interest to invest more in capital expenditure in contrast to stable period, considering that capital expenditures can be either value-increasing or value-destroying.

Furthermore, when the business environment changes, there is a lot of uncertainty and all rules that were there before are no longer valid. Outside experienced CEOs frequently provide firms with new perspectives and strategic directions, which contributes changes in the company's strategic decisions, focusing on investments that stimulate innovation, technology adoption, and market expansion for firm competitive advantage and long-term growth (Liu & Atinc, 2021). Besides, CEO with different industry/firm experiences and networks can influence their investment decisions of firms as they leverage their external knowledge and connections to identify opportunities that best align with the firm's strategic objectives. Furthermore, CEOs with outside experience, as one of organizational capabilities could enable the likelihood of process innovation activity by managing a wide range of innovation-related activities (Lee, Lee & Garrett, 2019; Piening & Salge, 2015). CEOs with outside experience are more sensitive to new information, identify new growth opportunities and make more aggressive investment decisions to appear talented. Such CEOs are more likely to announce an acquisition (Yim, 2013, Zhang et al., 2015), open new lines of business and close other existing businesses (Li et al., 2014), or take risky investment policies (Serfling, 2014). In summary, CEOs with outside experience are more likely to invest in R&D and total investment for strategic change in contrast to capital expenditure.

H1: CEO outside experience matters differently on corporate investment between pre-crisis and post-crisis period.

H1a. CEO outside experience is positively related to corporate capital expenditure in a stable business environment. When the business environment has changed following a shock, CEO outside experience is negatively related to corporate capital expenditure.

H1b. CEO outside experience is negatively related to corporate total investment in a stable business environment. When the business environment has changed following a shock, CEO with outside experience is positively related to corporate total investment.

4.4.2 Board governance and corporate investment before and after the crisis

Board governance contributes to shaping firms' behaviour and their decisions, such as corporate investment (Ruiz-Porras & Lopez-Mateo, 2011). Performance declines appear to increase boards' engagement in, and ability to influence organizational decision making (Dowell et al., 2011; Tuggle et al., 2010). Their active engagement of board directors and their monitoring function contribute to an effective governance mechanism, which could encourage management to make investments that create long-term value. In other words, effective board governance practices both encourage and constrain managers to avoid agency problems (Zulkafli & Samad, 2007). Effective board governance is able to ensure the investment opportunities under a thorough evaluation and align with the firm's strategic goals. Improved quality of investment decisions leads to more investment. Besides, effective board governance is more likely to get external funds and support because monitoring function contributes to increasing investors' trust. Furthermore, effective board governance practises contribute to better allocation and management of corporate resources, which in turn increase the total investment of the company.

CEOs with outside experience, who lack familiarity with specific firms and trust, are more likely to be cautious in pre-crisis and may forego profitable but risky projects, causing underinvestment. A vigilant governance board tends to prevent CEOs from avoiding complex decisions and induce it to turn down optimal projects (Bertrand and Mullainathan, 2003), and thus increase investment in capital expenditure. Effective board is better able to mitigate the information asymmetry between insiders and outside investors due to their higher degree of financial transparency and information disclosure (Bolton and Freixas, 2000; Nguyen,

Nguyen & Yin, 2015). CEOs with outside experience may make less risky investment than shareholders would like them to (Makadok, 2003). This is because agency problems severe on stable environment that managers have different goals and act in different ways in terms of risk (Eisenhardt, 1989).

Besides, effective board governance practice has a significant impact on innovative ideas in corporate business. The board may question the importance of efforts which seek to promote innovation and creativity. Financial performance and, in some situations, quarterly returns are necessary for board governance, which may lead boards to the reduced innovation due to short-term horizons (Abor & Adjasi, 2007). Corporate investment that does not yield immediate financial gain may occasionally be rejected without taking into account their preferable longer-term benefits, as boards are well-informed about the immediate costs of investment (e.g., R&D) and its impact on short-term profitability (Honoré, Munari & La Potterie, 2015; Lazonick and O'sullivan, 2000).

However, financial crisis leads to uncertain and complex business environment increasing global competition, which requires strategic change. In post-crisis, as the business environment grows more unpredictable, capital-intensive projects become much riskier. A vigilant governance board is more likely to prevent managerial empire-building for self-interest pursuit (Bertrand and Mullainathan, 2003). Besides, boards may reduce capital expenditure due to limited access to financial resources, high level of credit risk and less cash holding (Field et al., 2013; Elyasiani and Zhang, 2015). Better governed companies have great flexibility in terms of external financing and thus a smaller adverse effect on investment (Nguyen, Nguyen & Yin, 2015). Furthermore, board directors possess greater capabilities and incentives to evaluate long-term investments and encourage investment that are likely to generate innovation like R&D investment, by gathering information and accurately assessing the consequences of managerial decisions in the changing environment (Baysinger et al., 1991). Firms need long-term value-creation project such as R&D investments more than ever

because global competition continues to grow (Lv, Chen, Zhu, & Lan, 2019). Effective board governance is important for firms to encourage innovation, long-term wealth creation, future competitiveness, and resilience in the face of market changes.

H2: Board governance matters differently on corporate investment between pre-crisis and post-crisis period.

H1a. Board governance is positively related to corporate capital expenditure in a stable business environment. When the business environment has changed following a shock, board governance is negatively related to corporate capital expenditure.

H1b. Board governance is negatively related to corporate total investment in a stable business environment. When the business environment has changed following a shock, board governance is positively related to corporate total investment.

4.4.3 Board governance moderating role in the impact of CEO experience on corporate investment

The most significant aspect of CEO/board relations has been acknowledged as the support or constraints the board may offer to the CEO (Boyd et al., 2011; Shen, 2003). CEO experience has an influence on corporate investment, as CEO knowledge, skills, and experience have great impact on collecting and processing information. Corporate investments are influenced by both CEOs' risk attitudes based on their experience and the presence of agency problems arising from different risk perspectives between CEOs and board directors (Lu & Wang, 2018). Some shareholders could be more risk-adverse to maximize their wealth, whereas well-diversified shareholders prefer risky projects and increase total investment because the value of their stockholdings increases with the risk of cash flows of companies they invest in (Lu & Wang, 2018).

In stable period, CEOs with outside experience can act opportunistically and seize personal

gains from unnecessary value-destroying investments at the expense of shareholders' interest, particularly when firms with sufficient financial resources (Aktas, Andreou, Karasamani & Philip, 2019). As CEOs have an incentive to allocate the firm's resources to investments whose value is higher under them than under the best alternative (Shleifer & Vishny, 1989), agency problems may lead to CEO excessive investment in assets that are complementary to CEOs' skills, experience, and background, even if such investments are unprofitable projects for companies (Aktas, Andreou, Karasamani & Philip, 2019). CEOs spend cash quickly on value-destroying investments such as large capital expenditures and acquisitions instead of R&D, because wasting cash on M&A, capital expenditure could benefit CEO private interest (Harford and Li, 2007). CEOs could avoid risk-taking by investing less in R&D and abnormal total investment but more capital expenditure without alarming shareholders, as firms face low competition in stable environment.

Board governance describes how businesses should be managed, directed, and controlled. It is about supervising and holding those who direct and control management accountable, with the ultimate goal of achieve shareholders' long-term value. Board directors may not necessarily agree with management---i.e., CEOs, regarding what changes are necessary. Boards can sometimes contradict CEOs' proposed strategic changes when fulfilling their monitoring role and may not fully support management's agenda in their role of allocating resources (Liu & Atinc, 2021). In pre-crisis, monitoring function of boards play more important role in corporate decision-making, because boards intensify their monitoring and exert greater pressure on managers when firm performance declines, particularly during stable periods with severe agency problems. (McDonald & Westphal, 2003; Tuggle, Sirmon, Reutzel, & Bierman, 2010). In other words, board directors tend to pin success and failure on firm's top leader, once CEO has made large investments (Shi, Connelly & Mackey, 2019). Board of directors are more likely to strengthen their monitoring and control functions to outside experience CEOs' decisions and action in stable business environment. CEOs with outside experience tend to pursue self-interest, which may cause underinvestment and less

risk-taking in pre-crisis. While effective board governance can monitor CEOs to mitigate agency problems in pre-crisis and thus encourage CEOs to invest less in capital expenditure and invest more in R&D and total investment.

However, exogenous shocks can lead to financial distress, potentially resulting in bankruptcy, liquidation, or major changes in management (Lee & Yeh, 2004). Additionally, financial crisis resulted in severe financial constraints of companies due to the freezing credit market, especially for companies that rely on intangible assets and therefore have little collateral to secure loans (Rouyer, 2016). Limited financial resources could reduce corporate investment. Board governance benefit firms by providing greater access to financing, lower cost of capital, more information, better performance, and more favourable treatment of all stakeholders (Claessens et al., 2002). Moreover, board of directors are more likely to tolerate risk, loosen controls, and accept strategic choices with uncertain outcomes (Karaevli & Zajac, 2013), and thus work collaboratively with CEOs with outside experience. On the other hand, board of directors may prioritize short-term financial performance over long-term strategic investments like R&D. This can create conflicts with an outsider CEO who may advocate for riskier but potentially more profitable long-term investments. Board governance may then limit the CEO's ability to pursue such strategies for strategic change. Therefore, we have the following hypotheses:

H3: Board governance moderates the relationship between CEO experience and corporate investment differently between pre-crisis and post-crisis period.

H3a: The relationship between CEO outside experience and capital expenditure is negatively moderated by board governance in a stable environment. When the business environment has changed following a shock, the moderating role of board governance between CEO outside experience and capital expenditure is positive.

H3b. The relationship between CEO outside experience and total investment

is positively moderated by board governance in a stable environment. When the business environment has changed following a shock, the moderating role of board governance between CEO outside experience and total investment is negative.

4.5 Data and Methodology

4.5.1 Sample and Main variables

4.5.1.1 Sample

Refer to Empirical Chapter 1

The study is based on annual data on U.S. publicly traded firms available on Standard and Poor's Compustat-North America database and BoardEx who survived from the global financial crisis of 2008. The sample period is from pre-crisis, crisis, and post-crisis. (2000 to 2019). The basic sample is focused on all industries, excluding financial firms (SIC codes 6000 to 6999) and utilities (SIC codes 4900 to 4949), a total of 2402 firms, referring to Empirical Chapter 1 (i.e., Chapter 3). In Chapter 2, we have already argued the appropriateness of using the financial crisis of 2008 as a natural experiment, as the GFC of 2008 is a watershed moment whereby *all* firms in the USA were able to sense the threat posed by the disruption. This, in turn, enables me to make the reasonable assumption that the vast majority of the firms, who sensed the threat (and opportunities) posed by the crisis in 2008, undertook necessary organizational and other changes – which we can alternatively call seize and transform – in the immediate aftermath of 2008. However, this window can be altered for the purpose of robustness checks. In Empirical Chapter 1, we investigate how CEO experience determines firm performance/competitiveness both pre- and post-crisis, taking the time period from 2012-2019. As I mention above, I draw on the M&A literature to posit that this process (i.e., changes in corporate strategy, specifically corporate investment) takes 3 years, from 2009 to 2011, to examine how CEO experience determine corporate investment both pre- and post-crisis in Empirical Chapter 2. The panel dataset presents

estimates of the changes in the impact of CEO outside experience on average annual different types of investment, from the pre-crisis period (average 2005-2007) to post-crisis period (average 2009-2011).

4.5.1.2 Main variables

The firm performance, CEO outside experience, board governance, and control variables are discussed in detail in the following sections.

This research investigates the relationship between CEO outside experience, board governance and corporate investment. I also classify observations in the full sample into two sub-samples of firms with and without financial constraint for robustness checks. KZ-Index as a measure of financial constraints (Ameida, Campello & Weissbach, 2004; Kaplan and Zingales, 1997) that higher KZ-index indicates higher financial constraints, measured as below:

$$\text{KZ Index} = -1.002 \text{ Cash Flow} + 0.283 \text{ Q} + 3.139 \text{ Leverage} - 39.368 \text{ Dividends} - 1.315 \text{ Cash Holdings}.$$

Besides, I also conduct robustness checks with sub-samples corresponding different levels of bankruptcy possibility²⁴. Z-score as a measure of bankruptcy possibility, measured as below:

$$\begin{aligned} \text{Z-Score} = & 1.2 * (\text{working capital} / \text{total assets}) + 1.4 * (\text{retained earnings} / \text{total assets}) \\ & + 3.3 * (\text{Earnings before interest and tax} / \text{total assets}) + 0.6 * (\text{Market value of equity} / \text{total} \\ & \text{liabilities}) + 1 * (\text{Sale} / \text{total assets}). \end{aligned}$$

All variables measurement and data sources are provided in **Table 4-1**. Independent variables and control variables are the same as Empirical Chapter 1.

²⁴ Z-score < 1.81 indicates high bankruptcy possibility; Z > 2.67 indicates low bankruptcy possibility; 1.81 < Z-score < 2.67 indicates grey zone (MacCarthy, 2017)

Table 4-1 Variable description

Variables	Measurement	Literature support	Data Source
Dependent Variables			
R&D	R&D expenses scaled by total assets	Detthamrong, Chancharat & Vithessonthic, 2017; Hermann & Datta, 2006; Brick, Palmonand & Wald, 2006;	Compustat
Total Investment	INV is the sum of capital expenditures, R&D expenditures and acquisitions, minus sales of property, plant and equipment, scaled by lagged total assets.	Biddle, Hilary & Verdi, 2009; Richardson, 2006;	Compustat
Capital Investment	Capital expenditure scaled by total assets.	Borisova & Brown, 2013; Brown & Petersen, 2011; Shen & Zhang, 2013	Compustat
Independent Variables			
CEO Experience_Outsider1	1 if (s)he was in executive roles (CEO, COO, MD etc) at a different firm (within the same industry or at a different industry) during the previous 10 years, 0 otherwise	Hamori & Koyuncy, 2015; Zhu, Hu and Shen, 2020	Board Ex
CEO Experience_Outsider2	1 if (s)he was CEO, COO, MD etc at a firm in a different industry during the previous 10 years, 0 otherwise	Hamori & Koyuncy, 2015; Zhu, Hu and Shen, 2020	Board Ex
Board Governance Index (BGI)	Board governance score is based on board size, board independence, busy directorship, and CEO duality. The index ranges from a feasible low of 0 to a high of 4; a high score is associated with good monitoring function.	Bhagat and Bolton, 2008, 2017; Guest, 2009; Martynova & Renneboog, 2010	Board Ex
Control Variables			
Prior CEO tenure	Total number of years CEO has spent in CEO positions in both	Keil, Lavie and Pavićević, 2021	Board Ex

	same and different companies during that CEO's career		
CEO tenure	The number of years for which the firm's CEO has been in that position	Herrmann and Datta, 2002, Herrmann and Datta, 2006; Hsua, Chen&Cheng, 2013	Board Ex
CEO Age	CEO age was measured as the number of years from the date of birth	Herrmann and Datta, 2002, Herrmann and Datta, 2006; Hsua, Chen&Cheng, 2013	Board Ex
CEO Gender	Dummy variable equals to 1 for a female CEO and 0 for a male CEO	Hanousek, Shamshur& Tresl, 2019; Wu, Li, Ying&Chen, 2018	Board Ex
CEO compensation	The sum of salary, bonus, and stipends	Chen, Liu, & Li, 2010; Firth et al., 2007; Kato & Long, 2006; Wang & Xiao, 2011	Board Ex
Firm size	The natural logarithm of a firm's total asset	Mitton, 2002; Singla & George, 2013	Compustat
Firm age	firm age as the time between its going public and the present time (also in years)	Filatotchev et al., 2006; Johnson et al. 2016; Kieschnick & Moussawi, 2018	Compustat
Leverage	Long-term debt plus debt in current liabilities divided by total asset	Ghosh & Jain, 2000; Aivaziana, Geb & Qiu, 2005; Chava & Roberts, 2008; Chen et al., 2010.	Compustat
Tangibility	Tangibility is asset tangibility measured by net fixed assets divided by total assets.	Hovakimian, 2009 ; Tran, 2020	Compustat
KZ Index	$\text{KZ Index} = -1.002 \text{ Cash Flow} + 0.283 Q + 3.139 \text{ Leverage} - 39.368 \text{ Dividends} - 1.315 \text{ Cash Holdings.}$	Ameida, Campello & Weissbach, 2004; Kaplan and Zingales, 1997	Compustat
Dividend Payout Ratio	Payout ratio is measured as total distributions (dividends plus	Ameida, Campello & Weissbach, 2004 ; Fazzari et al. (1988)	Compustat

Altman's Z-Score	stock repurchases) divided by operating income. $\text{Z-Score} = 1.2 * (\text{working capital} / \text{total assets}) + 1.4 * (\text{retained earnings} / \text{total assets}) + 3.3 * (\text{Earnings before interest and tax} / \text{total assets}) + 0.6 * (\text{Market value of equity} / \text{total liabilities}) + 1 * (\text{Sale} / \text{total assets})$	Bhagat & Bolton, 2019; Tran, 2020	Compustat
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4.5.1.3 Dependent variable

In this section, we introduce the different types of corporate investment as dependent variable, presented in **Table 4-1**. First, as R&D spending with typically high risks and costs as one of the most fundamental investment decisions made by top management team of company particular CEO of firms (Barker & Mueller, 2002; Lin, Lin, Song & Li, 2011), we, therefore, measure R&D investment as R&D expenses scaled by total assets. There is restricted collateral value of R&D and risky companies have to pledge collateral to gain debt (Berger and Udell, 1990; Shen & Zhang, 2013). Besides, high level of debt finance can result in issues of financial distress, particularly for R&D intensive companies (Cornell and Shapiro, 1988; Shen & Zhang, 2013). Second, we measure capital investment as capital expenditure scaled by total assets, which is a more flexible investment type compared with R&D. Firms that are credit-dependent should experience greater decrease in capital investment (Kahel & Stulz, 2013). Firms with a higher level of leverage should experience a greater decrease in capital investment. Finally, total investment is measured as the sum of capital expenditures, R&D expenditures and acquisitions, minus sales of property, plant and equipment, scaled by lagged total assets.

4.5.1.4 Independent variable

Refer to Empirical Chapter 1 Board Governance Index.

4.5.1.5 Control variable

Executive compensation is a significant internal governance mechanism to alleviate managerial slack and align managerial incentives with shareholder concerns (Holmstrom, 1979; Jensen & Meckling, 1976). We measure executive compensation as the sum of salary, bonus, and stipends (Chen, Liu, & Li, 2010; Firth et al., 2007; Kato & Long, 2006; Wang & Xiao, 2011). Other control variables refer to Empirical Chapter 1.

4.5.2 Data Description

Refer to Empirical. Chapter 1

Table 4-2. presents the summary descriptive statistics regarding mean, median, minimum and maximum for the key variables, including corporate investment variables, CEO outside experience, and corporate governance. It shows that there is a large firm-level variation in different kinds of corporate investment. The mean capital expenditure across all firm years equals 0.05, while its minimum and maximum is -0.93 and 5.45, respectively. Besides, the mean R&D across all firm years equals 0.12, whereas minimum and maximum is -0.01 and 133.69, respectively. The data shows there are great difference of corporate investment decisions among firms. In particular, the panel shows that compared to capital expenditure, R&D spending tend to have large variation, which consistent with Xu, Zhou and Du (2019). They demonstrate that high performing firms are more likely to engage in risk taking such as R&D to sustain their long-term competitive advantage, particularly when firms suffered differently from financial crisis of 2008 with different CEO experience and corporate governance mechanism according to Empirical Chapter 1. Besides, the sample of minimum and maximum CEO outside experience is 0 and 1 and the mean of CEO outside experience is 0.49, which reflects there are great variation of CEO outside experience across firms. Further,

the panel shows that board governance index (BGI) with the mean (2.56) and the minimum and maximum (0, 4), reflecting the overall board characteristics, typically show great difference, where some firms have effective board governance mechanism, while others have poor board governance mechanism.

Table 4-2.Descriptive Statistics for variables in the testing equation Eq. (1) in Empirical Chapter 2.

This table presents descriptive statistics of our main variables. The descriptive statistics were presented further for full sample, pre-crisis and post-crisis sub samples. Pre-crisis period covers 2000 to 2007, post-crisis1 period covers 2009-2011 and post-crisis2 period covers 2012 to 2019. The table contains the sample CEO experience, board governance, other characteristics of CEOs and characteristics of firms used in the study. The results are based on a sample of 2,402 firms and 36,107 firm years from 2000 to 2019 due to data limitation (missing value).

Variable	Obs	Mean	S.D.	Min	Median	Max
Capital Expenditure	36053	0.05	0.07	-0.93	0.03	5.45
Total Investment	32865	0.17	1.57	-1.83	0.09	233.375
R&D	22257	0.12	1.06	-0.01	0.03	133.69
R&D Dummy	36107	0.89	0.31	0	1	1
CEO Outsider1	36107	0.49	0.50	0	0	1
CEO Outsider2	36107	0.34	0.47	0	0	1
Board Governance Index	36107	2.56	0.84	0	3	4
CEO Tenure	36107	7.41	7.07	0	5.4	60.7
Prior CEO tenure	36107	9.40	7.67	0	7.8	60.7
CEO Age	36107	56.45	8.21	28	56	95
CEO Gender	36107	0.03	0.17	0	0	1

CEO Compensation	30,998	2541.79	6791.531	0	0	37864
Firm Size	36107	6.42	2.24	0.00	6.53	13.61
Firm Age (IPO)	36107	58.70	48.43	0	25	119
Leverage	36107	0.47	18.98	0	0.18	3465
Tangibility	36107	0.26	0.24	0	0.17	0.99
Payout Ratio	36100	0.42	1.26	-7.04	0.05	12.59
KZ Index	36107	1.51	68.05	-550.54	0.39	11798.4
Z-Score	36022	-25.71	1266.428	-113602.9	3.26	967.5686

Note: Other variables have been presented in Empirical Chapter 1 Data Descriptive Statistics

Table 4-3 reports the Pearson correlation coefficients between corporate investment (R&D, Capital expenditure and Total investment) and CEO experience, corporate governance and control variables. CEO outside experience is positively associated with R&D and total investment but negatively associated with capital expenditure, providing preliminary evidence that CEOs with outside experience are more likely to make more investment, particularly R&D to sustain companies' competitive advantage. In addition, firms with better corporate governance are more likely to make less investment, like R&D. Besides, CEO outside experience negatively related to capital expenditure, as CEOs with outside experience have ability to think outside box and thus are more likely to make investment for strategic changes instead of spending more in capital expenditure. Further, CEO outside experience is positively related to total investment. Finally, the correlation matrix indicates corporate governance negatively correlated with capital expenditure, total investment and R&D.

Table 4-3. Person correlation matrix.

Variables	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10
V1: R&D Spending	1.0000									
V2: Capital Expenditure	-0.0363	1.0000								
V3: Total Investment	0.2131	0.0093	1.0000							
V4: CEO Outsider1	0.0303	-0.0461	0.0150	1.0000						
V5: CEO Outsider2	0.0062	-0.0403	0.0137	0.7415	1.0000					
V8: Board Governance Index	-0.0502	-0.0369	-0.0281	0.1230	0.0853	1.0000				
V7: Post-crisis 1	0.0032	-0.0484	-0.0057	0.0537	0.0467	-0.0285	1.0000			
V7: Post-crisis 2	0.0106	-0.0631	0.0152	0.0993	0.0724	0.0785	-0.4434	1.0000		
V9: Firm Size	-0.1973	0.0578	-0.0669	-0.0490	-0.0554	0.4575	-0.0692	0.0567	1.0000	
V10: Firm Age	-0.0304	-0.0122	-0.0215	-0.0178	-0.0136	0.0451	-0.0223	0.0799	0.1754	1.0000
V11: Leverage	0.3258	0.0073	0.0476	0.0312	0.0302	-0.0441	-0.0011	0.0268	-0.0661	0.0173
V12: Firm Growth	-0.0088	0.0157	-0.0011	-0.0286	-0.0195	0.0481	-0.0114	-0.0210	0.1156	0.0183
V13: ROA1	-0.8002	0.0170	-0.1054	-0.0232	-0.0182	0.0534	0.0007	-0.0090	0.1314	-0.0101
V14: ZScore	-0.4940	-0.0008	-0.0239	-0.0195	-0.0181	0.0396	-0.0007	-0.0161	0.0893	-0.0143
V15: Tangibility	-0.0867	0.5806	-0.0228	-0.0470	-0.0586	-0.0227	-0.0205	-0.0334	0.1946	0.0915
Variables	V11	V12	V13	V14	V15					
V11: Leverage	1.0000									
V12: Firm Growth	-0.0021	1.0000								
V13: ROA1	-0.4130	0.0060	1.0000							
V14: ZScore	-0.4261	0.0026	0.7197	1.0000						
V15: Tangibility	0.0082	0.0156	0.0326	0.0216	1.0000					

Note: The Pearson correlation coefficients between the variables employed in the testing equation are presented in the lower diagonal.

4.5.3 Methodology

In this research, we examine the impact of CEO experience on corporate investment using financial crisis as the event. Corporate investments of companies are regressed on the CEO experience for pre-crisis period. The regression estimates are then used to generate predictions of CEO experience impact on corporate investment for post-crisis period. The difference between the pre- and post-crisis constitutes corporate investment which reflects the experience of CEOs impact on the change of investment undertaken by the firm under the disrupted economic environment. The corporate investment and CEO experience from 3 years before the crisis to 3 years immediately after the crisis form the basis for the analysis by controlling board governance and firm characteristics. In addition, we further investigate the indirect effect of board governance on the relationship between CEO experience and board governance, instead of the existing literature focusing more on the direct impact of board governance on corporate investment (e.g., Gugler, 2003; Nguyen, Nguyen & Yin, 2015).

We adopt the event study methodology to take a first look at the hypothesis that firms with CEO outside experience should be associated with more risk-taking corporate investment than firms with CEO inside experience. Refer to existing literature compare pre- and post-M&A performance (e.g., Ravenscraft & Scherer, 1989; Sumon & Selarka, 2012), we compare pre- and post-crisis corporate investment in terms of the impact of CEO experience and indirect impact of board governance. As discussed earlier in Empirical Chapter 1, we undertake this exercise for 2000-2007 (pre-crisis), 2009-2011 (post-crisis1) and 2012-2019 (post-crisis2). In keeping with the M&A literature, the aforementioned change in corporate investment is between year $T+1$ and $T+3$, T is the year of financial crisis. Because making strategic decisions, i.e., corporate investment, in a volatile business environment, i.e., post-crisis1, would offer firms some advantages when situations become normal once again.

We adapt the methodology of Bhaumik and Selarka (2012) and undertake a panel data analysis using the following regression specification:

$$Investment_{i,t} = \beta_1 + \beta_2 CEO \text{ outside experience} + \beta_3 Board \text{ governance index} + \beta_4 Post - crisis1 + \beta_5 Post - crisis2 + \beta_6 (CEO \text{ outside experience} * Post - crisis1) + \beta_7 (CEO \text{ outside experience} * Post - crisis2) + \beta_8 (Board \text{ governance index} * Post - crisis1) + \beta_9 (Board \text{ governance index} * Post - crisis2) + \beta_{10} X_{i,t} + \gamma_i + \varepsilon_{i,t}$$

Eq. (4-1)

where the dependent variable is corporate investment (i.e., Capital investment, Total investment, and R&D), Post-crisis1 is a dummy variable that take the value 1 for the time period Post-crisis is between 2009 and 2011, and zero otherwise; Post-crisis2 is a dummy variable that take the value 1 for the time period Post-crisis is between 2012 and 2019 and zero otherwise (Pre-crisis as P_0 indicates the time period is between 2000 and 2007), referring to Chen (2014) who investigates CEO experience over the three years preceding the 2008 financial crisis (2005-2007) and the three years following the financial crisis (2009-2011). Either some investment (e.g., R&D) may take 3-5 years or some firms may begin to take actions relatively late than others, we thus investigate CEO experience over the five years both pre- and post-crisis. X is the control variable, including firm characteristics, other CEO characteristics, and year and industries characteristics, refer to Empirical Chapter 1 (Chapter 3). In this research, I use OLS model and fixed effect model to examine the relationship between corporate investment and CEO outside experience.

Overall, we then apply triple interaction regression models to examine the joint effect of CEO experience and corporate governance on corporate investment between pre-and post-crisis period. Note that my board governance measure will not vary with firm fundamentals over the sample period. We allow the slope coefficients for CEO experience, post-crisis, and the interaction between CEO outside experience and Post-Crisis to vary by board governance index. We examine whether board governance exerts impact on the relationship between CEO experience and corporate investment distinguished between pre- and post-crisis. The

regression models are as follows referring to Bhaumik and Selarka, 2012), and Buchanan, Cao and Chen (2018):

$$\begin{aligned}
Investment_{i,t} = & \beta_1 + \beta_2 CEO \text{ outside experience} + \beta_3 Board \text{ governance index} \\
& + \beta_4 Post - crisis1 + \beta_5 Post - crisis2 \\
& + \beta_6 (CEO \text{ outside experience} * Post - crisis1) \\
& + \beta_7 (CEO \text{ outside experience} * Post - crisis2) \\
& + \beta_8 (Board \text{ governance index} * Post - crisis1) \\
& + \beta_9 (Board \text{ governance index} * Post - crisis2) \\
& + \beta_{10} (CEO \text{ outside experience} * Board \text{ governance index}) \\
& + \beta_{11} (CEO \text{ outside experience} * Board \text{ governance index} * Post \\
& - crisis1) \\
& + \beta_{12} (CEO \text{ outside experience} * Board \text{ governance index} * Post \\
& - crisis2) + \beta_{13} X_{i,t} + \gamma_i + \varepsilon_{i,t}
\end{aligned}$$

Eq. (4-2)

The key variables of interest are the triple-difference interaction term: CEO outside experience * Post-crisis * Board Governance (in Eq. (2)). We measure board governance using board governance index with the value 1-4, where the higher the BGI, the better the monitoring function of the boards, otherwise advising function of the boards. The interaction terms capture how CEOs with outside experience and board governance work together to affect changes in corporate investments before and after the financial crisis. This regression model controls for both industry- and year-fixed effects to deal with unobserved heterogeneity across industries and years. I report my estimation results in *Section 4.6 Result and Discussion*.

4.6 Result and Discussion

I examine the relation between CEO outside experience and corporate investment pre- and post-exogenous shock by estimating models regressing different type of investment on CEO outside experience and control variable. In addition, we also investigate the direct impact of board governance on corporate investment in terms of exogenous shocks, and the indirect impact of board governance by taking board governance index as a moderating factor on the relationship between CEO outside experience and corporate investment. Our variables of

interest are the following three corporate investments: (1) Capital expenditure, (2) Total investment, regression results presented in Table 4-4. Column (1) report the OLS regression model results, Column (2) report the fixed effect (FE) regression model results, Column (3) report the OLS regression model results of our full regression model, i.e., triple interaction between CEO outside experience, corporate governance and corporate investment. To deal with the endogeneity issue, column (4) reports the fixed effect (FE) regression model results of our full regression model, i.e., triple interaction column (5) reports the GMM model results of the full model. As explained in methodology part, this research focus on the corporate investment between year T+1 and T+3---i.e., immediately after the crisis (Post-crisis1)

Table 4-4 presents the regression results, when corporate investment measured as capital expenditure. The panel shows that coefficients on CEO outside experience is insignificant in post-crisis, which indicates there is no significant relationship between CEO outside experience and capital expenditure of firms in post-crisis period. While results in OLS regression model show that there is a negative relationship between CEO outside experience and capital expenditure (-0.0096, t-statistics=0.0043) in pre-crisis but fixed effect model shows insignificant result in pre-crisis. However, after dealing with endogeneity issue using GMM model, the results show that CEO outside experience negatively (-2.4433, t-statistics=-1.78) affect capital expenditure in post-crisis but positively (2.4338, t-statistics=1.81) affect capital expenditure in pre-crisis. The results implicate that firms with CEO outside experience are less likely to increase their capital expenditure particular immediately after the financial crisis, because the large amounts of cash to be raised and limited access and high cost to external financing after the crisis (Campell et al., 2011; Watson and Head, 2006). In pre-crisis, CEO with outside experience has great pressure as they are new to the company (Karaevli, 2007; Fondas & Wiersema, 1997). They increase capital expenditure for firm innovation and growth to prove their leadership ability to move the company forward.

Besides, the baseline model shows that there is no significant relationship between board governance and capital expenditure in post-crisis but negatively (-0.0011, t-statistics=-1.32) affect capital expenditure in pre-crisis. However, after dealing with endogeneity issue, the results in GMM model shows that board governance negatively affect capital expenditure in post-crisis (-0.4413, t-statistics=-1.78), but positively affect capital expenditure (0.4343, t-statistics=1.80) in pre-crisis that is consistent with Allayannis and Miller (2012) who find that better board governance with improved monitoring function can prevent CEOs from pursuing self-interest and encourage management to make investment based on long-term value. In pre-crisis, CEOs pursuing “quiet life” may lead to under-investment as they give up risky, optimal projects, while effective boards monitor CEOs to invest more in capital expenditure (Bertrand and Mullainathan, 2003). Where in post-crisis, the risks associated with capital-intensive projects are significantly increased in volatile business environment. An effective board of governance is more likely to encourage CEOs to invest more for strategic changes and thus firm growth but avoid risks to engage in "empire-building" activities under managerial control (Jensen, 1986). The results support hypothesis 2.

Regarding triple interaction among CEO outside experience, board governance and crisis period on corporate investment, the GMM model shows that board governance positively (0.9638, t-statistics=1.78), affect the relationship between CEO outside experience and corporate investment ---i.e., capital expenditure in post-crisis, but negatively moderate the relationship in pre-crisis. The results also support hypothesis 3. The findings indicates that in post-crisis with great volatility and uncertainty, boards are more likely to trust CEOs with outside experience compared with pre-crisis period. Meanwhile board directors are more likely to loosen monitoring or controls, tolerate risk, and make strategic decisions with uncertain outcomes (Karaevli & Zajac, 2013), and thus work collaboratively with CEOs (Claessens et al., 2002). Trust and openness could encourage information sharing among CEOs and directors, which could contribute to effective decision making (Cai et al., 2015; Adams and Ferreira, 2007). While in pre-crisis, CEO with outside experience invest more in

capital expenditure in pre-crisis, thus effective board are more likely to constrain CEOs avoiding “empire-building”.

Table 4-4 Impact of CEO Experience and Board Governance and Other Firm Characteristics on Corporate Investment-Capital Expenditure.

Panel A:	OLS	FE	OLS	FE	GMM
Corporate Investment ---			(Triple)	(Triple)	
Capital Expenditure	(1)	(2)	(3)	(4)	(5)
L. Capital Expenditure					0.3102*** (0.0393)
L2. Capital Expenditure					0.0164 (0.0401)
CEO Outsider1	-0.0033*** (0.0011)	-0.0011 (0.0013)	-0.0053* (0.0032)	-0.0004 (0.0034)	2.4338* (1.3460)
Post-crisis1 (2009-2011)	-0.0154*** (0.0038)	0.0726*** (0.0228)	-0.0134*** (0.0049)	0.0722*** (0.0230)	-0.0837 (0.1066)
Post-crisis2 (2012-2019)	-0.0318*** (0.0037)	0.1231*** (0.0379)	-0.0309*** (0.0043)	0.1216*** (0.0380)	-0.1038 (0.0978)
CEO Outsider1*Post-crisis1	0.00008 (0.0019)	0.0009 (0.0017)	-0.0028 (0.0059)	0.0014 (0.0055)	-2.4433* (1.3734)
CEO Outsider1*Post-crisis2	-0.0010 (0.0015)	-0.00003 (0.0015)	-0.0021 (0.0048)	0.0024 (0.0047)	-2.4062* (1.3458)
Board Governance Index (BGI)	-0.0011* (0.0006)	-0.0005 (0.0007)	-0.0015* (0.0008)	-0.0004 (0.0009)	0.4343* (0.2411)
BGI*Post-crisis1	0.0012 (0.0011)	0.0010 (0.0010)	0.0004 (0.0016)	0.0011 (0.0015)	-0.4413* (0.2478)
BGI*Post-crisis2	0.0025*** (0.0009)	0.0024*** (0.0009)	0.0022* (0.0013)	0.0029** (0.0013)	-0.4371* (0.2416)

CEO Outsider1*BGI			0.0008	-0.0003	-0.9608*
			(0.0012)	(0.0013)	(0.5311)
CEO Outsider1*BGI*Post-crisis1			0.0011	-0.0002	0.9638*
			(0.0022)	(0.0021)	(0.5418)
CEO Outsider1*BGI*Post-crisis2			0.0003	-0.0009	0.9505*
			(0.0018)	(0.0017)	(0.5313)
CEO Characteristics					
CEO Tenure	-0.00006	0.00004	-0.00007	0.00004	0.0006
	(0.00009)	(0.0001)	(0.00009)	(0.0001)	(0.0005)
CEO Prior Tenure	0.0003***	0.00007	0.0003***	0.00007	-0.0004
	(0.00008)	(0.0001)	(0.00008)	(0.0001)	(0.0004)
CEO Gender	-0.0016	0.0016	-0.0016	0.0016	0.0009
	(0.0020)	(0.0026)	(0.0020)	(0.0026)	(0.0062)
CEO Age	-0.0003***	-0.00002	-0.0003***	-0.00002	-0.0005
	(0.00005)	(0.00007)	(0.00005)	(0.00007)	(0.0003)
CEO Compensation (Pay)	1.13e-07*	1.22e-07	1.07e-07*	1.22e-07	2.82e-07
	(5.91e-08)	(8.68e-08)	(6.11e-08)	(8.68e-08)	(2.58e-07)
Firm Characteristics					
Firm Size	-0.0016***	-0.0026***	-0.0016***	-0.0026***	-0.0026**
	(0.0002)	(0.0006)	(0.0002)	(0.0006)	(0.0014)
Firm Age (IPO)	-0.00003***	-0.0083***	-0.00003***	-0.0083***	7.68e-06
	(7.29e-06)	(0.0020)	(7.30e-06)	(0.0020)	(0.00003)
Leverage	-7.36e-06	-0.00004**	-6.78e-06	-0.00004**	-0.0019
	(0.00002)	(0.00002)	(0.00002)	(0.00002)	(0.0032)
Tangibility	0.1382***	0.1119***	0.1382***	0.1119***	0.0754***
	(0.0021)	(0.0039)	(0.0021)	(0.0039)	(0.0108)
Year fixed effects	Yes	Yes	Yes	Yes	Yes

Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	30,827	30,822	30,803	30,822	25,436
R Squared	0.3487	0.5122	0.3487	0.5122	
Number of firms	2,097	2,097	2,097	2,097	2,091
AR (2) test (p-value)					0.102
Sargan test of over- identification (p-value)					1.000
Diff-in- Sargan test of Exogeneity (p-value)					0.931

Note: (1). This table examines the effects of CEO Experience on Corporate Investment and how these effects will change after the financial crisis of 2008 compared with pre-crisis (2000-2007) using of static and dynamic model. Robust standard errors are in brackets and Standard errors clustered at firm levels; T-statistics are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

(2). AR (2) IS test for second order serial correlation in the first difference residuals, under the null of no serial correlation. Hensen/ Sargan test of overidentification is under the null that all instruments are valid. Diff-in-Hansen/ Sargan test of exogeneity is under the null that instruments used for equations in levels are exogenous. “***”, “**”, “*” represent significance at the 1%, 5% and 10% level, respectively.

Table 4-5 presents the regression results when corporate investment is measured by total investment. First, we find that CEO outside experience insignificantly affect total investment of companies both pre- and post-crisis in base-line model. However, after dealing with potential endogeneity issue, the results show that CEO outside experience is negatively related to total investment of the companies (1.3666, t-statistics=-1.87) in pre-crisis, but insignificant in post-crisis. The findings consistent with Georgakakis and Ruigrok (2017),

and Huse (1998) argue that CEOs with outside experience may lack firm -or industry specific knowledge and encounter resistance of firms due to lacking trust from boards, which may lead to more cautious investment instance and thus less total investment. The results indicates that CEOs with outside experience may prioritize stability in normal period through optimizing existing resources and operational efficiencies instead of making substantial investments. However, the impact of CEO outside experience on corporate investment in post-crisis is insignificant because the volatile environment makes CEOs difficult-to-predict discontinuities (Haleblian &Finkelstein, 1993). In other words, CEO with outside experience is less able to use novel knowledge and manage change effectively in terms of information processing due to the great noise and thus does not help corporate investment (Ahuja & Katila, 2001; Zhang &Rajagopalan, 2010).

Regarding board governance, the results in baseline model show that there is no direct impact of board governance on corporate investment both pre- and post-crisis, which is robusted result in GMM estimation. The results are consistent with exiting literature Kurniati (2019). In pre-crisis, the risks and opportunities are generally well-understood by both the CEO and the board. Consequently, board governance may not exert a significant impact on the firm's total investment when the business landscape is stable. However, in the post-crisis period with high volatility and uncertainty, boards are uncertain about the correct course of action, hindering their ability to effectively monitor CEOs' investment decisions to maximize firm value. Further, in post-crisis firms with more complex business environment and corporate strategies face higher costs in using board monitoring and are thus likely to rely less on board monitoring as a source of controlling or constraining CEOs behavior (Khedmati, Sualihu & Yawson, 2020).

Regarding the triple interaction, board governance positively affects the relationship between CEO outside experience and total investment of companies (31.8515, t-statistics=1.86) in pre-crisis, but insignificant in post-crisis period. In pre-crisis, CEOs with outside experience

are more likely to pursue “quiet life” leading to under-investment due to agency problems, while an effective board could more effectively monitor CEOs to invest more (Bertrand & Mullainathan, 2003). However, in post-crisis, board of directors may lack the specialized knowledge required to navigate the complexities of a rapidly changing environment and cannot accurately anticipate future, evaluate and percept potential investment opportunities and make efficient investment decisions, and thus cannot monitor CEOs decisions on investments effectively (Xie, 2015).

There are contracted results when corporate investment measured as capital expenditure and total investment. This is because total investment is the net investment between cash payment for different kinds of asset minus cash receipts from selling assets (Xie, 2015). When companies make investment decisions, they are more concerned with buying decisions (i.e., as a proxy for a firm enter new business) than selling decisions (i.e., as a proxy for a company's decision to exit existing businesses), and thus behave more cautiously by buying less and more efficiently in pre-crisis, depending on a firm's investment opportunities (Xie, 2015). However, in post-crisis, strategic changes are required to adapt to the changing business environment, and thus invest more.

Table 4-5 Impact of CEO Experience and Board Governance and Other Firm Characteristics on Corporate Investment-Total Investment.

Panel A:	OLS	FE	OLS	FE	GMM
Corporate Investment-Total			(Triple)	(Triple)	
Investment	(1)	(2)	(3)	(4)	(5)
L. Total Investment					-0.0269
					(0.1696)
					-2.1116***
					(0.1809)

CEO Outsider1	0.0009	0.0645	0.0060	0.2242**	-81.8459*
	(0.0076)	(0.0400)	(0.0231)	(0.1086)	(43.8782)
Post-crisis1 (2009-2011)	-0.0077	-0.3030	0.0427	-0.5718	-17.2976
	(0.0271)	(0.5963)	(0.0462)	(0.6004)	(20.7190)
Post-crisis2 (2012-2019)	0.0639	-0.0032	-0.0482	-0.1599	-30.1703
	(0.0654)	(1.0304)	(0.0418)	(1.0299)	(18.9714)
CEO Outsider1*Post-crisis1	-0.0183	0.0474	-0.1048*	0.4144**	59.9806
	(0.0112)	(0.0514)	(0.0560)	(0.1647)	(42.3154)
CEO Outsider1*Post-crisis2	0.0589	0.0414	0.2576	0.1926	81.6449*
	(0.0530)	(0.0452)	(0.2056)	(0.1435)	(43.4896)
Board Governance Index (BGI)	-0.0100**	0.0123	-0.0091	0.0449	-11.6363
	(0.0049)	(0.0213)	(0.0065)	(0.0281)	(7.4500)
BGI*Post-crisis1	0.0065	0.0700**	-0.0134	0.1556***	6.6165
	(0.0092)	(0.0308)	(0.0159)	(0.0455)	(8.0985)
BGI*Post-crisis2	-0.0325	-0.0387	0.0088	-0.0061	11.6390
	(0.0280)	(0.0264)	(0.0116)	(0.0375)	(7.3740)
CEO Outsider1*BGI			-0.0018	-0.0613	31.8515*
			(0.0080)	(0.0405)	(17.0937)
CEO Outsider1*BGI*Post-crisis1			0.0341*	-0.1400**	-23.3248
			(0.0191)	(0.0621)	(16.5195)
CEO Outsider1*BGI*Post-crisis2			-0.0733	-0.0512	-31.7659*
			(0.0572)	(0.0529)	(16.9603)
CEO Characteristics					
CEO Tenure	-0.0015	0.0024	-0.0013	0.0037	-0.0151
	(0.0016)	(0.0037)	(0.0017)	(0.0037)	(0.0172)
CEO Prior Tenure	-0.0024	-0.0042	-0.0025	-0.0048	0.0151
	(0.0043)	(0.0033)	(0.0044)	(0.0033)	(0.0147)

CEO Gender	-0.0377 (0.0305)	-0.0089 (0.0780)	-0.0385 (0.0309)	-0.0099 (0.0777)	-0.0386 (0.2067)
CEO Age	-0.0004 (0.0016)	0.0025 (0.0022)	-0.0005 (0.0016)	0.0024 (0.0022)	0.0196* (0.0118)
CEO Compensation (Pay)	3.62e-06* (0.1.91e-06)	-1.29e-06 (2.65e-06)	3.64e-06* (1.91e-06)	-1.58e-07 (2.62e-06)	3.08e-06 (7.42e-06)
<i>Firm Characteristics</i>					
Firm Size	-0.0359** (0.0153)	0.0619*** (0.0194)	-0.0358** (0.0152)	0.0454** (0.0190)	-0.0268 (0.0350)
Firm Age (IPO)	-0.0004* (0.0016)	-0.0018 (0.0587)	-0.0004* (0.0002)	0.0013 (0.0586)	-0.0032*** (0.0011)
Leverage	0.0032 (0.0038)	-0.0269*** (0.0025)	0.0031 (0.0037)	-0.0234*** (0.0023)	0.1931*** (0.0352)
Tangibility	0.0207 (0.0282)	-0.3291*** (0.1215)	0.0218 (0.0285)	-0.3507*** (0.1212)	0.1446 (0.2949)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	28,130	28,125	28,130	28,125	23,004
R Squared	0.0074	0.2602	0.0076	0.2600	
Number of firms	2,097	2,092	2,097	2,092	2,066
AR (2) test (p-value)					0.111
Sargan test of over-identification (p-value)					1.000
Diff-in- Sargan test of Exogeneity (p-value)					0.154

Note:

(1). This table examines the effects of CEO Experience on Corporate Investment and how these effects will change after the financial crisis of 2008 compared with pre-crisis (2000-2007) using of static and dynamic model. Robust standard errors are in brackets and Standard errors clustered at firm levels; T-statistics are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

(2). AR (2) IS test for second order serial correlation in the first difference residuals, under the null of no serial correlation. Hensen/Sargan test of overidentification is under the null that all instruments are valid. Diff-in-Hansen/Sargan test of exogeneity is under the null that instruments used for equations in levels are exogenous. “***”; “**”; “*” represent significance at the 1%, 5% and 10% level, respectively.

4.7 Robustness Checks

4.7.1 Alternative measure of corporate investment R&D

Table 4-5 presents the regression results when corporate investment is measured as R&D, i.e., the spending to invest in R&D in column (1), (2) and (3), and R&D possibility in column (4), (5) and (6). The present study uses Tobit and Probit regression models due to the nature of the selected data. Tobit model is used because the dependent variable research and development (R&D) that is different from other measures of corporate investment (i.e., capital expenditure, total investment) that occurred in every company. However, R&D has values which are zero, more than zero. It is worth mentioning that R&D may have two outcomes. First, either zero in which case the firms do not invest in R&D and second a positive value in which case the firms invest in R&D. Since the R&D can never be negative, the left censoring random effect Probit model and Tobit model are applied.

Overall, I estimate this system using Probit model for R&D possibility and Tobit model for R&D value and two-stage least squares(2SLS) model to deal with potential endogeneity issue. The choice of instrument variables is crucial to consistent results. I choose instrumental

variables that should be correlated with endogenous variables but uncorrelated with error term based on extant literature. We, therefore, use the lagged corporate governance variable (Fang et al., 2009; Wang, Abbasi, Babajide & Yekini, 2019), dividend payout ratio (Kao et al., 2018) and CEO quality measured as the ratio of CEO tenure to CEO age (Bhagat & Bolton, 2008; Gibbons & Murphy, 1992).

Innovation is the main driver of firm growth and economic development due to the positive effects of R&D investment on innovation (Cumming & Knott, 2018; Honoré, Munari, de La Potterie, 2015). The baseline (probit) model in Table 4-5 shows that coefficients on CEO outside experience is significantly negative (-0.1404, t-statistics=-2.79) in pre-crisis consistent with Alchian and Demsetz (1972), and Cumming and Knott (2018). They argue that outside CEOs are more likely to lack the essential technological domain knowledge to effectively manage firm R&D. Besides, outside CEOs are likely to be risk-averse and invest less in R&D in a stable period. Because CEOs may experience a crisis of trust and job risk, once the R&D investment fails (Alchian & Demsetz, 1972). CEO outside experience positively affects R&D investment in post-crisis, which support the Hypotheses 1 that the impact of CEO experience matters differently before and after the crisis. The finding is consistent with Morelle and Schurhoff (2011), and Wong and Chen (2018) argue that outside CEOs are more likely to invest in R&D for strategic changes to gain potential growth opportunities and improve a company's technological capabilities and competitiveness (Dong and Gou, 2010; Shaikh et al., 2018), because their diverse experience, networks, and capability to challenge the status quo allow them to adapt better in the uncertain and volatile environment. There are robust results after dealing with endogeneity issue in 2SLS model.

Besides, governance mechanisms are to guarantee investors' return on their investments (Shleifer & Vishny, 1997) and to avoid expropriation by managers (La Porta et al., 2000). The baseline model shows there is insignificant impact of board governance and firm performance. But after dealing with endogeneity issue, board governance is positively

(0.0238, t-statistics=1.75) affect corporate investment –i.e., R&D possibility in post-crisis. The result is consistent with Munari et al. (2010) who argue that board directors have greater capabilities and incentives to evaluate long-term investments and encourage R&D investment that are likely to generate innovation, by gathering information and accurately pricing the impact of managerial decisions in the changing environment (Baysinger et al., 1991). However, board governance negatively (-0.0259, t-statistics=-2.02) affects R&D in pre-crisis, consistent with Driver and Guedes, (2012) that better governance does not support R&D investment. It is possible that shareholders do not comprehend in the long-term horizon of R&D projects in stable environment and thus, would exert pressure on managers, either directly or indirectly, to invest less in R&D and more in short-term value maximization (Lazonick and O'sullivan, 2000). Since board would be informed of both the immediate costs of R&D to the company and how these costs may impact the company's short-term profitability goals (Honoré, Munari & La Potterie, 2015; Lazonick and O'sullivan, 2000).

Regarding triple interactions, baseline models show insignificant moderating impact on the relationship between CEO outside experience and R&D investment. However, after dealing with endogeneity issue using 2SLS, board governance positively (0.0236, t-statistics=1.78) moderate the relationship between CEO outside experienced and R&D investment in pre-crisis period, but negatively (-0.0308, t-statistics=-2.07) moderate the relationship in post-crisis. In pre-crisis period, CEOs with outside experience lack specific industry or firm knowledge CEOs and choose those short-term projects with immediate revenue that is recorded in the accounting book because long-term R&D investments will diminish current net income (Dong & Gou, 2010). While a vigilant board is able to effectively monitor CEOs and prevent CEOs from expropriating resources in order to maximise their personal benefits (Sheikh, Wang & Khan, 2013). Besides, board directors can use their expertise analyses firm decisions and better monitor CEOs to alleviate the information asymmetry and agency problems between managers and shareholders (Lee, Rosenstein, & Wyatt, 1999). Consequently, board effectiveness may mitigate the negative impact of CEOs with outside

experience on corporate investment—i.e., R&D. The results indicate that board play important monitoring role in pre-crisis period. However, post-crisis boards often become increasingly risk-averse due to volatility and uncertainty and may find it challenging to effectively evaluate and guide R&D initiatives, and thus tend to invest less in R&D. In other words, boards are more likely to be risk-averse and more cautious in corporate investment strategy to safeguard existing assets and shareholder value in post-crisis. Besides, a lack of board support and collaboration can discourage the effectiveness of CEO outside experience in initiating innovation strategy---i.e., R&D for growth opportunity in post-crisis.

The regression results in Tobit model reports that CEO outside experience is positively related to R&D spending in post-crisis but negatively related to R&D spending in pre-crisis. The corporate governance positively affects R&D spending (0.0653, t-statistics= 2.14) in post-crisis that robusted with results in 2SLS but negatively (-0.0337, t-statistics= -1.31) in pre-crisis. Furthermore, board governance has no moderating effect on the relationship between CEO outside experience and R&D spending. However, in post-crisis the board does not know what to do due to the altered environment full of uncertainty and volatility, which renders the moderating influence of board governance insignificant. The finding is consistent with Coles et al.'s (2001) contention that boards are passive instruments that are loyal to the managers who select them, lack company knowledge, and rely on the company's top executives for information. Moreover, investment opportunities are firm specifically defined relative to such things as managerial skill (Anderson et al., 1993). Consequently, it is difficult to monitor managers' actions in growth firms, as it is difficult to determine if it is managers' actions or external factors that led to successful investment options. The results show almost robust results with R&D possibility. Additionally, I find that there are contradictory results between capital expenditure and R&D. This is because capital expenditure is asset building and easier to justify, while R&D is riskier to create tangible assets compared with capital expenditure.

Table 4-6 Impact of CEO Experience and Board Governance and Other Firm Characteristics on Corporate Investment-R&D.

Panel A:	Tobit	Tobit	2SLS	Probit	Probit	2SLS
Corporate Investment- R&D		(Triple)	(R&D Spendings)		(Triple)	(RD Possibility)
	(1)	(2)	(3)	(4)	(5)	(6)
CEO Outsider1	-0.0481*	-0.2255***	-0.1016	-0.1404***	-0.1958	-0.0731**
	(0.0276)	(0.0823)	(0.0719)	(0.0503)	(0.1408)	(0.0337)
Post-crisis1 (2009-2011)	-0.1010	-0.1897	-0.2243***	-0.1412	-0.2769	-0.0735**
	(0.0959)	(0.1208)	(0.0803)	(0.1735)	(0.2160)	(0.0352)
Post-crisis2 (2012-2019)	-0.0769	-0.1599	-0.1633**	-0.3218*	-0.3559*	-0.0847**
	(0.0903)	(0.1058)	(0.0752)	(0.1689)	(0.1982)	(0.0340)
CEO Outsider1*Post-crisis1	0.0277	0.2476*	0.1350	0.2287***	0.4726*	0.1006***
	(0.0458)	(0.1502)	(0.0944)	(0.0817)	(0.2492)	(0.0381)
CEO Outsider1*Post-crisis2	0.0449	0.2550**	0.0924	0.2363***	0.3088	0.0864**
	(0.0371)	(0.1220)	(0.0840)	(0.0672)	(0.2082)	(0.0340)
Board Governance Index (BGI)	-0.0478***	-0.0779***	-0.0337	-0.0453	-0.0567	-0.0259**
	(0.0160)	(0.0207)	(0.0257)	(0.0283)	(0.0386)	(0.0128)
BGI*Post-crisis1	0.0517*	0.0914**	0.0653**	-0.0124	0.0437	0.0238*
	(0.0279)	(0.0409)	(0.0305)	(0.0472)	(0.0715)	(0.0136)
BGI*Post-crisis2	0.0428*	0.0797**	0.0375	0.0198	0.0347	0.0247*
	(0.0225)	(0.0314)	(0.0277)	(0.0392)	(0.0572)	(0.0130)
CEO Outsider1*BGI		0.0723**	0.0363		0.0233	0.0236*
		(0.0316)	(0.0283)		(0.0550)	(0.0132)
CEO Outsider1*BGI*Post- crisis1		-0.0889	-0.0558		-0.0981	-0.0308**
		(0.0562)	(0.0364)		(0.0952)	(0.0149)

CEO	Outsider1	*BGI	*Post-	-0.0844*	-0.0351	-0.0296	-0.0243*
crisis2				(0.0448)	(0.0323)	(0.0779)	(0.0141)
CEO Characteristics							
CEO Tenure	-0.0065***	-0.0066***	-0.0049***	-0.0041	-0.0040	-0.0005	
	(0.0023)	(0.0023)	(0.0012)	(0.0038)	(0.0038)	(0.0004)	
CEO Prior Tenure	0.0047**	0.0047**	0.0047***	0.0009	0.0009	0.0005	
	(0.0021)	(0.0021)	(0.0011)	(0.0035)	(0.0035)	(0.0003)	
CEO Gender	-0.0104	-0.0113	-0.0046	-0.2083**	-	-0.0125	
	(0.0471)	(0.0471)	(0.0240)	(0.0823)	0.2088**	(0.0077)	
					(0.0822)		
CEO Age	-0.0023**	-0.0023**	-0.0008	0.0084***	0.0084**	0.0008***	
	(0.0012)	(0.0012)	(0.0006)	(0.0020)	*	(0.0002)	
					(0.0020)		
CEO Compensation (Pay)	7.32e-06***	7.33e-06***	5.05e-06***	-1.83e-07	-2.40e-07	-3.05e-07	
	(1.40e-06)	(1.40e-06)	(7.21e-07)	(2.92e-06)	(2.92e-06)	(2.34e-07)	
Firm Characteristics							
Firm Size	-0.0654***	-0.0654***	-0.0475***	0.0990***	0.0992**	0.0063***	
	(0.0047)	(0.0047)	(0.0024)	(0.0084)	*	(0.0008)	
					(0.0084)		
Firm Age (IPO)	0.0003*	0.0003*	-6.72e-06	0.0015***	0.0015**	0.0001***	
	(0.0002)	(0.0002)	(0.000009)	(0.0003)	*	(0.00003)	
					(0.0003)		
Leverage	0.0006*	0.0006*	0.0879***	-0.0007	-0.0007	-0.0002***	
	(0.0003)	(0.0003)	(0.0019)	(0.0004)	(0.0004)	(0.00006)	
Tangibility	-0.0981	-0.0962	-0.1055***	-0.6905***	-	-0.0668***	
	(0.0633)	(0.0633)	(0.0325)	(0.0800)	0.6895**	(0.0085)	
					*		

					(0.0800)	
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	19,175	19,175	17496	26,807	26,807	26061
R Squared	0.0076	0.0077	0.1647	0.5168	0.5168	0.5402
Number of firms	1,413	1,413	1404	1,841	1,841	2094

Note:

(1). This table examines the effects of CEO Experience on Corporate Investment and how these effects will change after the financial crisis of 2008 compared with pre-crisis (2000-2007) using Tobit and Probit. R&D spending in Tobit model is measured as R&D/ Asset, while in Probit model using R&D Dummy where firms with R&D investment is 1, otherwise 0. Z-statistics are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

(2). AR (2) IS test for second order serial correlation in the first difference residuals, under the null of no serial correlation. Hensen test of overidentification is under the null that all instruments are valid. Diff-in-Hansen test of exogeneity is under the null that instruments used for equations in levels are exogenous. “***”, “**”, “*” represent significance at the 1%, 5% and 10% level, respectively.

4.7.2 Endogeneity issue

Refer to Empirical Chapter 1, to deal with the endogeneity issue, I use generalized method of moments (GMM) to estimate the impact of CEO outsider experience and corporate governance on corporate investment measured as capital expenditure and total investment using OLS and FE model as baseline model. All analyses involve tests for weak instruments suggested by Stock and Yogo (2004) and the Hensen-Sargen overidentification test (Hahn and Hausman (2002) and the AR test for the joint significance of the endogenous variables in the equation (Bhagat & Bolton, 2008). Besides, I use instrument variable to do 2SLS analysis

when corporate investment measured as R&D. The research uses a number of econometrics model to sufficiently address the potential endogeneity issue. The results in GMM model and 2SLS are fairly consistent and robust presented in Table 4-4, 4-5 and 4-6.

4.7.3 Sub-sample Analysis

We investigate the relationship using different measures of corporate investment, including corporate investment as capital expenditure, total investment and R&D, and the results fairly support my hypotheses. I also use subsample analysis to investigate whether there is any difference of the relationship among firms with different financial constraints and different bankruptcy possibility. as follows.

4.7.3.1 *Financial (un)constrained firms*

Table 4-7 reports the results of sub-sample analysis in terms of financially constrained firms and financially unconstrained firms measured by KZ-index. The result show that CEO outside experience negatively affect capital expenditure in pre-crisis for financially constrained firms but insignificant for financially unconstrained firms. Because firms have difficulties in raising external funds, which limit their ability to take large-scale capital investment. Whereas CEO outside experience positively affect capital expenditure in post-crisis for both financially constrained and unconstrained firms, which is contradicted with the result in full sample. The finding indicates that CEOs with outside experience have high incentives to take advantage of future growth opportunities by taking great risks for strategic change due to suffering greater pressure to survive in volatile environment (Zhang & Rajagopalan, 2010). Besides, the results show that board governance has no impact on capital expenditure, which indicates that financial constraints can be an alternative to corporate governance for monitoring. Furthermore, the result shows that board governance negatively moderates the relationship between CEO outside experienced and capital expenditure in post-crisis but positively

moderates the relationship in pre-crisis for financially constrained firms. These findings contradict the full sample regression results.

Regarding total investment, the results in **Table 4-7** show that firms with low financial constraints have robust results with the full sample regression results. Despite having sufficient financial resources, CEOs in financially unconstrained firms have make less total investment of firms because they are less familiar with firms' operations and long-term growth opportunities (Zhang & Rajagopalan, 2004). Therefore, they are more cautious thus prefer maintaining financial stability and optimize exiting assets. However, in post-crisis, firms with high bankruptcy possibility are more likely to motivate outside experienced CEOs initiate strategic changes and take risks to improve firm competitiveness and survive in the volatile environment, as such CEOs with fresh perception and knowledge have ability to identify, evaluate investment opportunities, and thus make more investment (Goodman et al., 2013). Besides, board governance has no direct impact on the total investment of companies.

Table 4-7 Impact of CEO Experience and Board Governance and Other Firm Characteristics on Corporate Investment-Capital Expenditure and Total Investment. Subsample Analysis financial (un)constrained companies---KZ Index.

Panel A:	Capital Expenditure		Total Investment	
	GMM		GMM	
	High FCs	Low FCs	High FCs	Low FCs
Corporate Investment				
L1. Corporate Investment	-0.1491 (0.1416)	0.1776 (0.1140)	-0.0870 (0.1799)	-0.5844*** (0.1783)
L2. Corporate Investment	0.0244 (0.1270)	0.1070 (0.1122)	-2.0202*** (0.1950)	-0.4043 (0.2491)
CEO Outsider1	-0.3685* (0.2121)	-0.1055 (0.0716)	-85.9377* (47.2171)	-6.6698* (3.5365)

Post-crisis1 (2009-2011)	-0.2063*	-0.1226*	-35.1051	-0.1117
	(0.1403)	(0.0696)	(23.3493)	(1.6535)
Post-crisis2 (2012-2019)	-0.1217	-0.0578	-36.2048	-2.3993*
	(0.1165)	(0.0382)	(22.5666)	(1.4602)
CEO Outsider1*Post-crisis1	0.4771*	0.2315**	80.0562*	3.3118
	(0.2633)	(0.1171)	(46.6257)	(3.7243)
CEO Outsider1*Post-crisis2	0.3214	0.0757	85.7304*	6.7974*
	(0.2229)	(0.0767)	(46.9371)	(3.5912)
Board Governance Index (BGI)	-0.0530	-0.0223	-14.4064	-0.9049
	(0.0422)	(0.0147)	(8.8095)	(0.5574)
BGI*Post-crisis1	0.0812	0.0499**	13.7403	0.0353
	(0.0562)	(0.0275)	(9.2054)	(0.6406)
BGI*Post-crisis2	0.0435	0.0192	14.1029	0.9134
	(0.0459)	(0.0147)	(8.8176)	(0.5628)
CEO Outsider1*BGI	0.1437*	0.0421	33.7051*	2.5754*
	(0.0844)	(0.0280)	(18.5217)	(1.3683)
CEO Outsider1*BGI*Post-crisis1	-0.1899*	-0.0911**	-31.4467*	-1.2737
	(0.1048)	(0.0455)	(18.3530)	(1.4404)
CEO Outsider1*BGI*Post-crisis2	-0.1293	-0.0311	-33.5581*	-2.6278*
	(0.0883)	(0.0297)	(18.4119)	(1.3894)
CEO Characteristics				
CEO Tenure	-0.0002	0.0001	0.0063	-0.0043**
	(0.0002)	(0.0001)	(0.0198)	(0.0021)
CEO Prior Tenure	0.0006***	0.00001	0.0015	0.0033**
	(0.0002)	(0.00009)	(0.0182)	(0.0016)
CEO Gender	-0.0056	-0.0006	-0.6278	0.0227
	(0.0040)	(0.0018)	(0.3980)	(0.0330)

CEO Age	-0.0001 (0.0001)	-0.0002*** (0.00007)	0.0092 (0.0127)	-0.0013 (0.0014)
CEO Compensation (Pay)	1.83e-08 (1.29e-07)	-3.09e-08 (6.33e-08)	1.42e-06 (0.00001)	-7.77e-07 (1.00e-06)
<i>Firm Characteristics</i>				
Firm Size	-0.0019*** (0.0006)	-0.00003 (0.0003)	-0.0464 (0.0586)	-0.0108** (0.0048)
Firm Age (IPO)	-0.00006*** (0.00002)	-5.02e-06 (8.15e-06)	-0.0027** (0.0013)	-0.0008*** (0.0002)
Leverage	0.0003 (0.0006)	-0.0086 (0.0112)	0.1640*** (0.0391)	0.2511** (0.1226)
Tangibility	0.1321*** (0.0271)	0.1118*** (0.0225)	-0.1216 (0.4382)	0.0016 (0.0377)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	12,482	12,954	11,210	11,794
R Squared				
Number of firms	1,737	1,659	1,658	1,599
AR (2) test (p-value)	0.157	0.246	0.143	0.103
Sargan test of over-identification (p-value)	0.137	0.268	1.000	1.000
Diff-in- Sargan test of Exogeneity (p-value)	0.404	0.770	0.244	0.672

Note:

(1). This table examines the effects of CEO Experience on Corporate Investment and how these effects will change after the financial crisis of 2008 compared with pre-crisis (2000-2007) using of static and dynamic model. Robust standard errors are in brackets and Standard errors clustered at firm

levels; T-statistics are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

(2). Subsample Analysis regarding financially constrained and unconstrained firms measured by KZ Index. We regard firms with a high KZ index as financially constrained companies, otherwise financially unconstrained firms. According to the subsample analysis, we can identify the different impact of CEO outside experience on firms under different financial conditions.

Regarding R&D presented in Table 4-8; I find that firms with high financial constraints have robust results with the full sample. The findings also imply that financial constraint can be an alternative monitoring mechanism of corporate governance. When an outsider CEO takes charge of a financially constrained firm, they often face limited knowledge and understanding of the firm's internal operations, technological capabilities, and industry dynamics. This lack of familiarity and the associated learning curve can lead outsider CEOs to be more risk-averse when it comes to R&D investments. They may prioritize short-term financial stability and cost-cutting measures over long-term innovation initiatives. In financial constrained firms, CEOs with outside experience are more risk-averse due to career concerns and unfamiliarity with the firms' operation and industry dynamics and thus invest less in R&D focusing on short-term financial stability rather than long-term innovation during stable period (Beekun, Stedham & Young, 1998). However, in post-crisis, outside experienced CEOs with fresh perspectives, novel knowledge and skills are more likely to initiate strategic change and innovation to adapt to the challenging environment (Harris & Helfat, 1997; Zhang & Rajagopalan, 2004).

Table 4-8 Impact of CEO Experience and Board Governance and Other Firm Characteristics on Corporate Investment-R&D. Subsample Analysis financial (un)constrained companies---KZ Index.

Panel A: R&D	R&D Dummy		R&D Spending	
	2SLS		2SLS	
	High FCs	Low FCs	High FCs	Low FCs

CEO Outsider1	-0.0948*	-0.0948	-0.2613	0.0446**
	(0.0547)	(0.0547)	(0.1598)	(0.0207)
Post-crisis1 (2009-2011)	-0.0481	-0.0481	-0.4720**	-0.0181
	(0.0576)	(0.0576)	(0.1834)	(0.0225)
Post-crisis2 (2012-2019)	-0.0808	-0.0808	-0.3451**	-0.0034
	(0.0554)	(0.0554)	(0.1671)	(0.0216)
CEO Outsider1*Post-crisis1	0.1270**	0.0504	0.3146	-0.0293
	(0.0614)	(0.0458)	(0.2097)	(0.0270)
CEO Outsider1*Post-crisis2	0.1008*	0.0481	0.2484	-0.0817***
	(0.0578)	(0.0438)	(0.1821)	(0.0248)
Board Governance Index (BGI)	-0.0247	-0.0157	-0.0723	0.0072
	(0.0211)	(0.0151)	(0.0589)	(0.0072)
BGI*Post-crisis1	0.0182	0.0173	0.1415**	-0.0020
	(0.0225)	(0.0159)	(0.0700)	(0.0085)
BGI*Post-crisis2	0.0234	0.0158	0.0844	-0.0102
	(0.0214)	(0.0154)	(0.0628)	(0.0078)
CEO Outsider1*BGI	0.0276	0.0117	0.0894	-0.0134*
	(0.0217)	(0.0158)	(0.0638)	(0.0081)
CEO Outsider1*BGI*Post-crisis1	-0.0426*	-0.0125	-0.1288	0.0107
	(0.0243)	(0.0177)	(0.0815)	(0.0103)
CEO Outsider1*BGI*Post-crisis2	-0.0284	-0.0118	-0.0872	0.0252***
	(0.0228)	(0.0169)	(0.0711)	(0.0094)
CEO Characteristics				
CEO Tenure	-0.0011**	0.00002	-0.0072***	-0.0015***
	(0.0005)	(0.0005)	(0.0024)	(0.0004)
CEO Prior Tenure	0.0004	0.0004	0.0077***	0.0013***
	(0.0005)	(0.0004)	(0.0022)	(0.0003)

CEO Gender	-0.0407*** (0.0129)	0.0071 (0.0090)	-0.0535 (0.0545)	0.0116* (0.0068)
CEO Age	0.0008*** (0.0003)	0.0008*** (0.0002)	-0.0004 (0.0013)	-0.0006*** (0.0002)
CEO Compensation (Pay)	-7.44e-07** (3.73e-07)	-2.02e-07 (2.93e-07)	6.47e-06*** (1.58e-06)	1.70e-06*** (2.16e-07)
<i>Firm Characteristics</i>				
Firm Size	0.0075*** (0.0011)	0.0030*** (0.0011)	-0.0669*** (0.0047)	-0.0222*** (0.0008)
Firm Age (IPO)	0.0002*** (0.00005)	0.0001*** (0.00004)	-0.0002 (0.0002)	-0.0003*** (0.00003)
Leverage	-0.0002*** (0.00006)	0.1090*** (0.0126)	0.0849*** (0.0028)	0.1595*** (0.0071)
Tangibility	-0.0767*** (0.0121)	-0.0834*** (0.0121)	-0.1336** (0.0612)	-0.1259*** (0.0114)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	12,791	13,270	8,102	9,394
R Squared	0.4752	0.6330	0.1690	0.2707
Number of firms	1,750	1,670	1,117	1,162

Note:

(1). This table examines the effects of CEO Experience on Corporate Investment and how these effects will change after the financial crisis of 2008 compared with pre-crisis (2000-2007) using of static and dynamic model. Robust standard errors are in brackets and Standard errors clustered at firm levels; T-statistics are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

(2). Subsample Analysis regarding financially constrained and unconstrained firms measured by KZ Index. We regard firms with a high KZ index as financially constrained companies, otherwise financially unconstrained firms. According to the subsample analysis, we can identify the different impact of CEO outside experience on firms under different financial conditions.

4.7.3.2 Firms with high, medium, and low probability of going bankruptcy (Altman Z-score)

Altman Z-score is a proxy for firm's bankruptcy possibility: The lower the Z-score, the higher the firm bankruptcy possibility. Table 4-9 reports that Firms with high bankruptcy possibility show robusted results with the full sample estimation the impact of CEO outside experience, board governance and triple interaction on capital expenditure. Whereas firms with medium bankruptcy possibility have contradicted results with high bankruptcy possibility firms. Specifically, there is a negative relationship (-0.3678, t-statistics=-2.27) between CEO outside experience and capital expenditure in pre-crisis period, but a positive relationship (0.3476, t-statistics=2.10) in post-crisis period for firms with medium bankruptcy possibility. As firms with medium bankruptcy possibility indicates certain financial vulnerability, CEOs with outside experience tend to invest less in capital expenditure to conserve resources and mitigate financial risks (Cassell, Huang, Sanchez& Stuart, 2012). However, in post-crisis, outside experienced CEOs are more likely to provide fresh perspectives, bold thinking and are more willing to take risks in post-crisis to adapt to the business environment with increased uncertainty and competitive pressure (Zhang & Rajagopalan, 2010). Meanwhile, board governance has no impact on such firms' capital expenditure. Furthermore, CEO outside experience has no impact on capital expenditure both pre- and post-crisis. Board governance has no impact on capital expenditure.

Total investment results Table 4-9 show that firms with low bankruptcy possibility have robusted results with full sample regression. Whereas firms with high and medium bankruptcy possibility have contradicted results. CEOs with outside experience in firms with high/medium bankruptcy possibility are more likely to have more total investment in pre-crisis period but have less investment in post-crisis period. In pre-crisis, outside experienced CEOs with bold thinking and novel skills are more likely to formulate and implement strategic changes (Zhang & Rajagopalan, 2010), and thus invest more to improve poor firm performance. In post-crisis, CEOs with outside experience in firms with high/medium

bankruptcy possibility are more likely to consider investment decisions seriously and more conservative, and thus reduce total investment to mitigate potential risks and uncertainties. This finding is consistent with Vo and Le (2017) argue that firms have lower incentives to take advantage of future growth opportunities by taking great risks due to suffering greater pressure to survive.

Table 4-9 Impact of CEO Experience and Board Governance and Other Firm Characteristics on Corporate Investment--Capital Expenditure and Total Investment. Subsample Analysis bankruptcy possibility of companies---Altman Z-score.

Panel A: Corporate Investment	Capital Expenditure			Total Investment		
	GMM			GMM		
	High Bankruptcy Possibility	Medium Bankruptcy Possibility	Low Bankruptcy Possibility	High Bankruptcy Possibility	Medium Bankruptcy Possibility	Low Bankruptcy Possibility
L1. Corporate Investment	0.3333*** (0.0498)	0.0803 (0.1036)	0.1440 (0.2077)	1.4003*** (0.1439)	-0.6492*** (0.1130)	0.0563** (0.0278)
L2. Corporate Investment	0.0824* (0.0455)	-0.2004 (0.1435)	0.1363 (0.0877)	-2.8954*** (0.3221)	-0.3966*** (0.1314)	0.0031 (0.0299)
CEO Outsider1	1.5743* (0.9202)	-0.3678** (0.1618)	-1.1592 (0.7189)	348.2208** (170.1046)	2.7423** (1.3397)	-5.4137* (3.2074)
Post-crisis1 (2009-2011)	0.1940 (0.2596)	-0.1196 (0.0896)	-0.1154 (0.4168)	77.7365 (64.7306)	0.0630 (0.2405)	-2.3072* (1.2498)
Post-crisis2 (2012-2019)	0.1540 (0.0997)	-0.1475 (0.0917)	-0.4341 (0.2699)	71.5632 (67.9760)	0.2137 (0.1977)	-2.1470* (1.1450)
CEO Outsider1*Post-crisis1	-1.7371* (0.9874)	0.3476** (0.1658)	0.7606 (0.9764)	-342.0822** (160.2484)	-2.2934* (1.2800)	5.9287* (3.2694)

CEO	-1.6678*	0.3834**	1.1535*	-336.7365**	-2.7129**	5.5268*
Outsider1*Post-crisis2	(0.9416)	(0.1624)	(0.6994)	(169.0674)	(1.3291)	(3.1235)
Board Governance Index (BGI)	0.3534**	-0.0512	-0.1586	29.1392	0.4898	-0.7957*
	(0.1773)	(0.0330)	(0.1112)	(26.6912)	(0.3620)	(0.4538)
BGI*Post-crisis1	-0.4066**	0.0486	0.0439	-30.7661	-0.4623	0.8938*
	(0.2061)	(0.0359)	(0.1622)	(26.0779)	(0.3420)	(0.4846)
BGI*Post-crisis2	-0.3863**	0.0545	0.1642	-27.9659	-0.5269	0.8265*
	(0.1832)	(0.0361)	(0.1057)	(27.3362)	(0.3560)	(0.4447)
CEO	-0.6440*	0.1414**	0.4522	-138.2527**	-1.0613**	2.0889*
Outsider1*BGI	(0.3736)	(0.0633)	(0.2804)	(67.6709)	(0.5195)	(1.2364)
CEOOutsider1*BG	0.7099*	-0.1345**	-0.2976	136.3253**	0.8954*	-2.2787*
I*Post-crisis1	(0.4022)	(0.0651)	(0.3778)	(63.9108)	(0.5006)	(1.2571)
CEOOutsider1*BG	0.6765*	-0.1471**	-0.4509*	133.607**	1.0578**	-2.1329*
I*Post-crisis2	(0.3816)	(0.0635)	(0.2731)	(67.1988)	(0.5170)	(1.2061)
CEO						
Characteristics						
CEO Tenure	-0.0002	-0.0001	-0.0004	-0.0539	0.0020	-0.0012
	(0.0005)	(0.0002)	(0.0005)	(0.0914)	(0.0014)	(0.0018)
CEO Prior Tenure	-0.00006	0.0002	0.0004	-0.1907	0.0001	0.0018
	(0.0007)	(0.0002)	(0.0003)	(0.1229)	(0.009)	(0.0013)
CEO Gender	0.0110	-0.0055	0.0023	0.7838	-0.0120	0.0422
	(0.0119)	(0.0038)	(0.0060)	(1.8956)	(0.0221)	(0.0270)
CEO Age	-0.0006	-0.0002*	0.00002	-0.2195*	-0.0028**	-0.0007
	(0.0005)	(0.0001)	(0.0003)	(0.1166)	(0.0011)	(0.0011)
CEO Compensation (Pay)	-4.88e-08	-1.23e-07	-5.20e-08	-0.00005	-1.55e-06	-2.20e-07
	(4.26e-07)	(1.08e-07)	(1.59e-07)	(0.00007)	(8.72e-07)	(7.95e-07)

<i>Firm</i>						
<i>Characteristics</i>						
Firm Size	-0.0023 (0.0019)	-0.0004 (0.0006)	0.0006 (0.0014)	-0.4439 (0.3366)	0.0002 (0.0048)	-0.0011 (0.0045)
Firm Age (IPO)	-8.63e-07 (0.00005)	-0.00005*** (0.00002)	-0.00007 (0.00005)	0.0119 (0.0084)	-0.0008*** (0.0002)	-0.0004** (0.0002)
Leverage	-0.0011 (0.0016)	-0.0039 (0.0192)	-0.0229 (0.0486)	0.1732 (0.1987)	0.0277 (0.1545)	0.0811** (0.0413)
Tangibility	0.0236 (0.0153)	0.1574*** (0.0253)	0.1397*** (0.0252)	-2.2663 (1.9896)	-0.0101 (0.0260)	0.0290 (0.0363)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,604	5,082	13,750	6,022	4,644	12,338
R Squared						
Number of firms	1,119	1,216	1,660	1,067	1,156	1,606
AR (2) test (p-value)	0.123	0.911	0.105	0.141	0.476	0.107
Sargan test of over-identification (p-value)	0.991	0.738	0.983	1.000	0.247	0.235
Diff-in- Sargan test of Exogeneity (p-value)	0.399	0.103	0.176	0.195	0.161	0.165

Note:

Note:

(1). This table examines the effects of CEO Experience on Corporate Investment and how these effects will change after the financial crisis of 2008 compared with pre-crisis (2000-2007) using of static and dynamic model. Robust standard errors are in brackets and Standard errors clustered at firm

levels; T-statistics are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

(2). Subsample Analysis regarding bankruptcy possibility measured by Altman Z-score. We regard firms with Z-score<1.8 index as high bankruptcy possibility companies, Z-score>3 as low bankruptcy possibility companies, otherwise medium bankruptcy possibility companies. According to the subsample analysis, we can identify the different impact of CEO outside experience on firms under different financial conditions.

Table 4-10 reports the result for R&D investment possibility. Firms with low bankruptcy possibility have robust results with the full sample regression. However, in firms with high and medium bankruptcy possibility, CEO outside experience has no impact on R&D investment, which indicated firms have less incentive to invest in R&D for investment opportunity, when they suffer great pressure for survival (Vo & Le, 2017).

Regarding R&D spending, there is no relationship between CEO outside experience and R&D spending for firms with high bankruptcy possibility. Besides, firms with medium bankruptcy possibility positively (0.0577, t-statistics=1.85) related to firm performance in post-crisis, which indicates that outside experienced CEOs are more likely to invest more in R&D expenditure, as such CEOs with fresh perspective and bold thinking are able to anticipate trends and movement in economic environment and thus accurately evaluate investment decisions for growth opportunity (Goodman et al., 2013). However, firms with less bankruptcy possibility tend to take less risks and invest less in R&D expenditure (-0.0315, t-statistics=-1.81) in post-crisis, which indicates that such firms tend to avoid potential loss and activate risk-aversion in turbulent environment, as R&D investment has higher risk of failure (Chrisman & Patel, 2012).

Table 4-10 Impact of CEO Experience and Board Governance and Other Firm Characteristics on Corporate Investment-R&D. Subsample Analysis different possibility of going bankruptcy companies---Altman Z-score.

Panel A:	R&D Dummy	R&D Spending
R&D	2SLS	2SLS

	High	Medium	Low	High	Medium	Low
	Bankruptcy	Bankruptcy	Bankruptcy	Bankruptcy	Bankruptcy	Bankruptcy
	Possibility	Possibility	Possibility	Possibility	Possibility	Possibility
CEO Outsider1	-0.0553	-0.0009	-0.0887**	-0.5935	-0.0213	-0.0009
	(0.1035)	(0.0704)	(0.0394)	(0.5030)	(0.0253)	(0.0118)
Post-crisis1 (2009-2011)	-0.0411	-0.0120	-0.0996**	-1.0035*	-0.0510*	0.0054
	(0.1062)	(0.0727)	(0.0416)	(0.5386)	(0.0270)	(0.0134)
Post-crisis2 (2012-2019)	-0.0798	-0.0352	-0.0917**	-0.7347	-0.0177	0.0253**
	(0.1045)	(0.0713)	(0.0401)	(0.5229)	(0.0258)	(0.0125)
CEO Outsider1*Post-crisis1	0.0649	-0.0555	0.1451***	0.7626	0.0577*	-0.0305*
	(0.1078)	(0.0777)	(0.0472)	(0.5602)	(0.0312)	(0.0168)
CEO Outsider1*Post-crisis2	0.0468	0.0345	0.0946**	0.4920	0.0197	-0.0383**
	(0.1053)	(0.0745)	(0.0440)	(0.5319)	(0.0283)	(0.0148)
Board Governance Index (BGI)	-0.0133	0.0009	-0.0344**	-0.1647	-0.0065	0.0002
	(0.0425)	(0.0269)	(0.0144)	(0.2061)	(0.0094)	(0.0040)
BGI*Post-crisis1	0.0168	0.0017	0.0323**	0.3137	0.0193*	-0.0056
	(0.0434)	(0.0279)	(0.0157)	(0.2197)	(0.0103)	(0.0050)
BGI*Post-crisis2	0.0248	-0.0054	0.0272*	0.1851	0.0093	-0.0074*
	(0.0426)	(0.0272)	(0.0148)	(0.2129)	(0.0098)	(0.0044)
CEO Outsider1*BGI	0.0169	-0.0060	0.0297*	0.2142	0.0063	-0.0001
	(0.0426)	(0.0274)	(0.0153)	(0.2097)	(0.0100)	(0.0046)
CEO Outsider1*BG I*Post-crisis1	-0.0253	0.0296	-0.0475***	-0.2983	-0.0191	0.0121*
	(0.0443)	(0.0302)	(0.0181)	(0.2305)	(0.0120)	(0.0063)
CEO Outsider1*BG I*Post-crisis2	-0.0158	0.0056	-0.0286*	-0.1805	-0.0076	0.0137**
	(0.0433)	(0.0288)	(0.0168)	(0.2205)	(0.0109)	(0.0055)

CEO						
Characteristics						
CEO Tenure	-0.0020*** (0.0006)	-0.0003 (0.0007)	0.0006 (0.0005)	-0.0088* (0.0047)	-0.0001 (0.0004)	-0.0001 (0.0002)
CEO Prior Tenure	0.0020*** (0.0006)	-0.0013 (0.0006)	-0.0003 (0.0005)	0.0150*** (0.0040)	0.0005 (0.0003)	-0.0004* (0.0002)
CEO Gender	-0.0134 (0.0145)	0.0359** (0.0004)	-0.0240** (0.0106)	-0.0847 (0.1076)	-0.0004 (0.0073)	0.0102** (0.0044)
CEO Age	0.0012*** (0.0003)	0.00002 (0.0004)	0.0008*** (0.0003)	-0.0010 (0.0025)	-0.0011*** (0.0002)	-0.0004*** (0.0002)
CEO Compensation (Pay)	-1.40e-06*** (5.39e-07)	-31.31e-06 (4.32e-07)	1.59e-07 (3.22e-07)	0.00001*** (4.58e-06)	1.15e-06*** (2.10e-07)	1.29e-06*** (1.32e-07)
Firm						
Characteristics						
Firm Size	0.0048*** (0.0012)	0.0073*** (0.0017)	0.0074*** (0.0013)	-0.0903*** (0.0092)	-0.0129*** (0.0008)	-0.0104*** (0.0006)
Firm Age (IPO)	-7.09e-06 (0.00006)	0.0002*** (0.0001)	0.0003*** (0.00004)	0.0009** (0.0004)	-0.0001 (0.00003)	-0.0002*** (0.00002)
Leverage	-0.0003*** (0.00006)	0.0707*** (0.0145)	0.0183 (0.0129)	0.0836*** (0.0040)	-0.0677 (0.0082)	-0.0601*** (0.0071)
Tangibility	-0.1159*** (0.0131)	-0.0516** (0.0165)	-0.1226*** (0.0141)	0.0120 (0.1106)	-0.1159*** (0.0105)	-0.1291*** (0.0071)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,784	5,189	14,088	3,987	3,168	10,347
R Squared	0.3548	0.6009	0.6159	0.1716	0.3112	0.3346
Number of firms	1,138	1,231	1,672	715	799	1,181

Note:

(1). This table examines the effects of CEO Experience on Corporate Investment and how these effects will change after the financial crisis of 2008 compared with pre-crisis (2000-2007) using of static and dynamic model. Robust standard errors are in brackets and Standard errors clustered at firm levels; T-statistics are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

(2). Subsample Analysis regarding bankruptcy possibility measured by Altman Z-score. We regard firms with $Z\text{-score} < 1.8$ index as high bankruptcy possibility companies, $Z\text{-score} > 3$ as low bankruptcy possibility companies, otherwise medium bankruptcy possibility companies. According to the subsample analysis, we can identify the different impact of CEO outside experience on firms under different financial conditions.

Overall, firms with low bankruptcy possibility significantly support my hypotheses for the impact on Total investment compared with firms with high and medium bankruptcy possibility. Whereas firms with high bankruptcy possibility significantly support my hypotheses for the impact on capital expenditure compared with firms with low and medium bankruptcy possibility. Besides, CEO outside experience play more significant role in firms when using bankruptcy possibility mechanism, while corporate governance play more crucial role when using financial constraints mechanism.

4.7.4 Different measure of CEO outside experience

Referring to Empirical Chapter 1, we use the alternative measure of CEO outside industry experience, i.e., CEO outsider². **Table 4-11** regarding capital expenditure reports the regression results using CEO outside experience, which shows robust results to CEO outside firm experience and CEO outside industry experience. **Table 4-12** regarding total investment reports the regression results using CEO outside industry experience, which shows robust results to CEO outside firm experience. **Table 4-13** regarding R&D reports the regression results using CEO outside firm experience, which shows robust results to CEO outside industry experience. Particularly, the impact of CEO outside industry experience on R&D spending is more obvious than CEO outside firm experience, as their knowledge and skills

are more diverse and break the status quo to initiate strategic change for competitiveness (Zhang & Rajagopalan, 2010).

Table 4-11 Impact of CEO Outside Experience (CEO Outsider2) and Board Governance and Other Firm Characteristics on Corporate Investment-Capital Expenditure.

Panel A:	OLS	FE	OLS	FE	GMM
Corporate Investment ---			(Triple)	(Triple)	
Capital Expenditure	(1)	(2)	(3)	(4)	(5)
L. Capital Expenditure					0.2550*** (0.0706)
L2. Capital Expenditure					0.0103 (0.0566)
CEO Outsider2	-0.0039*** (0.0012)	-0.0008 (0.0014)	-0.0076** (0.0034)	0.0010 (0.0036)	3.8999* (2.0590)
Post-crisis1 (2009-2011)	-0.0169*** (0.0038)	0.0713*** (0.0228)	-0.0145*** (0.0044)	0.0705*** (0.0229)	1.4687 (0.9335)
Post-crisis2 (2012-2019)	-0.0328*** (0.0036)	0.1230*** (0.0379)	-0.0303*** (0.0040)	0.1230*** (0.0380)	1.3397* (0.7158)
CEO Outsider2*Post-crisis1	0.0038* (0.0019)	0.0049*** (0.0018)	-0.0009 (0.0060)	0.0064 (0.0056)	-4.2866* (2.4810)
CEO Outsider2*Post-crisis2	0.0011 (0.0016)	0.0012 (0.0016)	-0.0046 (0.0050)	0.0006 (0.0049)	-3.9674* (2.0724)
Board Governance Index (BGI)	-0.0011* (0.0006)	-0.0005 (0.0007)	-0.0016** (0.0008)	-0.0003 (0.0008)	0.5272* (0.2847)
BGI*Post-crisis1	0.0011 (0.0011)	0.0010 (0.0010)	0.0002 (0.0014)	0.0013 (0.0013)	-0.5814 (0.3695)

BGI*Post-crisis2	0.0024 (0.0009)	0.0024*** (0.0009)	0.0016 (0.0011)	0.0024** (0.0011)	-0.5342* (0.2838)
CEO Outsider2*BGI			0.0016 (0.0013)	-0.0007 (0.0014)	-1.5340* (0.8096)
CEO Outsider2*BGI*Post-crisis1			0.0017 (0.0022)	-0.0005 (0.0021)	1.6854* (0.9742)
CEO Outsider2*BGI*Post-crisis2			0.0019 (0.0018)	0.0003 (0.0018)	1.5597* (0.8149)
CEO Characteristics					
CEO Tenure	0.00002 (0.00008)	0.0001 (0.0001)	8.98e-06 (0.00009)	0.0001 (0.0001)	0.0010 (0.0008)
CEO Prior Tenure	0.0002*** (0.00008)	0.00002 (0.0001)	0.0002*** (0.00008)	0.000002 (0.0001)	-0.0004 (0.0006)
CEO Gender	-0.0015 (0.0020)	0.0016 (0.0026)	-0.0014 (0.0020)	0.0016 (0.0026)	-0.0021 (0.0097)
CEO Age	-0.0003*** (0.00005)	-6.66e-06 (0.00007)	-0.00003*** (0.00005)	-6.72e-06 (0.00007)	-0.0002 (0.0004)
CEO Compensation (Pay)	1.19e-07** (5.91e-08)	1.24e-07 (8.68e-08)	1.23e-07** (5.91e-08)	1.24e-07 (8.68e-08)	6.34e-07 (4.72e-07)
Firm Characteristics					
Firm Size	-0.0016*** (0.0002)	-0.0025*** (0.0006)	-0.0016*** (0.0002)	-0.0025*** (0.0006)	-0.0049* (0.0027)
Firm Age (IPO)	-0.00003*** (7.29e-06)	-0.0083*** (0.0020)	-0.00003*** (0.7.29e-06)	-6.72e-06*** (0.00007)	-0.00002 (0.00005)
Leverage	-7.37e-06 (0.00002)	-0.00004** (0.00002)	-5.52e-06 (0.00002)	-0.00004** (0.00002)	-0.0006 (0.0012)

Tangibility	0.1381*** (0.0021)	0.1118*** (0.0039)	0.1382*** (0.0021)	0.1118*** (0.0039)	0.0728*** (0.0159)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	30,827	30,822	30,827	30,822	25,436
R Squared	0.3484	0.5123	0.3487	0.5123	
Number of firms	2,102	2,097	2,102	2,097	2,091
AR (2) test (p-value)					0.103
Sargan test of over-identification (p-value)					1.000
Diff-in- Sargan test of Exogeneity (p-value)					0.998

Note:

(1). This table examines the effects of CEO Experience on Corporate Investment and how these effects will change after the financial crisis of 2008 compared with pre-crisis (2000-2007) using of static and dynamic model. Robust standard errors are in brackets and Standard errors clustered at firm levels; T-statistics are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

(2). AR (2) IS test for second order serial correlation in the first difference residuals, under the null of no serial correlation. Hensen test of overidentification is under the null that all instruments are valid. Diff-in-Hansen test of exogeneity is under the null that instruments used for equations in levels are exogenous. “***”, “**”, “*” represent significance at the 1%, 5% and 10% level, respectively.

Table 4-12 Impact of CEO Outside Experience (CEO Outsider2) and Board Governance and Other Firm Characteristics on Corporate Investment-Total Investment.

Panel A:	OLS	FE	OLS	FE	GMM
Corporate Investment ---			(Triple)	(Triple)	
Total Investment	(1)	(2)	(3)	(3)	(4)
L. Total Investment					-0.0325 (0.1743)
L2. Total Investment					-2.0616*** (0.1889)
CEO Outsider2	-0.0004 (0.0098)	0.0617 (0.0424)	0.0174 (0.0250)	0.2356** (0.1152)	-86.8073* (51.8725)
Post-crisis1 (2009-2011)	-0.0067 (0.0266)	-0.3224 (0.5947)	0.0208 (0.0357)	-0.4797 (0.5977)	-25.2403 (17.6033)
Post-crisis2 (2012-2019)	0.0652 (0.0639)	-0.0446 (1.0280)	-0.0256 (0.0401)	-0.1555 (1.0289)	-27.3386 (17.6134)
CEO Outsider2*Post-crisis1	-0.0256** (0.0112)	0.0422 (0.0537)	-0.0930* (0.0505)	0.3650** (0.1687)	81.8855 (52.0376)
CEO Outsider2*Post-crisis2	0.0807 (0.0780)	0.0672 (0.0481)	0.3146 (0.2978)	0.2931* (0.1500)	89.0303* (52.3623)
Board Governance Index (BGI)	-0.0100* (0.0049)	0.0146 (0.0212)	-0.0078 (0.0060)	0.0380 (0.0255)	-10.5057 (6.8767)
BGI*Post-crisis1	0.0063 (0.0092)	0.0696** (0.0307)	-0.0045 (0.0127)	0.1251*** (0.0393)	9.8707 (6.8889)
BGI*Post-crisis2	-0.0319 (0.0276)	-0.0382 (0.0263)	0.0014 (0.0108)	-0.0057 (0.0327)	10.6302 (6.8860)
CEO Outsider2*BGI			-0.0072 (0.0083)	-0.6501 (0.0432)	33.7898* (20.1936)

CEOOutsider2*BGI*Post-crisis1			0.0267 (0.0171)	-0.1222* (0.0634)	-31.9136 (20.2894)
CEOOutsider2*BGI*Post-crisis2			-0.0854 (0.0818)	-0.0774 (0.0552)	-34.6017* (20.3944)
CEO Characteristics					
CEO Tenure	-0.0014 (0.0019)	0.0031 (0.0037)	-0.0013 (0.0020)	0.0038 (0.0037)	-0.0193 (0.0188)
CEO Prior Tenure	-0.0025 (0.0047)	-0.0048 (0.0033)	-0.0026 (0.0047)	-0.0050 (0.0033)	0.0099 (0.0136)
CEO Gender	-0.0405 (0.0335)	-0.0212 (0.0777)	-0.0414 (0.0341)	-0.0258 (0.0777)	0.0327 (0.2094)
CEO Age	-0.0005 (0.0016)	0.0024 (0.0022)	-0.0005 (0.0016)	0.0023 (0.0022)	0.0022 (0.0077)
CEO Compensation (Pay)	3.54e-06* (1.83e-06)	-2.36e-07 (2.62e-06)	3.48e-06* (1.78e-06)	-2.43e-07 (2.62e-06)	-7.56e-06 (9.37e-06)
Firm Characteristics					
Firm Size	-0.0356** (0.0150)	0.0474** (0.0191)	-0.0352** (0.0146)	0.0472** (0.0190)	0.0139 (0.0472)
Firm Age (IPO)	-0.0004* (0.0002)	0.0006 (0.0586)	-0.0004* (0.0002)	0.0012 (0.0585)	-0.0018** (0.0008)
Leverage	0.0032 (0.0037)	-0.0233*** (0.0023)	0.0029 (0.0035)	-0.0234*** (0.0023)	0.1865*** (0.0352)
Tangibility	0.0203 (0.0284)	-0.3561*** (0.1212)	0.0201 (0.0282)	-0.3582*** (0.1212)	0.4515 (0.3566)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	28,130	28,125	28,130	28,125	23,004

R Squared	0.0075	0.2595	0.0077	0.2602	
Number of firms	2,097	2,097	2,097	2,097	2,066
AR (2) test (p-value)					0.159
Sargan test of over-identification (p-value)					1.000
Diff-in- Sargan test of Exogeneity (p-value)					0.161

Note:

(1). This table examines the effects of CEO Experience on Corporate Investment and how these effects will change after the financial crisis of 2008 compared with pre-crisis (2000-2007) using of static and dynamic model. Robust standard errors are in brackets and Standard errors clustered at firm levels; T-statistics are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

(2). AR (2) IS test for second order serial correlation in the first difference residuals, under the null of no serial correlation. Hensen test of overidentification is under the null that all instruments are valid. Diff-in-Hansen test of exogeneity is under the null that instruments used for equations in levels are exogenous. “***”, “**”, “*” represent significance at the 1%, 5% and 10% level, respectively.

Table 4-13 .Impact of CEO Outside Experience (CEO Outsider2) and Board Governance and Other Firm Characteristics on Corporate Investment-R&D.

Panel A:	Tobit	Tobit	2SLS	Probit	Probit	2SLS
Corporate		(Triple)	(R&D)		(Triple)	(RD Dummy)
Investment-R&D	(1)	(2)	(3)	(4)	(5)	(6)
CEO Outsider2	-0.0628** (0.0296)	-0.2063** (0.0882)	-0.2234** (0.1081)	-0.2019*** (0.0531)	-0.1825 (0.1444)	-0.0653** (0.0303)

Post-crisis1 (2009-2011)	-0.0980 (0.0952)	-0.1501 (0.1098)	-0.2276** (0.1072)	-0.1195 (0.1729)	-0.1499 (0.2006)	-0.0542* (0.0302)
Post-crisis2 (2012-2019)	-0.0696 (0.0898)	-0.0894 (0.0986)	-0.1780* (0.1045)	-0.2981* (0.1681)	-0.4330** (0.1854)	-0.0833*** (0.0294)
CEOOutsider2*Pos t-crisis1	0.0247 (0.0476)	0.1983 (0.1545)	0.2199* (0.1244)	0.2207** (0.0854)	0.2841 (0.2488)	0.0761** (0.0352)
CEOOutsider2*Pos t-crisis2	0.0312 (0.0390)	0.1216 (0.1283)	0.1739 (0.1169)	0.2356*** (0.0703)	0.5429** (0.2111)	0.1014*** (0.0331)
Board Governance Index (BGI)	-0.0486*** (0.0160)	-0.0664*** (0.0191)	-0.0819** (0.0391)	-0.0508* (0.0284)	-0.0484 (0.0352)	-0.0229** (0.0109)
BGI*Post-crisis1	0.0521* (0.0279)	0.0749** (0.0356)	0.0882** (0.0409)	-0.0059 (0.0472)	0.0064 (0.0630)	0.0177 (0.0115)
BGI*Post-crisis2	0.0440** (0.0225)	0.0547** (0.0277)	0.0684* (0.0394)	0.0257 (0.0392)	0.0756 (0.0504)	0.0256** (0.0111)
CEOOutsider2*BG I		0.0583* (0.0337)	0.0810* (0.0420)		-0.0080 (0.0572)	0.0189 (0.0118)
CEOOutsider2*BG I*Post-crisis1		-0.0699 (0.0574)	-0.0932* (0.0479)		-0.0246 (0.0952)	-0.0216 (0.0136)
CEOOutsider2*BG I*Post-crisis2		-0.0391 (0.0469)	-0.0707 (0.0450)		-0.1136 (0.0792)	-0.0297** (0.0128)
CEO						
Characteristics						
CEO Tenure	-0.0073*** (0.0022)	-0.0074*** (0.0022)	-0.0078*** (0.0012)	-0.0062* (0.0037)	-0.0060 (0.0037)	-0.0007** (0.0003)
CEO Prior Tenure	0.0052** (0.0021)	0.0052** (0.0021)	0.0061*** (0.0011)	0.0023 (0.0035)	0.0020 (0.0035)	0.0006* (0.0003)
CEO Gender	-0.0096	-0.0094	0.0058	-0.2058**	-0.2056**	-0.0127*

	(0.0471)	(0.0471)	(0.0249)	(0.0823)	(0.0823)	(0.0077)
CEO Age	-0.0023**	-0.0023**	-0.0005	0.0082***	0.0084***	0.0008***
	(0.0012)	(0.0012)	(0.0006)	(0.0020)	(0.0020)	(0.0002)
CEO Compensation	7.31e-06***	7.34e-06***	5.65e-06***	1.07e-07	-6.69e-08	-3.38e-07
(Pay)	(1.40e-06)	(1.40e-06)	(7.49e-07)	(2.93e-06)	(2.93e-06)	(2.34e-07)
Firm						
Characteristics						
Firm Size	-0.0655***	-0.0656***	-0.0515***	0.0982***	0.0992***	0.0064***
	(0.0047)	(0.0047)	(0.0025)	(0.0084)	(0.0085)	(0.0008)
Firm Age (IPO)	0.0003*	0.0003*	2.37e-06	0.0015***	0.0015***	0.0001***
	(0.0002)	(0.0002)	(0.00010)	(0.0003)	(0.0003)	(0.00003)
Leverage	0.0006*	0.0006*	0.0005***	-0.0006	-0.0007*	-0.0002***
	(0.0003)	(0.0003)	(0.0002)	(0.0004)	(0.0004)	(0.00006)
Tangibility	-0.0992	-0.0978	-0.0791**	-0.6978***	-6.69e-	-0.0671***
	(0.0633)	(0.0633)	(0.0342)	(0.0801)	08***	(0.0085)
					(0.0801)	
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	19,175	19,175	16,244	26,807	26,807	26,061
R Squared	0.0076	0.0077	0.0603	0.5168	0.5171	0.5401
Number of firms	1,413	1,413	1,394	1,841	1,841	2,094

Note:

(1). This table examines the effects of CEO Experience on Corporate Investment and how these effects will change after the financial crisis of 2008 compared with pre-crisis (2000-2007) using Tobit and Probit. R&D spending in Tobit model is measured as R&D/ Asset, while in Probit model using R&D Dummy where firms with R&D investment is 1, otherwise 0. Z-statistics are in parentheses. Statistical significance at the 10%, 5%,

and 1% levels is denoted by *, **, and ***, respectively.

(2). AR (2) IS test for second order serial correlation in the first difference residuals, under the null of no serial correlation. Hensen test of overidentification is under the null that all instruments are valid. Diff-in-Hansen test of exogeneity is under the null that instruments used for equations in levels are exogenous. “***”, “**”, “*” represent significance at the 1%, 5% and 10% level, respectively.

4.8 Conclusion

The literature on CEO managerial ability and corporate investment suggests that CEO managerial ability contributes to improved investment efficiency (Gan, 2019; Jensen 1986; Shleifer & Vishny, 1989; Malmendier & Tate, 2005; Morck et al., 1990; Bertrand & Schoar 2003). Talented CEOs increase (decrease) capital expenditures, acquisition expenditures, and total investments when their firms operate in settings more prone to under/over-investment (Gan, 2019). Yet, the literature on the impact of CEO experience on corporate investment is very limited, and therein lies the contribution of this research. The research also sheds light on upper echelon theory and agency theory aspects of US firms in terms of exogenous shock, which are arguably the key directions in which future research should be extended. Specifically, we examine the relationship between CEO outside experience and different types of corporate investments in terms of crisis using firm-level data from U.S, a country was suffered more from the financial crisis of 2008. We also examine both the direct impact and moderating impact of board governance on corporate investment.

The results suggest that the impact of CEO outside experience and board governance on corporate investment changes between pre-and post-crisis. Specifically, CEOs with outside experience are more likely to invest less in capital expenditure but invest more in R&D in post-crisis. This finding supports the notion that outside experienced CEOs are more likely to invest in R&D for strategic changes to gain potential growth opportunities and improve a company's technological capabilities and competitiveness to adapt to the volatile and uncertain environment (Dong and Gou, 2010; Shaikh et al., 2018). Whereas CEOs with

outside experience invest more in capital expenditure but invest less in R&D/total investment due to agency problems in pre-crisis. To enhance their power and status, CEOs with outside experience over-invest in sub-optimal investment projects to expand their business for “empire-building” in pre-crisis (Jensen, 1986). Meanwhile, Managers under-invest in R&D/total investment to reduce inherent employment risk, because (R&D) investments have a high risk, uncertain cash flows, low success rates, and an important effect on immediate performance (Lee and O'Neill, 2003; Driver and Guedes, 2012). CEOs with outside experience pursue “quiet life” to avoid complex decisions due to agency problem, and thus reduce total investment in pre-crisis.

Besides, board governance negatively affects capital expenditure and positively affect R&D in post-crisis, but positively affect capital expenditure and negatively affect R&D in pre-crisis. Boards do not comprehend the long-term horizon in stable environment but are more incentive to make strategic change for long-term goals in turbulent environment. However, board governance has no direct impact on corporate total investment. Board governance positively moderates the relationship between CEO outside experience and capital expenditure in post-crisis but negatively moderate the relationship in pre-crisis. While board governance negatively moderates the relationship between CEO outside experience and total investment/R&D in post-crisis but positively affects the relationship in pre-crisis. As for capital expenditure, boards are generally more willing to take risks, tolerant risks and make uncertain strategic decisions in collaboration with CEOs in post-crisis (Claessens et al., 2002; Karaevli & Zajac, 2013), but constrain CEOs with outside experience due to agency problems in pre-crisis. For R&D and total investment, before a crisis, CEOs with outside experience often focus on short-term projects for immediate profits, avoiding long-term investment, such as R&D. In pre-crisis, vigilant boards can monitor such CEOs against under-investment, using their expertise to reduce information asymmetry and conflicted interest between managers and shareholders. After a crisis, however, boards become more cautious due to the unstable environment and may struggle to effectively guide R&D efforts,

leading to reduced investment in such initiatives. Further, these results are almost robust when using a CEO outside industry experience.

Additional test with sub-sample analysis indicates that these results for total investment are largely driven by firms with low financial constraints and low bankruptcy possibility. While capital expenditure is greatly driven by low financial constrained firms and high bankruptcy possibility firms, the results for R&D is greatly driven by high financial constrained firms and low bankruptcy possibility firms. Meanwhile, CEO outside experience plays more significant role in firms when using financial constraints mechanism, while board governance plays more crucial role when using bankruptcy possibility mechanism. Further, financial constraints as an alternative of corporate finance, which can help mitigate agency problems. From the managerial practice standpoint, these findings have important implications for executive succession and corporate investment decisions in terms of exogenous shock.

5. Chapter 5 Empirical Chapter 3

Corporate Financial Policy during Severe Disruption: CEO Experience and Board Governance impact before and after Global Financial Crisis

Abstract

This research examines how corporate financial policy and CEOs outside experience and board governance influence corporate financial policy and how this influence differs between a "normal" period and in the aftermath of a major crisis that significantly alters the business environment within which firms operate, using Financial Crisis of 2008 as an exogenous shock. I find that the impact of CEO outside experience, board governance on corporate financial policy change between pre- and post-crisis. Specifically, CEOs with outside experience tend to hold less cash with agency motives to pursue their own career and reputation in pre-crisis. After a crisis, such CEOs are more cautious to hold more cash to prepare for future opportunities and uncertainties. Meanwhile, in the post-crisis period, CEOs with outside experience are more likely to use leverage for strategic investments due to easier access to external funding, but they don't influence leverage decisions in the pre-crisis period. Furthermore, in pre-crisis, board governance enhances the influence of CEOs with outside experience on firms' cash holdings and leverage, as boards trust these CEOs and collaborate more closely with them. However, after a crisis, board governance dampens the impact of such CEOs on financial policies. This is because CEOs become more cautious, preferring to hold more cash, while boards encourage to use these reserves for strategic change and eventually benefit shareholders. Additional tests with different mechanisms show that these results are largely driven by companies suffering from high financial constraints to reduce financial cost, and low/medium bankruptcy risk to avoid loss.

5.1 Introduction

Corporate financing decisions, as a significant topic in the finance research, show great importance to the investment choices of businesses operating in unreliable or incomplete capital markets where the cost of external capital is higher than the cost of internal resources due to asymmetric information problems in capital markets (Myer, 1984), particularly when the financial crisis led to the capital market frozen (Myer, 1984). Better corporate financing decisions (e.g., cash holdings, leverage) would sustain the investments in the firms (Campello et al. 2010), when companies could have difficulty accessing external resources due to the extremely cost caused by the financial crisis (Duchin et al. 2010). However, the financial crisis also highlighted the vulnerability of corporate financial policy during times of financial distress, thus CEOs change their financial policy for strategic change to survive or grow firms during the crisis. In particular, corporate financing decisions that are important in the context of a post-crisis world where liquidity is an issue. Exogenous shocks have a long-lasting impact on managers' risk attitudes and financial preferences (Malmendier, Tate, & Yan, 2011; Wenbin, Tian, Hu, & Yao, 2020), which leads to the question of whether the impact of CEO outside experience on corporate financing decisions change between extremely normal economic conditions and disrupted economic conditions.

CEO experience represents CEO's knowledge base, skills, perspective, and cognitive orientations, even ability to navigate the complex managerial environments. However, not all CEOs have the same impact on corporate financial policies, as their decisions may be affected by board members and other top managers. Differences among CEOs account for a great deal of the variation in corporate financial policy among firms and are severely related to corporate success, because CEO is responsible for setting priorities and organize to direct all this activity in terms of financing conditions (Sheikh, 2019).

Making financial decisions, such as cash holding and leverage, is quite challenging for CEOs regarding the financial crisis. While board governance mechanisms are meant to mitigate agency problems, under certain conditions such as economic instability and uncertainty. A question then is whether CEOs with outside experience can exert their influence effectively in the aftermath of a crisis when the board is arguably more vigilant. In addition to agency issues and management capabilities, investment decisions are not an ideas problem but a matter of resource allocation. Almeida et al. (2011) assert that the use of liquid assets and leverage can genuinely influence firm financing strategies and investment decisions when there are financial frictions. In short, financial decision-making affects investment, R&D, and other tactics, which is why there is a link to prior chapters of the dissertation. Besides, compared with strategic decisions, CEOs can get corporate financial things done in the short-term. In this research, the results show that outside experienced CEOs are more inclined to hold more cash in the post-crisis period from precautionary motive in order to better manage future projects with increasing value. In contrast, during the pre-crisis period, CEOs with outside experience were more inclined to hoard less cash in terms of agency motive to spend money for their own purposes.

First, this paper contributes to the empirical literature investigating how managerial traits and corporate governance relate to corporate policies (see e.g., Bernile et al., 2017; Custódio & Metzger, 2014; Deshmukh et al., 2017; Graham et al., 2015; Ferris et al., 2017). Most of the existing literature primarily focuses on how CEO characteristics affect risk taking in terms of corporate financing policy (see e.g., Bernile et al., 2017; Deshmukh et al., 2017; Dittmar and Duchin, 2016), whereas a few studies have found that CEO experience is associated with risk taking of a company by considering both board and macro-environment. Past literature (e.g., Hu, Li & Luo, 2019; Orens & Reheul, 2013) on how CEO experience relate to corporate choices in terms of cash holding and leverage by documenting that companies run by experienced CEOs compared with companies run by less without considering macroeconomic uncertainty. Besides, most recent research (e.g., Didier et al., 2021; Qin et al., 2020) addresses the significance of financial flexibility and stability in light of exogenous

shocks, such as the COVID-19 pandemic. Despite their importance, this research will add to literature on the impact of CEO outside experience on corporate financial policy and whether the relationship change between stable and turbulent environment. As CEO outside experience emphasizes the ability of CEOs to think out of box, related to strategic change, the study further identify why CEO origin influences corporate financial policy.

Second, board governance performs various roles in explaining cash policy, relying on firm financial positions. CEOs tend to use limited cash holdings to maintain investment opportunities with high potential return (Myers & Rajan, 1998), while effective board governance makes efforts to ensure CEOs maintain adequate cash holdings (Harford et al., 2008). In contrast, CEOs are more likely to pursue their own interests by incurring unnecessary expenses and investing in value-destroyed projects (Jensen, 1986; Jensen and Meckling, 1976). Under such a situation effective board governance play monitoring role in mitigating the agency issue. Empirical literature regarding corporate governance focuses a great deal of attention on the determinants of corporate financial policy and the existence of an optimal level of cash holding/leverage (Arping & Sautner, 2010; Chen and Chuang, 2008; Harford et al., 2008; Pinkowitz et al., 2003). However, there is little research regarding the changed association between board governance and corporate financial policy considering the changing macro-economic environment. Therefore, this research investigates whether the relationship between board governance and corporate financial policy could be different before and after the crisis regarding the different role of board governance.

Third, research by Chow, Muhammad, Bany-Ariffin and Cheng (2018) examine how corporate governance moderates the relationship between macroeconomic uncertainty and corporate capital structure. They find that corporate governance acts as an effective mechanism to reduce the use of leverage when there is a substantial volatility, and firms with better corporate governance generally have a significantly negative moderating the impact of macroeconomic uncertainty on their capital structure. However, these studies have certain limitations: these are conducted in in the distinctive institutional and market context of China.

Second, these do not exclusively consider macroeconomic uncertainty when investigating the influence of CEO outside experience on corporate financial policy. My research aims to fill these gaps in extant literature by making the following contribution. To the best of our knowledge, this is the first paper that examines whether individuals, board governance and macro-economic environment (i.e., exogenous shocks) influence corporate financial policy. Specifically, the research is to investigate the indirect impact of board governance, i.e., whether and how board governance moderates the relationship between CEO outside experience and corporate financial policy before and after the crisis.

Forth, this research is related to and builds on the studies of Ahsan et al., (2020), Tahir, Masri and Rahman, (2020), Zaid et al. (2020), and Sheikh (2019, 2022), by investigating this relation under different market conditions and competition levels, for financially constrained and unconstrained companies. Prior literature addresses the role of a firm's financial constraint status (e.g., Faulkender and Wang 2006), bankruptcy possibility (e.g., Sethi& Swain, 2019) and growth opportunities (e.g., Denis & Sibilkov, 2010). Controlling for these well-known factors of corporate financial policy, this study adds to the literature by documenting that the impact of CEO outside experience on corporate financial policy change between pre-and post-crisis on average, and particularly in the presence of different mechanisms, including financial constraints, bankruptcy possibility and growth opportunities.

5.2 Literature Review

As exogenous shocks affect firms within the economy in different ways, firm performance varies after the shocks. Some firms suffer severe losses, some are barely damaged, and some are even better off relative to their pre-crisis levels (Jin, Luo and Wan, 2018). The phenomenon attracts great interest from scholars to investigate why firms suffer differently from exogenous shocks, who could be involved in corporate decision-making. In an attempt to recover from the disruptions caused by exogenous shocks and maximizes overall market value, companies act differently in corporate financing decision (Abor, 2007). Besides, firms with more financial flexibility are more likely to invest without paying external issuance

costs and avoid financial distress costs when negative exogenous shocks occur (Gamba and Triantis, 2008). Credit rationing should be worthwhile for businesses with potentially good investment opportunities and need for finance, but these are discouraged from applying for external funding as they are afraid of being rejected. Such firms are generally more likely to adopt different financial policy compared with firms heavily rely on external finance (Han et al., 2009; Kon and Storey, 2003). Therefore, I focus on corporate financing decisions in this empirical chapter.

Although CEOs experience plays significant role in strategic decision-making and firm performance according to UET referring Empirical chapter 1 and 2, corporate financial policy, to some extent, is determined by the CEO's experience. This is because when CEOs with outside experience are better able to manage firms and require more money for further growth or expansion, they are more easily access credit (Islam et al., 2021). According to recent literature on corporate financing decisions (Custódio & Metzger, 2014; Orens & Reheul, 2013; Sheikh, 2022), the concept of CEO experience is employed to explain corporate financial decisions. Until recently, most previous empirical research assumed, at least implicitly, that the CEO of a company does not influence corporate financial decisions (Cronqvist, Makhija & Yonker, 2012). Alternately, there may be great differences among CEOs, but these differences will not influence companies if governance prevents CEOs from imposing their personal preferences on the companies they manage (Cronqvist, Makhija & Yonker, 2012).

There has been an unprecedented focus on corporate financial policy due to the Global financial crisis and the Covid-19 pandemic. CEOs with outside experience can shape the corporation's financing strategy according to their own inclination (Pan et al., 2016), as they are better able to effectively implement a turnaround strategy by changing corporate strategy (Islam et al., 2021). However, CEOs with outside experience could lead to great uncertainty as internal employees may resist the strategic changes they initiate (Karaevli & Zajac, 2013). In order to answer the research question, I investigate the impact of CEO with outside

experience on corporate financial policy during both normal and disrupted period, consistent with the earlier empirical chapters.

5.2.1 Managerial description

UET suggests that top management perceptions and cognitive base reflected by their demographic characteristics are expected to influence business strategy, including the strategic orientation of the business (Chaganti and Sambharya, 1987; Gupta and Govindarajan, 1984; Michel and Hambrick, 1992), strategic change (Wiersema and Bantel, 1992), and thus organizational outcomes (Hambrick and Mason's, 1984). However, the literature on the upper echelons places more emphasis on top management teams than merely CEOs when it comes to deciding a company's strategy and success (Hambrick and Mason, 1984). Consequently, the balance of decision-making authority between the CEO and other executives and the board varies across companies. Joining a new company may not be a pleasant experience due to pressure to improve firm performance and less support from the board and other top executives, which indicates CEOs with outside experience's influence on corporate policy may be constrained.

In the refinement of upper-echelon theory (Hambrick and Mason, 1984), Hambrick and Finkelstein (1987) introduce the concept of managerial discretion, which refers to the circumstances under which managers matter either more or less (Carpenter and Golden, 1997). Managerial discretion, referring to their ability to affect important organizational outcomes, is a function of the task environment, the internal organization, and managerial characteristics (Carpenter and Golden, 1997; Goll, Johnson and Rasheed, 2008). Managerial discretion suggests that high discretion contexts allow managers a greater opportunity to exercise their judgments (Goll, Johnson and Rasheed, 2008) and the degree of influence that executives might exert explaining not only whether managers matter but also when they do (Siréna, Patelb, Örtqvistc &Wincent, 2018). CEOs may need some discretion to operate, especially when there is a fair amount of uncertainty.

Three different types of aspects that make up managerial discretion: (1) individual factors (i.e., the CEO personal ability to envision or create multiple courses of action), (2) organizational factors (i.e., the organization's responsiveness to a range of potential actions and empowers the CEO to formulate and execute those actions), and (3) environmental factors (i.e., the environment's tolerance for variety and change) (Hambrick and Finkelstein, 1987, p. 379). Even CEOs in the same environmental situation will set different degrees of discretion for themselves in terms of their interpersonal linkage to the environment (Wangrow et al., 2015). This research investigates whether the impact of CEO outside experience on corporate financial policy change before and after the crisis.

5.2.2 Agency theory and stewardship theory

In the presence of agency conflict between the managers and the shareholders, too much managerial discretion may not be in the interests of the shareholders/company, and the literature has discussed how corporate governance mechanisms may be used to reduce managerial discretion in terms of monitoring function (Andersen, 2017; Youssef & Teng, 2019). The board of directors have monitored key areas of firms' strategic decision making, such as capital structure allocations, financial planning, financial risk management (Hoitash et al., 2016; Ham et al., 2017). A small but growing amount of literature on the role of corporate governance indicates that the characteristics of the board play significant role in explaining firms' capital structure (Abor, 2007; Zaid et al., 2021) and cash holding (Granado-Peiró and J. Lopez-Gracia, 2016). More cash holdings may result in a severe agency problem (Chen & Chung, 2009; Dittmar et al., 2003, Jensen, 1986). The self-interested CEOs would then use their substantial cash reserves to advance their own interests, such as expanding their business empires.

On the other hand, In addition to monitoring function, boards have functions in advising, cooperation and information exchange, and coordination (Glinkowska and Kaczmarek, 2020). CEOs' actions are pro-organizational and consistent with the objectives of the company, while board directors can help identify, select, and refine the value proposition of

the ideas that come up. Shareholders have a right to expect that CEOs will take their opinion into consideration when making strategic decisions, as CEOs are appointed to represent shareholders' interests (Chikh & Filbien, 2011). In order to improve the efficacy of CEOs' decisions, board is not only required to have objectivity and motivation, but it also requires knowledge, experience and expertise (e.g., Hambrick et al., 2015; Hillman and Dalziel, 2003; Wang, DeGhetto, Ellen & Lamont, 2019). CEOs and board of directors ought to be thinking about over different horizons to stabilize the organization, including a point of view on different potential scenarios²⁵, resilience and return.

CEOs can combine their own ability with board members' skills and capabilities, such as collecting more information for quick and effective decision-making convenience. A crisis environment creates a unique opportunity for board members to set up their gain and provide critically needed guidance to their companies, which could lead to better collaboration between management and board and effective response. Exogenous shocks greatly change the business environment with increasing challenges and uncertainty, which greatly mitigate the information asymmetry between shareholders and managers but work together for survival and recovery. Therefore, stewardship theory focusing more on providing support, giving advice, sharing experience and skills (Glinkowska & Kaczmarek, 2020), may play more significant role than agency theory in post-crisis period.

5.3 Research questions and Theoretical framework

²⁵ Think about and prepare several real scenarios, particularly when wait-and-see approach is not the appropriate one.

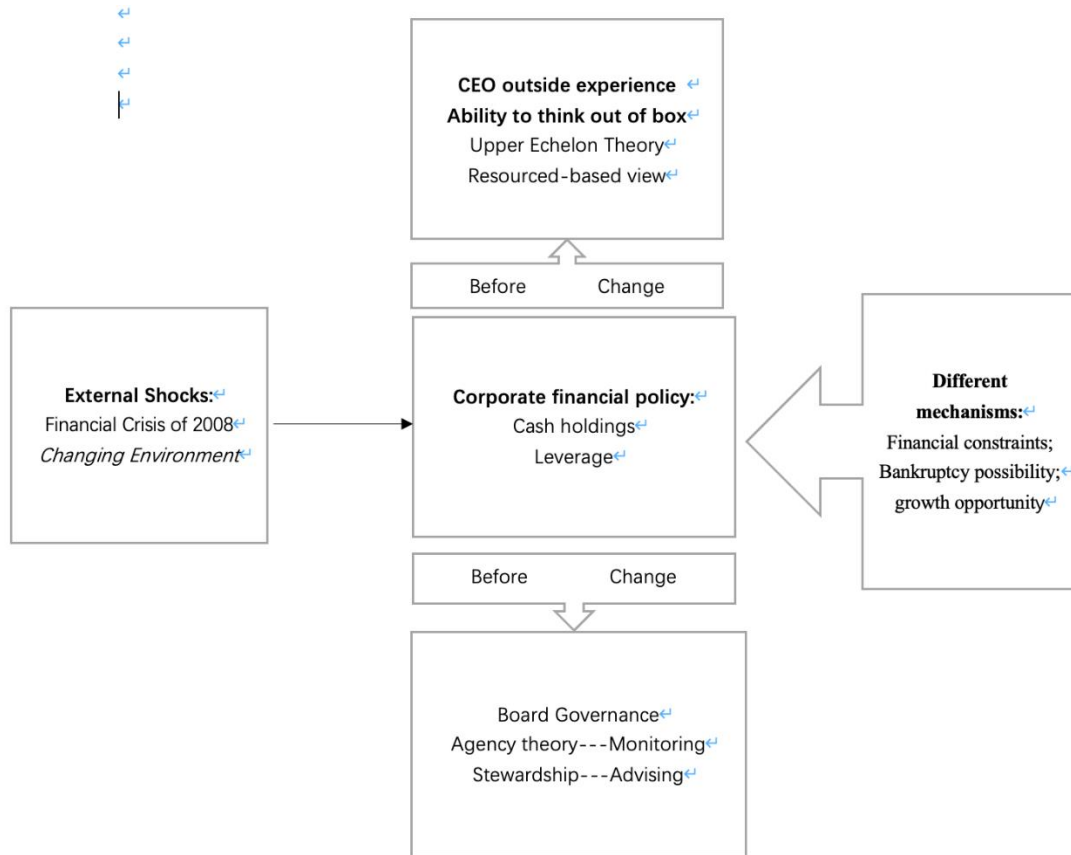


Figure 5-1 Theoretical Framework

The research question in this empirical chapter are as follows:

- Whether and how CEO experience contribute to corporate financial policy when companies operate in an either stable business environment (pre-crisis) or changed business environment (post-crisis)?
- Whether and how board governance contributes to corporate financial policy when companies operate in an either stable business environment (pre-crisis) or changed business environment (post-crisis)?
- Whether and how board governance indirectly affects corporate financial policy by moderating the relationship between CEO experience and corporate financial policy in an either stable business environment (pre-crisis) or changed business environment (post-crisis)?

5.4 Hypotheses development

Corporate financing decisions are determined by the motives based on the trade-off and agency theories. According to the trade-off theory, companies reserve money for precautionary motive (Opler et al., 1999). Companies have greater incentives to hold more cash when there are more investment opportunities, a higher cost to financial access, or a higher volatility in cash flow (Opler et al., 1999; Almeida et al., 2004). Financing conditions play crucial role in firms' operations and development (Jin, Luo and Wan, 2018), which affect companies' ability to deal with its environment full of competition, such as to achieve the first-best level when investment opportunities emerge (Abor, 2007; Abor and Biekpe, 2005; Almeida et al., 2004; Chen et al., 2018; Kusnadi and Wei, 2011). Otherwise, they may give up high-quality projects which have potentially led to more growth opportunities and higher profits (Campello et al., 2010, Musso and Schiavo, 2008).

Cash holdings provide an important means through which firms ensure liquidity (Almeida et al., 2014), especially during periods of financial stress and limited access to credit (Campello et al., 2011). Even if holding cash can benefit firms as cash provides higher financial flexibility for decision-making (Florackis and Sainani, 2018), it may also conceal an opportunity cost associated with long-term returns of missed investment opportunities (Jensen, 1986). Holding cash might be partly motivated by rational objectives like the need to maintain daily operations and the potential to finance new investment opportunities. However, it can also be driven in part by other factors. The more likely it is that cash holdings will be mismanaged and irresponsibly spent, the lower the market value (Schauten, Dijk & Waal, 2013). Dittmar and Mahrt-Smith (2007) explain why poorly governed firms' value (excess) cash less: these firms invest (more) money in low return projects, and excess cash may make managers "lazy" by lowering their incentives to control costs, increase margins, etc. Furthermore, agency motive constrained by good corporate governance is more significant in pre-crisis period, which relates to the potential suboptimal use of corporate cash by self-interested CEOs in pursuit of private benefits (Amess, Banerji& Lampousis, 2015).

Unlike corporate investment strategy, corporate financing decisions, such as leverage, cash holding, can be observable and recognized right now. If there is large availability of cash in firms, CEOs might be opportunistically and inefficiently use it to gain personal benefits, such as high compensation, empire building, tunnelling, and thus increase agency problems in firms (La Rocca and Cambrea, 2019). Therefore, self-interested CEOs will use free cash flow more generously, which results in overinvestment costs (Granado-Peiró and Lopez-Gracia, 2016).

Leverage is an indicator for a firm's riskiness since higher leverage is shown to raise a firm's likelihood of financial distress and default risk, which could be affected by CEO outside experience (Molina, 2005; Bhagat et al., 2015; Faccio et al., 2016). Besides, as debt amount can be easily observed, debt decrease can create potential underinvestment incentives (Aivazian, Ge and Qiu, 2005). Leverage is associated with maximizing returns to various stakeholders of companies and affects a company's ability to deal with its competitive environment (Abor and Biekpe, 2005). CEOs can reduce leverage in anticipation of future investment opportunities (Aivazian, Ge and Qiu, 2005). However, firms are more likely to use more leverage for tax shield (Chyz, 2010).

According to M&A literature, managers have to make numerous adjustments to the way they run their company in the three years following the M&A. It is recommended to establish a 3-year window for newly merged or acquired entities to fully integrate and stabilize (Capron and Guillén, 2009; Golubov and Xiong, 2020; Laabs and Schiereck, 2010). This period is crucial for obtaining a meaningful comparison of the outcomes and performance beyond the 3-year period. In this empirical research, therefore, I focus on the period that returns to a certain degree of normality, instead of immediately after the crisis that is too volatile, making it difficult for firms to make financial decisions. Because it is an environment where external finance is extremely difficult to get.

CEOs are able to pursue strategies in terms of the differences in experience, knowledge, skill, access to resources (Chung & Luo, 2013). CEOs with outside experience are more likely to learn from external reference and carry information about unobservable market dimensions that are difficult for focal firms to evaluate (Malhotra, Zhu & Reus, 2022). CEOs with outside experience have both diagnostic value and anchoring effects with external reference, whereas CEOs with inside experience has only anchoring effect with internal reference that may signal managerial skills in extracting synergy (Malhotra, Zhu & Reus, 2022). Besides, Zhang and Rajagopalan (2010) suggest that firms led by CEOs with outside experience undergo more substantial strategic changes, since these CEOs are expected to pursue novel or different strategies (Hambrick & Finkelstein, 1987) and stray from rather than build upon the firm's existing capabilities due to their limited understanding of the firm's existing resources and constraints.

CEOs typically use suboptimal levels of leverage to avoid the disciplinary effects of debt (Jensen and Meckling, 1976; Jensen, 1993). CEOs with outside experience led to great influence over firms' corporate financing decisions (Chintrakarn, & Liu, 2012; Li, 2018). Outside experienced CEOs with career-concern may focus more on enhancing their reputation within the company by inefficiently deploying cash resources at the expense of shareholders (Amess, Banerji& Lampousis, 2015). Further, CEOs with outside experience are more likely to invest more cash to low-return projects, and an abundance of excess cash can potentially diminish CEOs' incentives to manage costs, enhance profit margins, and so forth, potentially resulting in agency problems (Dittmar & Mahrt-Smith, 2007). Meanwhile, CEOs with outside experience might seek to lower leverage since it gives them more freedom to act in their own best interests by avoiding the sanctions associated with timely interest and loan repayment. Greater dependency on leverage could increase the cost of debt and the likelihood of bankruptcy (Fosu, Danso, Ahmad, & Coffie, 2016; Jiraporn et al., 2012). CEOs with outside experience tend to reduce the leverage of firms, especially in the early stages of their CEO appointment when the risk of job loss is higher (Friend and Lang, 1988, Jensen, 1986). This is because CEOs with outside experience who do not meet the short-term goals

established by the board or fail to avoid bankruptcy may be at a higher risk of losing their job (Berger et al, 1997; Granado-Peiró and Lopez-Gracia, 2016; Harris & Raviv, 1991).

Therefore, agency motive of CEOs with outside experience in pursuit of private benefits is more significant in the pre-crisis period.

Financial crisis leads to great uncertainty and challenges in the macroeconomic environment. Uncertainty reduces corporate investment by enhancing the value of the choice of waiting and seeing causing companies to wait for additional information before taking actions (Bernanke, 1983; Bloom et al., 2007; Im, Park & Zhao, 2017). The precautionary motive emphasizes concerns with liquidity and the retention of cash for investment purposes and how this is influenced by capital market imperfections (Amess, Banerji& Lampousis, 2015). CEOs prefer holding more cash since it provides flexibility that allow companies to exploit future profitable investment opportunities and reduces the possible risks, when uncertainty recedes (Bates et al., 2009; Han and Qiu, 2007; Opler et al., 1999; Magerakis, 2022; Phan, Nguyen, Nguyen & Hegde, 2019). Outside experienced CEOs with new knowledge are more likely to be aware of the risks for strategic change (Sariol & Abebe, 2017). CEO outsiders are more likely to hold more cash as a cushion in post-crisis period and thus mitigate the likelihood of bankruptcy and increase their financial strength (Cassell et al., 2012; Chava and Purnanandam, 2010). Cash holdings provide an important means through which firms ensure liquidity (Almeida et al., 2014), especially during post-crisis periods of financial stress and limited access to credit (Campello et al., 2011). CEOs with precautionary motives are more likely to building-up high levels of cash reserves aims to improve shareholders' wealth (Belghitar and Khan, 2013).

Meanwhile, in post-crisis, CEOs with outside experience may view leverage as a strategic instrument to enhance the firm's financial flexibility, access to capital and tax shield, allowing it to navigate economic uncertainties, and seize growth opportunities for strategic change that emerge during market disruptions. Besides, CEOs with outside experience can access to access external finance easily using their skills, better reputation, and credibility to access

external finance (Islam et al., 2021). Therefore, the precautionary motive plays a more crucial role in post-crisis rather than agency perspective.

Hypothesis 1. The relationship between CEO outside experience and corporate financing decisions would change between pre- and post-crisis period.

H1a. CEO outside experience is negatively related to corporate cash holdings in a stable business environment. When the business environment has changed following a shock, CEO outside experience is positively related to corporate cash holdings.

H1b. CEO outside experience is negatively related to corporate leverage in a stable business environment. When the business environment has changed following a shock, CEO outside experience is positively related to corporate leverage.

5.4.1 Board governance and corporate financial policy before and after crisis

An effective board focuses on maximizing shareholder value and capital allocation efficiency. Effective boards often encourage firms to hold less cash and pursue more efficient investments, ultimately enhancing the value of cash for shareholders (Chen et al., 2020). Consequently, they may prefer to invest excess cash in growth opportunities, such as R&D, M&A, and capital investments in a stable environment (Chen, Guedhami, Yang & Zaynutdinova, 2020). Because boards may have more faith in business anticipation and managers' capacity to generate investment returns in a stable environment with fewer immediate pressures or crises.

CEOs may employ more debt than the optimal amount to consolidate their equity voting power and avert takeover risks (Chao et al., 2017; Harris & Raviv, 1990). One of the most crucial internal control systems for monitoring CEOs' behavior in corporate financial policy is an effective board of directors (Fama and Jensen, 1983; Bebchuk and Cohen, 2005; Faleye, 2006). Since an effective board of directors could help increase corporate leverage by decreasing asymmetric information and the caused adverse selection costs (Mande et al., 2012). Leverage and effective board governance mechanisms serve as alternative

mechanisms to address agency problems. Hence, it is expected that firms with effective board governance are more likely to have lower level of leverage (Arping & Sautner, 2010).

Effective board governance is often associated with lower leverage in pre-crisis periods due to its emphasis on financial stability and risk management.

However, boards prioritize financial resilience and mitigate risk in post-crisis. Therefore, boards are more likely to hold more cash as a buffer against unexpected events and allow the firm to navigate uncertainties with greater flexibility (Ferreira & Vilela, 2004; Opler et al., 1999) due to great uncertainty and changes in post-crisis. This indicates the precautionary motive to remain exiting asset value. Moreover, board of directors do not know what the correct thing is to do for survival and recovery, they tend to be more precautionary and risk averse to wait for right time to invest for firm growth (Finkelstein and Hambrick, 1996, Miller and Shamsie, 2001). Meanwhile, effective board governance tends to use more leverage in post-crisis due to due to strategic changes required for recovery and growth to adapt to changing business environment. Besides, effective boards gain insights into the company's risk tolerance and financial resilience and more easily assess external finance in post-crisis.

Hypothesis 2. The relationship between board governance and corporate financing decisions would change between the pre- and post-crisis period.

H2a. Board governance is negatively related to corporate cash holdings in a stable business environment. When the business environment has changed following a shock, board governance is positively related to corporate cash holdings.

H2b. Board governance is negatively related to corporate leverage in a stable business environment. When the business environment has changed following a shock, board governance is positively related to corporate leverage in the post-crisis period.

5.4.2 Board governance moderating role in the impact of CEO experience on corporate financial policy

According to Boyd et al. (2011) and Shen (2003), the most important aspect of CEO/board relations is the support or constraints that the board can provide to the CEO. The knowledge, skills, and experience of the CEO have a significant impact on accumulating and analysing data to predict the future, which impacts the financial policy of the corporation. Governance by the board defines the management, direction, and control of businesses. CEOs with outside experience are reviewed as more talented and competent because the barrier for an outsider to become CEO is higher than for an insider with firm's specific knowledge (Milbourn, 2003). Outside experienced CEO with diverse outside experience is appointed by board based on their expertise and track record of success (Fitzsimmons & Callan, 2016). Therefore, boards have confidence in these CEOs' competence in a stable environment and thus work more collaboratively. Consequently, boards have confidence in these CEOs' competence to manage the company effectively. In a pre-crisis, stable environment characterized by fewer immediate pressures and a more predictable future, there is a greater likelihood of these CEOs working collaboratively with the board to enhance shareholders' long-term value.

However, in post-crisis, firms must hold more cash to reduce the risk of financial distress, including bankruptcy, in order to reduce the cost of financial distress (Ferreira & Vilela, 2004; Garca- Teruel & Martnez-Solano, 2008). To minimize all costs linked with financial instability, firms must maintain greater cash reserves (Bashir, 2014). In post-crisis, CEOs tend to be cautious, preferring to hold more cash for unexpected downturns, emergencies, and opportunities, while boards may advocate for using cash holdings for strategic changes to maximize shareholders' long-term value. Besides, effective board governance provides firms with greater access to financing, a reduced cost of capital, and more information, are more likely to tolerate risk, loosen controls, and accept strategic choices with uncertain outcomes (Claessens et al., 2002; Karaevli & Zajac, 2013). On the other hand, in post-crisis CEOs with

outside experience are more likely to invest more and take great risks for strategic change. However, board may be more cautious and risk-averse to maximize firm value in post-crisis. Boards wait for potentially profitable investment due to the less accessible to external financing and high cost in post-crisis (Abor, 2007; Almeida et al., 2004; Chen et al., 2018; Kusnadi and Wei, 2011). Therefore, we have the following hypotheses:

Hypothesis 3. Board governance moderates the relationship between CEO experience and corporate financial decision differently between pre-crisis and post-crisis period.

H3a: The relationship between CEO outside experience and cash holdings is positively moderated by board governance in a stable business environment. When the business environment has changed following a shock, the moderating role of board governance between CEO outside experience and cash holdings is negative.

H3b. The relationship between CEO outside experience and leverage is positively moderated by board governance in a stable business environment. When the business environment changes following a shock, the moderating role of board governance between CEO outside experience and leverage is negative.

5.5 Data and Methodology

5.5.1 Sample and Data

5.5.1.1 Sample

The study is based on annual data on U.S. publicly traded firms available on Standard and Poor's Compustat-North America database and BoardEx who survived from the global financial crisis of 2008. The sample period is from pre-crisis, crisis, and post-crisis. (2000 to 2019). The basic sample is focused on all industries, excluding financial firms (SIC codes 6000 to 6999) and utilities (SIC codes 4900 to 4949), in total 2402 firms, referring to Empirical Chapter 1 (i.e., Chapter 3). In Chapter 2, we have already argued the appropriateness of using financial crisis of 2008 as a natural experiment, as the GFC of 2008

is a watershed moment whereby *all* firms in the USA were able to sense the threat posed by the disruption. This, in turn, enables me to make the reasonable assumption that the vast majority of the firms, who sensed the threat (and opportunities) posed by the crisis in 2008, undertook necessary organizational and other changes – which we can alternatively call seize and transform – in the immediate aftermath of 2008. However, this window can be altered for the purpose of robustness checks. In Empirical Chapter 1, we investigate how CEO experience determines firm performance/competitiveness both pre- and post-crisis, taking the time period from 2012-2019. I draw on the M&A literature to posit that this process (i.e., changes in corporate strategy, specifically corporate investment) takes 3 years, from 2009 to 2011, to examine how CEO experience determine corporate investment both pre- and post-crisis in Empirical Chapter 2. Consistent with Empirical Chapter 1 and 2, I use panel dataset to examine the the changes in the impact of CEO outside experience on corporate financial policy between pre-crisis (2000-2007) and post-crisis (2012-2019). The final sample after deleting observations with missing variables consists of an unbalanced panel of 36,125 observations for the period 2000–2019.

5.5.1.2 Data

Refer to Empirical Chapter 1

5.5.2 Main variables

5.5.2.1 Dependent variable

"Cash is king.", since it directly affects financing, investments, operations, payouts, and ultimately firm value (Chen et al., 2020). An optimal level of cash holdings is crucial to addressing the finance, risk, and governance challenges because either deficit or excess cash would raise risk and uncertainty issues for the company. According to prior literature (Jiang et al., 2010; Chen et al., 2012; Harford et al., 2008), neither having too much nor too little cash is a good. Therefore, corporate cash holdings decisions should match the firm's demand and risk tolerance. In this research, we measure cash holding as the ratio of cash and

marketable securities to the book value of total assets. (Chen et al., 2020; Foley et al., 2007). Leverage, as a key indicator of a firm's riskiness as higher leverage is demonstrated to increase a firm's likelihood of financial distress and default risk (Molina, 2005; Bhagat et al., 2015; Faccio et al., 2016). Powerful CEOs' risk-taking preferences are more likely to translate into a measurable effect on corporate leverage (Schopohl, Urquhart & Zhang, 2021). Leverage is defined as total debt divided by total asset (Aivaziana, Geb & Qiuc, 2005).

5.5.2.2 Independent variable

Consistent with Chapter 3 and Chapter 4, CEO outside experience, board governance index are the main variables. I also use different mechanisms---i.e., financial constraints (KZ Index), Growth opportunities (Tobin's Q), and Bankruptcy possibilities (Altman's Z-score) for additional test.

5.5.2.3 Control variable

Refer to Chapter 3 and 4, control variables that could be associated with CEO outside experience and corporate financing were included to rule out alternative explanations. We control for several firm level variables, such as firm size, firm age, leverage, and tangibility. It has been suggested that firm size influences a variety of organisational outcomes (Miller, 1991). Firm age may influence the CEO's authority and corporate financing (Carpenter et al., 2003; Fredrickson et al., 1988; Henderson, 1999). We also control and other CEO characteristics ²⁶and board level variables i.e., board size. The variable description is presented in **Table 5-1**.

Table 5-1 Variable Description

Variables	Measurement	Literature support	Data Source
Dependent Variables			

²⁶ I also control other CEO characteristics, such as CEO age, CEO gender, CEO education, but it show insignificance. I, therefore, remove them.

Cash holdings	The ratio of cash and marketable securities to the book value of total assets.	Chen et al., 2020; Foley et al., 2007	Compustat
Leverage	Long-term debt plus debt in current liabilities divided by total asset	Ghosh & Jain, 2000; Aivaziana, Geb & Qiu, 2005; Chava & Roberts,	Compustat

Independent Variables

CEO Experience_Outsider1	1 if (s)he was in executive roles (CEO, COO, MD etc) at a different firm (within the same industry or at a different industry) during the previous 10 years, 0 otherwise	Hamori & Koyuncy, 2015; Zhu, Hu and Shen, 2020	Board Ex
CEO Experience_Outsider2	1 if (s)he was CEO, COO, MD etc at a firm in a different industry during the previous 10 years, 0 otherwise	Hamori & Koyuncy, 2015; Zhu, Hu and Shen, 2020	Board Ex
Board Governance Index (BGI)	Board governance score is based on board size, board independence, busy directorship and CEO duality. The index ranges from a feasible low of 0 to a high of 4; a high score is associated with good monitoring function.	Bhagat and Bolton, 2008, 2017; Guest, 2009; Martynova & Renneboog, 2010	Board Ex

Control Variables

Prior CEO tenure	Total number of years CEO has spent in CEO positions in both same and different companies during that CEO's career	Keil, Lavie and Pavićević, 2021	Board Ex
CEO tenure	The number of years for which the firm's CEO has been in that position	Herrmann and Datta, 2002, Herrmann and Datta, 2006; Hsua, Chen&Cheng, 2013	Board Ex
CEO Age	CEO age was measured as the number of years from the date of birth	Herrmann and Datta, 2002, Herrmann and Datta, 2006; Hsua, Chen&Cheng, 2013	Board Ex
CEO Gender	Dummy variable equals to 1 for a female CEO and 0 for a male CEO	Hanousek, Shamshur& Tresl, 2019; Wu, Li, Ying&Chen, 2018	Board Ex

CEO compensation	The sum of salary, bonus, and stipends	Chen, Liu, & Li, 2010; Firth et al., 2007; Kato & Long, 2006; Wang & Xiao, 2011	Board Ex
Firm size	The natural logarithm of a firm's total asset	Mitton, 2002; Singla & George, 2013	Compustat
Firm age	firm age as the time between its going public and the present time (also in years)	Filatotchev et al., 2006; Johnson et al. 2016; Kieschnick & Moussawi, 2018	Compustat
Tangibility	Tangibility is asset tangibility measured by net fixed assets divided by total assets.	Hovakimian, 2009 ; Tran, 2020	Compustat
KZ Index	KZ Index = $-1.002 \text{ Cash Flow} + 0.283 Q + 3.139 \text{ Leverage} - 39.368 \text{ Dividends} - 1.315 \text{ Cash Holdings}$.	Ameida, Campello & Weissbach, 2004; Kaplan and Zingales, 1997	Compustat
Dividend Payout Ratio	Payout ratio is measured as total distributions (dividends plus stock repurchases) divided by operating income.	Ameida, Campello & Weissbach, 2004 ; Fazzari et al. (1988)	Compustat
Tobin' s Q	The market value of assets divided by the book value of assets	The market value of assets divided by the book value of assets	The market value of assets divided by the book value of assets
Altman's Z-Score	Z-Score = $1.2 * (\text{working capital} / \text{total assets}) + 1.4 * (\text{retained earnings} / \text{total assets}) + 3.3 * (\text{Earnings before interest and tax} / \text{total assets}) + 0.6 * (\text{Market value of equity} / \text{total liabilities}) + 1 * (\text{Sale} / \text{total assets})$	Bhagat & Bolton, 2019; Tran, 2020	Compustat

5.5.3 Data Description

Table 5-2 presents descriptive statistics regarding mean, median, minimum and maximum for the key variables, including corporate financing variables, CEO power variables and firm characteristics. Inspection of the table reveals a high variation of corporate financing policy among the firms. The mean (median) cash holding across all firm years equals 0.2 (0.12), while its minimum and maximum is 0 and 0.96, respectively. Besides, the mean (median) leverage across all firm years equals 0.47 (0.18), whereas minimum and maximum is 0 and 3465, respectively. The data shows there are great differences of corporate financing policy among firms. On average, the sample firms possess important growth opportunities as indicated by an average market to book ratio of 3.0099. The mean (median) KZ index, Tobin's Q and Z-score is 1.51 (0.39), 3.01 (1.11) and -25.71(3.26), but there is a great variation of financial constraints, growth opportunities and bankruptcy possibility among firms. These statistics show the significance and necessity to use them as mechanisms, different level of financially constraints, growth opportunity and bankruptcy possibility, to further explain the relationship between CEO power and corporate financing both during pre- and post-crisis.

Table 5-2.Descriptive statistics.

Variable	Obs	Mean	S.D.	Min	Median	Max
Cash holding	36,107	0.2	0.22	0	0.12	0.96
Leverage	36,107	0.47	18.98	0	0.18	3465
CEO Outsider1	36107	0.49	0.50	0	0	1
CEO Outsider2	36107	0.34	0.47	0	0	1
Board Governance Index	36107	2.56	0.84	0	3	4
CEO Tenure	36107	7.41	7.07	0	5.4	60.7

Prior CEO tenure	36107	9.40	7.67	0	7.8	60.7
CEO Age	36107	56.45	8.21	28	56	95
CEO Gender	36107	0.03	0.17	0	0	1
CEO Compensation	30,998	2541.79	6791.531	0	0	37864
Firm Size	36107	6.42	2.24	0.00	6.53	13.61
Firm Age (IPO)	36107	58.70	48.43	0	25	119
Leverage	36107	0.47	18.98	0	0.18	3465
Tangibility	36107	0.26	0.24	0	0.17	0.99
Payout Ratio	36100	0.42	1.26	-7.04	0.05	12.59
KZ Index	36107	1.51	68.05	-550.54	0.39	11798.4
Z-Score	36022	-25.71	1266.43	-113602.9	3.26	967.57
Tobin's Q	36,107	3.01	59.09	0	1.11	5452.50

Note:

The sample consists of all firms listed in the Compustat Annual File. The file covers the period of 2000– 2019 with an unbalanced panel of 36,107 observations of 2402 firms.

Table 5-3 reports the equity of mean and median test between pre- and post-crisis. According to the corporate financing policy value presented in Table 5-3, there is significant difference of Cash holdings and Leverage between pre- and post- crisis period, with the mean (median) of 0.2065 (0.1100) and 0.1924 (0.1140) respectively, 0.2441 (0.1395) and 0.6956 (0.1911). Accordingly, there is more cash holding and less leverage in post-crisis period on the basis of precautionary perspective but less cash holding and more leverage in pre-crisis on the basis of agency problems. In addition, there is significant difference of CEO outside experience in the pre-and post-crisis period with the mean (medians) of 0.3764 (0) and 0.5521 (1) respectively,

which indicates there is more outside experienced CEOs in post-crisis with both abilities to think out of box, skills, knowledge and power for strategic changes to adapt to the challenging business environment but less in pre-crisis period. Besides, the mean (median) of CEO tenure in pre- and post-crisis is 6.4083 (4.6) and 8.1955 (6) respectively, which supplies there is more long-tenured CEOs. Regarding board governance, we develop board governance index based on four dimensions of board characteristics consistent with empirical chapter 1 and 2, there is significant difference of board governance index between pre- and post- crisis period, with the mean (median) of 2.3836 (2) and 2.7128 (3) respectively.

Table 5-3.Equity mean and median test in pre- and post-crisis.

Variable	Mean			Median		
	Pre-crisis	Post-crisis	P-value	Pre-crisis	Post-crisis	P-value
Firm						
Performance						
Cash Holdings	0.2065	0.1924	0.0000	0.11	0.11	0.137
Leverage	0.2441	0.6956	0.0430	0.16	0.21	0.0000
CEO Experience						
CEO Experience Outsider1	0.3764	0.5521	0.0000	0	1	0.000
CEO Experience Outsider2	0.2561	0.3749	0.0000	0	0	0.000
CEO Tenure (same company)	6.4083	8.1955	0.0000	4.6	6	0.000
CEO Prior Tenure	7.5278	10.8752	0.0000	5.9	9.9	0.000
CEO Age	55.0373	57.7697	0.0000	55	57	0.000
CEO Gender	0.9796	0.961	0.0000	0	0	0.000
Board						
Governance						
Boar Governance Index	2.3836	2.7128	0.0000	2	3	0.000
Firm						
Characteristics						
Firm Size	6.3834	6.6043	0.0000	6.4204	6.807	0.000
Firm Age (IPO)	53.6957	63.6885	0.0000	18	28	0.000
Tobin's Q	2.0852	4.2912	0.0038	0.0345	1.29	0.000
Z-score	5.3313	-49.3442	0.0006	3.7809	2.9838	0.000

Financial Constraints						
KZ-Index	0.5040	2.5687	0.0278	0.4441	0.4181	0.039
Payout Ratio	0.4232	0.3923	0.8838	0.0412	0.1357	0.000
Tangibility Ratio	0.2555	0.255	0.8634	0.1839	0.1641	0.000
Executive Pay						
Total Pay	3179.6640	3102.521	0.7045	0	0	0.000

Note:

- (1). Two tailed t-tests (mean-comparison tests) of the difference between the pre-crisis means and post-crisis means were conducted.
- (2). Nonparametric test (K-sample equity-of-medians test) of the difference between the pre-crisis medians and post-crisis medians were conducted.
- (3). *p-value indicates statistical significance for the null-hypothesis that difference = Mean/Median (post-crisis) - Mean/ Median (pre-crisis) =0.
- (4). This table demonstrates whether corporate financing policy, CEO power variables were quite different between pre-crisis and post-crisis for the selected industries.
- (5) In addition to median in pre-and post-crisis, the table also presents the percentage of firms *greater than median* " () " in the post-crisis period and post-crisis period.

Table 5-4 reports the Person correlation coefficients between corporate financing decisions, CEO outside experience, board governance index and control variables, providing preliminary evidence that CEO outside experience has impact on corporate financing in support of my hypotheses. The correlations for the control variables are as expected and are consistent with prior research (e.g., Lewellyn & Muller-Kahle, 2012).

Table 5-4. *Pearson correlation matrix.*

Variables	V1	V2	V3	V4	V5	V6	V7	V8
V1:CashHolding	1.0000							
V2: Leverage	0.0258	1.0000						
V3:CEOUtsider1	0.0053	0.0130	1.0000					
V4: Board Governance Index	-0.0584	-0.0254	0.0438	1.0000				
V5: PostCrisis1	0.0394	-0.0007	0.0642	0.0007	1.0000			
V6: PostCrisis2	-0.0451	0.0107	0.0908	0.1537	-0.4036	1.0000		
V7:CEO Tenure	-0.0166	-0.0012	-0.2720	-0.1880	0.0113	0.0978	1.0000	
V8:Prior CEO tenure	-0.0088	0.0047	-0.0536	-0.1948	0.0166	0.1614	0.8229	1.0000
V9:CEO Gender	0.0254	-0.0007	0.0136	0.0286	0.0006	0.0393	-0.0626	-0.0714
V10:CEO Age	-0.0918	0.0036	-0.0829	-0.1389	-0.0035	0.1350	0.4413	0.4693
V11: Firm Size	-0.3708	-0.0372	-0.0225	0.1481	-0.0534	0.0750	-0.0805	0.0961
V12: Firm Age	-0.1828	0.0102	0.0027	0.0387	-0.0095	0.0867	0.0287	0.0304
V13:Tangibility	-0.4408	-0.0105	0.0282	-0.0198	-0.0025	-0.0047	0.0183	0.0031
V14:Total Compensation	-0.1041	-0.0044	-0.0268	0.0067	-0.0353	0.0380	-0.0644	-0.0658
Variables	V9	V10	V11	V12	V13			
V9: CEO Gender	1.0000							
V10: CEO Age	-0.0625	1.0000						
V11:firmsize	0.0041	-0.0027	1.0000					
V12:FirmAge	-0.0082	0.1399	0.1343	1.0000				
V13: Tangibility	-0.0089	0.0674	0.1896	0.1222	1.0000			
V14: Total Compensation	0.0102	0.0102	0.5217	0.1632	-0.0022	1.0000		

Note: The Pearson correlation coefficients between the variables employed in the testing equation are presented in the lower diagonal.

5.5.4 Methodology

In this research, I investigate whether a CEO with outside experience makes different corporate financial policy in a changed business environment. I, thus, adopt the event study methodology to take a first look at the hypothesis that firms with CEO outside experience should be associated with more cash holdings/leverage than firms with CEO inside experience. Post-crisis1 period (2009-2011) is too volatile, making it challenging for firms to make financial decisions. Because it is an environment where external finance is very difficult to obtain, and companies may already be in serious trouble. Therefore, I focus on post-crisis2 (2011-2019) period in this empirical chapter, even if the business environment

returns to some degree of normality but still a changed business environment because of the crisis.

As a result, I examine the impact of CEO outside experience on corporate financing before and after the crisis where we begin with the following the panel data regression model:

$$\begin{aligned}
 \text{Corporate Financing}_{i,t} &= \beta_1 + \beta_2 \text{CEO outside experience} + \beta_3 \text{Board governance index} \\
 &+ \beta_4 \text{Post} - \text{crisis1} + \beta_5 \text{Post} - \text{crisis2} \\
 &+ \beta_6 (\text{CEO outside experience} * \text{Post} - \text{crisis1}) \\
 &+ \beta_7 (\text{CEO outside experience} * \text{Post} - \text{crisis2}) \\
 &+ \beta_8 (\text{Board governance index} * \text{Post} - \text{crisis1}) \\
 &+ \beta_9 (\text{Board governance index} * \text{Post} - \text{crisis2}) + \beta_{10} X_{i,t} + \gamma_i + \varepsilon_{i,t}
 \end{aligned}$$

Eq. (5-1)

where the dependent variable is corporate financing (i.e., Cash Holdings, and Leverage), Post-crisis1 is a dummy variable that take the value 1 for the time period Post-crisis is between 2009 and 2011 and zero otherwise; Post-crisis2 is a dummy variable that take the value 1 for the time period Post-crisis is between 2012 and 2019 and zero otherwise (Pre-crisis as P_0 indicates the time period is between 2000 and 2007), referring to Chen (2014) who investigates CEO experience over the three years preceding the 2008 financial crisis (2005-2007) and the three years following the financial crisis (2009-2011). I investigate CEO experience over the five years both pre- and post-crisis2. X is the control variable, including firm characteristics, other CEO characteristics, and year and industries characteristics, refer to Empirical Chapter 1 (Chapter 3). In this research, I use OLS model and fixed effect model to examine the relationship between corporate financing and CEO outside experience.

Overall, we then apply triple interaction regression models to examine the joint effect of CEO experience and board governance on corporate financing between pre-and post-crisis period. To do so, we use an indicator board governance index to indicate board effectiveness. Note that our board governance measure will not vary with firm fundamentals over the sample period. We use the triple interaction between CEO outside experience and board governance, and the pre- and post- crisis for the impact of corporate financing. The regression models are as follows referring to Bhaumik and Selarka, (2012), and Buchanan, Cao and Chen (2018):

$$\begin{aligned}
& \text{CorporateFinancing}_{i,t} \\
&= \beta_1 + \beta_2 \text{CEO outside experience} + \beta_3 \text{Board governance index} \\
&+ \beta_4 \text{Post} - \text{crisis1} + \beta_5 \text{Post} - \text{crisis2} \\
&+ \beta_6 (\text{CEO outside experience} * \text{Post} - \text{crisis1}) \\
&+ \beta_7 (\text{CEO outside experience} * \text{Post} - \text{crisis2}) \\
&+ \beta_8 (\text{Board governance index} * \text{Post} - \text{crisis1}) \\
&+ \beta_9 (\text{Board governance index} * \text{Post} - \text{crisis2}) \\
&+ \beta_{10} (\text{CEO outside experience} * \text{Board governance index}) \\
&+ \beta_{11} (\text{CEO outside experience} * \text{Board governance index} * \text{Post} \\
&- \text{crisis1}) \\
&+ \beta_{12} (\text{CEO outside experience} * \text{Board governance index} * \text{Post} \\
&- \text{crisis2}) + \beta_{13} X_{i,t} + \gamma_i + \varepsilon_{i,t}
\end{aligned}$$

Eq. (5-2)

The key variables of interest are the triple-difference interaction term: CEO outside experience * Post-crisis * Board Governance (in Eq. (2)). We measure board governance using board governance index with the value 1-4, where the higher the BGI, the better the monitoring function of the boards, otherwise advising function of the boards. The interaction terms capture how CEOs with outside experience and board governance work together to affect changes in corporate investments before and after the financial crisis. I report my estimation results in *Section 5.6 Result and Discussion*.

5.6 Results and discussion

Table 5-5 reports the regression results for the relation between CEO outside experience and corporate financing decisions during pre- and post-crisis using the two alternative measures of cash holding and leverage and two different methodologies: OLS model, and fixed effect model. The regression models include Fama-French 48 industry-fixed effects under the assumption that such treatment adequately captures product market competition. The regression models also include the abovementioned group of control variables.

The results in **Table 5-5** show that CEO outsider has a negative impact on corporate cash holding in pre-crisis (-0.0472, t-statistic=-4.85) at the 1% significance level, while there is a

no significant impact on cash holding in post-crisis. The fixed effect model shows robust results. This finding is consistent with previous literature (Cannella Jr. & Lubatkin, 1993; Haque, Choi, Lee & Wright, 2022; Lauterbach et al., 1999). In pre-crisis, CEOs with outside experience pursuing self-interest are inclined to spend any extra cash to expand the business for “empire building” rather than saving for future investments (Jensen, 1986; Jensen and Meckling, 1976). Whereas CEO with outside experience may find it challenging to identify the appropriate strategic direction for the company in the uncertain and volatile environment following a crisis. Therefore, outside experience does not help CEOs in corporate financial decision-making. After dealing with endogeneity issue, GMM model shows that CEO outsider has a negative impact on corporate cash holding in pre-crisis (-1.1719, t-statistic=-1.67) at the 10% significance level, while CEO outsider has a positive impact on corporate cash holding in post-crisis (1.1453, t-statistic=1.65) at the 10% significance level, which is consistent with the exiting literature (Easterbrook, 1984; Jensen, 1986) that CEOs pursuing self-interest value future flexibility and thus have precautionary motive to make investment and prioritize financial stability in post-crisis (Finkelstein and Hambrick, 1996, Miller and Shamsie, 2001). CEOs with outside experience who may have limited knowledge of the company's internal operations and industry dynamics, prioritize financial stability and liquidity preservation in order to endure turbulent conditions (Zhang & Rajagopalan, 2010). More cash holdings can be a buffer against potential disruptions and enable firms to navigate uncertainties with greater flexibility (Haque, Choi, Lee & Wright, 2022).

Board governance has a negative impact on corporate cash holding in pre-crisis (-0.0138, t-statistic=-5.37) at the 1% significance level, which is consistent with the exiting literature, (Hu et al., 2020) that corporate financial policy is possibly distorted by the agency conflicts of pursuing “quiet life” driven by reputation and career concern that may lead to under-investment as managers turn down risky, optimal projects (Bertrand and Mullainathan, 2003; Lu and Wang, 2015). Therefore, an effective board can help to mitigate agency conflict by monitoring CEOs to invest more and thus less cash holdings. Whereas in post-crisis, board governance has no impact on cash holdings, which indicates that board of directors lack

knowledge and information to deal with an unknown and unpredictable future in identifying opportunities in post-crisis and thus board governance has no impact on cash holdings. The fixed effect model shows robust results. After dealing with endogeneity issue using GMM model, CEO outsider has a negative impact on corporate cash holding in pre-crisis (-0.2326, t-statistic=-1.76) at the 10% significance level, whereas board governance has a positive impact on corporate cash holding in post-crisis (0.2257, t-statistic=1.71) at the 10% significance level. The post-crisis period requires strategic thinking in order to be able to deal with an uncertain and unpredictable future when it comes to identifying business opportunities and developing strategies for competitiveness (Bratianu, 2017). Corporate financial decision-making in turbulent periods differs from normal periods, as it entails more time to gather information and consider scenarios before making decisions. Board of directors are precautionary and risk averse to wait for right time to invest in post-crisis with great uncertainty and changes (Finkelstein and Hambrick, 1996, Miller and Shamsie, 2001), because of holding more cash as a buffer against unexpected events (Ferreira & Vilela, 2004; Opler et al., 1999).

Regarding the triple interaction among CEO outside experience, board governance and crisis period on corporate financial policy, the results show that board governance positively (0.0177, t-statistics=1.67) moderates the relationship between CEO outside experience and cash holdings in pre-crisis, but insignificant in post-crisis. CEOs with outside experience are appointed based on their expertise and track record of success (Fitzsimmons & Callan, 2016). Therefore, boards trust such CEOs with competence for firm operations. In pre-crisis, stable environments with fewer immediate pressures or crises are more likely to promote them work collaboratively with board. However, both board and CEOs lack information and knowledge for scenario analysis in turbulent environment (Beshlawy & Ardroumli, 2021). Therefore, board has no moderating impact on the relationship between CEO outside experience and cash holding in post-crisis. After dealing with endogeneity issue using GMM model, the results show that board governance positively moderates the relationship between CEO outside experience and cash holdings in pre-crisis, but negatively moderates the relationship in

post-crisis. In post-crisis, CEOs tend to be cautious, preferring to hold more cash for unexpected downturns, emergencies, and opportunities, while boards may advocate for using cash holdings for strategic changes to benefit shareholders.

Table 5-5. Impact of CEO Outside Experience and Board Governance and Other Firm Characteristics on Corporate Financial Policy ---Cash Holding

Panel A:	OLS	FE	OLS	FE	GMM
Corporate Financing ---			(Triple)	(Triple)	
Cash Holding	(1)	(2)	(3)	(3)	(4)
L1. Cash Holding					0.7170*** (0.0643)
CEO Outsider1	-0.0044 (0.0034)	-0.0003 (0.0026)	-0.0472*** (0.0097)	-0.0167** (0.0067)	-1.1719* (0.7015)
Post-crisis1 (2009-2011)	0.0138 (0.0118)	-0.0754* (0.0447)	0.0017 (0.0150)	-0.0762* (0.0450)	-0.7146** (0.2803)
Post-crisis2 (2012-2019)	0.0329 (0.0112)	-0.1445* (0.0744)	0.0359*** (0.0132)	-0.1438* (0.0746)	-0.5753* (0.3214)
CEO Outsider1*Post-crisis1	-0.0032 (0.0057)	-0.0044 (0.0034)	0.0302** (0.0179)	0.0017 (0.0108)	1.3301** (0.5705)
CEO Outsider1*Post-crisis2	-0.0062 (0.0046)	-0.0083*** (0.0029)	0.0001 (0.0147)	-0.0049 (0.0746)	1.1453* (0.6947)
Board Governance Index (BGI)	-0.0059*** (0.0019)	-0.0043*** (0.0013)	-0.0138*** (0.0026)	-0.0073*** (0.0017)	-0.2326* (0.1322)
BGI*Post-crisis1	0.0106*** (0.0034)	0.0057*** (0.0020)	0.0164*** (0.0050)	0.0065** (0.0030)	0.2859** (0.1136)
BGI*Post-crisis2	0.0010 (0.0027)	0.0035** (0.0013)	0.0014 (0.0039)	0.0039 (0.0025)	0.2257* (0.1317)
CEO Outsider1*BGI			0.0177*** (0.0038)	0.0066*** (0.0025)	0.0047* (0.2815)

CEOOutsider1*BGI*Post-crisis1			-0.0141** (0.0068)	-0.0028 (0.0041)	-0.5347** (0.2288)
CEOOutsider1*BGI*Post-crisis2			-0.0043 (0.0054)	-0.0019 (0.0034)	-0.4623* (0.2797)
CEO Characteristics					
CEO Tenure	0.0002 (0.0003)	0.0009*** (0.0002)	0.0001 (0.0003)	0.0009*** (0.0002)	-0.0007 (0.0006)
CEO Prior Tenure	6.37e-06 (0.0003)	-0.0008*** (0.0002)	0.0001 (0.0003)	-0.0008*** (0.0002)	0.0006 (0.0005)
CEO Gender	0.0287*** (0.0060)	0.0036 (0.0051)	0.0286*** (0.0060)	0.0036 (0.0051)	0.0015 (0.0051)
CEO Age	-0.0014*** (0.0001)	-0.0001 (0.0001)	-0.0014*** (0.0001)	-0.0001 (0.0001)	-0.00007 (0.0002)
CEO Compensation (Pay)	-1.51e-06 (1.81e-07)	-1.37e-07 (1.70e-07)	1.51e-06*** (1.81e-07)	-1.44e-07 (1.70e-07)	-4.34e-08 (2.06e-07)
Firm Characteristics					
Firm Size	-0.0266** (0.006)	-0.0290*** (0.0012)	-0.0266*** (0.0006)	-0.0290*** (0.0012)	-0.0055*** (0.0021)
Firm Age (IPO)	0.0004*** (0.00002)	0.0090** (0.0040)	-0.0004*** (0.00002)	0.0090** (0.0040)	-0.0001** (0.00004)
Tangibility	-0.3806*** (0.0065)	-0.4774*** (0.0077)	-0.3806*** (0.0065)	-0.4774*** (0.0077)	-0.1903*** (0.0197)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	30,873	30,868	30,873	30,868	28,128
R Squared	0.3794	0.8103	0.3801	0.8104	
Number of firms	2,102	2,097	2,102	2,097	2,097
AR (2) test (p-value)					0.114

Sargan test of over-identification (p-value)	0.215
Diff-in- Sargan test of Exogeneity (p-value)	0.759

Note: (1). This table examines the effects of CEO Experience on Corporate Financial Policy and how these effects will change after the financial crisis of 2008 compared with pre-crisis (2000-2007) using of static and dynamic model. Robust standard errors are in brackets and Standard errors clustered at firm levels; T-statistics are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

(2). AR (2) IS test for second order serial correlation in the first difference residuals, under the null of no serial correlation. Hensen/ Sargan test of overidentification is under the null that all instruments are valid. Diff-in-Hansen/ Sargan test of exogeneity is under the null that instruments used for equations in levels are exogenous. “***”, “**”, “*” represent significance at the 1%, 5% and 10% level, respectively.

The results in Table 5-6 show that CEO outsider has a positive impact on corporate leverage in post-crisis (6.1518, t-statistic=3.6) at the 1% significance level, while there is no significant impact on leverage in pre-crisis. Fixed effect model and GMM model show robusted results. The result indicates outside experienced CEOs in post-crisis period use more leverage for strategic change use and thus survive in the challenging environment, as outside experienced CEOs with fresh perspectives are easily to identify and assess emerging opportunities and design proper strategies compared with inside experienced CEOs. Such CEOs are more likely to disrupt the status quo and initiate and implement broader strategic change (Grossman, 2007; Karaevli and Zajac, 2012). Therefore, CEOs with outside experience are more likely to prioritize investment using leverage in order to drive firm growth and enhance shareholders’ value in turbulent environment. Besides, CEOs with outside experience are more likely to manage firms with more tax avoidance activities (Chyz, 2010).

Second, baseline model shows that board governance negatively (-1.0863, $t=-3.42$) affects corporate leverage in post-crisis but insignificant in pre-crisis. In the aftermath of a financial crisis, boards tend to adopt more conservative financial policies using less leverage, due to awareness of increased risks and uncertainties in the market. Furthermore, using high level of leverage may limit firms' ability to obtain additional financing for unexpected expenses or new opportunities, which would hinder flexibility (Harford, Mansi & Maxwell, 2007; Jensen, 1986). While adding the interaction between CEO outside experience and board governance, board governance has no direct impact on leverage, robust in OLS, FE and GMM model. The results may indicate leverage as an alternative of board governance.

Third, OLS model shows the result that board governance negatively (-1.9748, $t\text{-statistics}=-3.09$) moderate the relationship between CEO outside experience and corporate leverage in post-crisis but insignificant in pre-crisis, which show robust result in FE and GMM model. CEOs with external experience may bring a diversified viewpoint and more aggressive financial strategies to use high level of leverage (Karaevli and Zajac, 2012), while effective boards are more prudent to manage risks and ensuring financial stability using less leverage during post-crisis (Harford, Mansi & Maxwell, 2007).

Table 5-6. Impact of CEO Outside Experience and Board Governance and Other Firm Characteristics on Corporate Financial Policy ---Leverage

Panel A:	OLS	FE	OLS	FE	GMM
Corporate Financing ---			(Triple)	(Triple)	
Leverage	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(3)</i>	<i>(4)</i>
L1. Leverage					0.2645 (0.1882)
CEO Outsider ¹	0.0298 (0.3966)	-0.2391 (0.4761)	0.5861 (1.1331)	-0.8489 (1.2400)	-328.8019 (202.9434)

Post-crisis1 (2009-2011)	1.0395 (1.3685)	-5.3416 (8.3330)	0.5430 (1.7402)	-4.4240 (8.3949)	-159.8337 (106.6974)
Post-crisis2 (2012-2019)	2.8255** (1.3011)	-4.9374 (13.8752)	-0.2800 (1.5365)	-7.9687 (13.8991)	-143.2915 (91.9780)
CEO Outsider1*Post-crisis1	0.1336 (0.6612)	-0.1819 (0.6312)	0.8405 (2.0874)	-1.7116 (2.0163)	369.4026* (219.0162)
CEO Outsider1*Post-crisis2	0.7933 (0.5354)	0.9687* (0.5497)	6.1518*** (1.7079)	6.2200*** (1.7292)	336.1591* (200.5972)
Board Governance Index (BGI)	0.0027 (0.2251)	0.2438 (0.2469)	0.0994 (0.2988)	0.1251 (0.3257)	-58.3700 (38.2760)
BGI*Post-crisis1	-0.4418 (0.3916)	0.0603 (0.3768)	-0.2549 (0.5870)	-0.3293 (0.5656)	65.1231 (43.5096)
BGI*Post-crisis2	-1.0863*** (0.3177)	-1.1778*** (0.3184)	0.0453 (0.4538)	-0.0885 (0.4588)	58.6722 (37.7268)
CEO Outsider1*BGI			-0.2212 (0.4400)	0.2883 (0.4675)	132.3803 (81.6267)
CEO Outsider1*BGI*Post- crisis1			-0.2624 (0.7898)	0.5906 (0.7624)	-148.2673* (88.0278)
CEO Outsider1*BGI*Post- crisis2			-1.9528*** (0.6319)	-1.9748*** (0.6390)	-135.2072* (80.8630)
CEO Characteristics					
CEO Tenure	-0.0187 (0.0318)	0.0531 (0.0452)	-0.0115 (0.0319)	0.0578 (0.0452)	-0.1414 (0.1166)
CEO Prior Tenure	-0.0104 (0.0292)	-0.0196 (0.0402)	-0.0153 (0.0292)	-0.0201 (0.0402)	0.1171 (0.1017)
CEO Gender	-0.4125 (0.7020)	-0.0051 (0.9457)	-0.4225 (0.7018)	0.0474 (0.9456)	-0.4564 (0.9901)
CEO Age	0.0012	-0.0100	0.0007	-0.0110	-0.0002

	(0.0166)	(0.0258)	(0.0166)	(0.0258)	(0.0410)
CEO Compensation (Pay)	0.00005**	-2.21e-06	0.00005**	-3.03e-06	-0.00002
	(0.000002)	(0.00003)	(0.00002)	(0.00003)	(0.00004)
<i>Firm Characteristics</i>					
Firm Size	-0.4420***	-0.6016***	-0.4346***	-0.6199***	0.0086
	(0.0676)	(0.2238)	(0.0676)	(0.2238)	(0.1947)
Firm Age (IPO)	0.0037	0.4443	0.0036	0.4524	-0.0019
	(0.0026)	(0.7484)	(0.0026)	(0.7482)	(0.0049)
Leverage					
Tangibility	-1.3032*	-10.3749***	-1.2671*	-10.3450***	1.2900
	(0.7514)	(1.4391)	(0.7512)	(1.4389)	(1.3803)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	30,873	30,868	30,873	30,868	28,128
R Squared	0.0052	0.2187	0.0060	0.2192	
Number of firms	2,102	2,097	2,012	2,097	2097
AR (2) test (p-value)					0.106
Sargan test of over-identification (p-value)					0.998
Diff-in- Sargan test of Exogeneity (p-value)					0.161

Note: (1). This table examines the effects of CEO Experience on Corporate Financial Policy and how these effects will change after the financial crisis of 2008 compared with pre-crisis (2000-2007) using of static and dynamic model. Robust standard errors are in brackets and Standard errors clustered at firm levels; T-statistics are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

(2). AR (2) IS test for second order serial correlation in the first difference residuals, under the null of no serial correlation. Hensen/ Sargan test of overidentification is under the null that all instruments are valid. Diff-in-Hansen/ Sargan test of exogeneity is under the null that instruments used for equations in levels are exogenous. “****”, “***”, “**” represent significance at the 1%, 5% and 10% level, respectively.

5.7 Robustness Check

5.7.1 Econometric Issues

This research does not potentially suffer from simultaneity and reverse causality problems, because of the exogenous shocks allows me to make causal inferences about the effects of corporate governance on the level and value of corporate cash holdings and leverage and allow to emphasis the research questions in different crisis period. However, prior research on the relationship between corporate governance and cash holdings or leverage provides conflicting results, probably because the majority of corporate governance decisions are endogenous. (e.g., Hermalin and Weisbach, 2003; Larcker et al., 2011). In particular, the value-maximizing governance decisions for one firm could vary considerably from those of another firm, in which case the equilibrium relation between governance and firm value is unclear because a firm's governance policies are endogenous decisions made in response to the governance issues the firm faces (Bharath and Hertznel, 2019; Larcker et al., 2011). In this research, I use GMM model to deal with the endogeneity issue and the results presented in **Table 5-5 and Table 5-6**.

5.7.2 Subsample Analysis using different Mechanisms.

We investigate the relationship using different measures of corporate financing, including Cash holdings and Leverage, and the results fairly support my hypotheses. We also use different mechanisms to examine the impact of CEO outside experience and board governance on corporate financing decisions before and after the crisis with the following subsample analysis: financial constraints, bankruptcy possibility and growth opportunities.

5.7.2.1 Different level of Financial constrained firms

Referring to Chapter 4, financial Constraints is calculated as KZ Index. KZ index is calculated as

$$\text{KZ index} = -1.0002(\text{cash flow}/\text{asst total}) - 39.368(\text{dividend}/\text{asset total}) - 1.315(\text{cash balance}/\text{asset total}) + 3.139 \text{ leverage} + 0.283 \text{ Tobin's Q}.$$
 Besides, bankruptcy possibility is calculated as Altman's Z-score, which is calculated as
$$\text{Z-Score} = 1.2 * (\text{working capital}/\text{total assets}) + 1.4 * (\text{retained earnings}/\text{total assets}) + 3.3 * (\text{Earnings before interest and tax}/\text{total assets}) + 0.6 * (\text{Market value of equity}/\text{total liabilities}) + 1 * (\text{Sale}/\text{total assets}).$$
 Furthermore, growth opportunities is calculated as Tobin's Q, which is calculated as The market value of assets divided by the book value of assets; Control variables is the same as baseline model and the variable description in **Table 5-1**. I use GMM estimation to investigate the research question using different mechanisms ---i.e., financial constraints, bankruptcy possibility and growth opportunity presented in Table 5-7, 5-8 and 5-9, respectively.

Table 5-7 reports that firms with low financial constraints have contradicted results with full sample regression results. There is a positive relationship between CEO outside experience and cash holding (0.6689, t-statistic=1.94) in financially unconstrained firms are more likely to hold more cash in pre-crisis but there is a negative relationship between CEO outside experience and cash holdings in financially unconstrained firms (-0.7511, t=-1.65) in post-crisis. The results indicates that CEOs with outside experience are more likely to identify growth opportunity, initiate strategic change using cash to adapt to the changed environment in post-crisis (Zhang & Rajagopalan, 2010), while CEO with outside experience are more likely to hold more cash to pursue self-interest in pre-crisis (Miller, 1991; Orens & Reheul, 2013).

Besides, firms with high financial constraints have robust result with full sample regressions that CEO outside experience are more likely to use less leverage in pre-crisis but use more leverage in post-crisis for strategic change. However, firms with low financial constraint are more likely to use more leverage in pre-crisis but insignificant in post-crisis. In pre-crisis,

firms with low financial constraints firms are more likely to satisfy his/her own interest to build business empire and thus improve their own reputation in terms of agency motive in pre-crisis and thus use more leverage (Teti, Acqua, Etro & Volpe, 2017).

Table 5-7 Impact of CEO Outside Experience and Board Governance and Other Firm Characteristics on Corporate Financial Policy-Cash holdings and Leverage. Subsample Analysis financial (un)constrained companies---KZ Index.

Panel A:	Cash Holdings		Leverage	
Corporate Financing	GMM		GMM	
	High FCs	Low FCs	High FCs	Low FCs
L. Corporate Financing	0.7287*** (0.0845)	0.6689*** (0.0366)	0.0417 (0.1820)	0.1364 (0.0929)
CEO Outsider1	-1.3649 (0.8754)	0.8565* (0.4417)	-79.1998* (46.0938)	332.1844* (174.2747)
Post-crisis1 (2009-2011)	-0.7924* (0.4326)	0.0073 (0.2360)	-18.9603 (22.5221)	-50.781** (23.2026)
Post-crisis2 (2012-2019)	-0.5361 (0.4497)	0.0621 (0.1757)	77.7859 (45.2189)	-36.1039 (24.1530)
CEO Outsider1*Post-crisis1	1.4789* (0.8266)	-0.6491 (0.5774)	54.7395 (42.1826)	-293.4119 (181.2676)
CEO Outsider1*Post-crisis2	1.2029 (0.8695)	-0.7511* (0.4564)	77.7859* (45.2189)	-324.2767 (175.0132)
Board Governance Index (BGI)	-0.2317 (0.1834)	0.0344 (0.0703)	-13.9846 (8.6980)	51.9006* (28.9738)
BGI*Post-crisis1	0.3116* (0.1796)	-0.0086 (0.0936)	7.9494 (9.2552)	-45.0566 (29.8052)
BGI*Post-crisis2	0.2116 (0.1856)	-0.0313 (0.0709)	13.9004 (8.7704)	-50.8671* (28.8861)

CEO Outsider1*BGI	0.5549	-0.3387*	32.3216*	-131.605
	(0.3566)	(0.1750)	(18.7669)	(69.1116)
CEOOutsider1*BGI*Post- crisis1	-0.6037*	0.2584	-22.5148	116.9827
	(0.3379)	(0.2264)	(17.2087)	(71.8829)
CEOOutsider1*BGI*Post- crisis2	-0.4960	-0.3003*	-31.7232*	129.1994
	(0.3543)	(0.1804)	(18.4256)	(69.5490)
CEO Characteristics				
CEO Tenure	-9.01e-06	0.0004	-0.0166	0.3350*
	(0.0005)	(0.0006)	(0.0216)	(0.1717)
CEO Prior Tenure	0.0007*	-0.0009*	0.0466*	-0.2766*
	(0.0004)	(0.0005)	(0.0247)	(0.1414)
CEO Gender	-0.0056	0.0059	-0.2347	0.1122
	(0.0088)	(0.0066)	(0.4660)	(1.1291)
CEO Age	0.0002	-0.0009*	0.0045	-0.0438
	(0.0003)	(0.0003)	(0.0139)	(0.0647)
CEO Compensation (Pay)	1.25e-07	3.64e-08	0.00003*	0.00003
	(3.04e-07)	(2.29e-07)	(0.00001)	(0.00005)
Firm Characteristics				
Firm Size	-0.0057**	-0.0082***	-0.4205***	0.0227
	(0.0024)	(0.0014)	(0.0139)	(0.1742)
Firm Age (IPO)	-0.00009**	-0.00005	0.0024	0.0111
	(0.00004)	(0.00005)	(0.0015)	(0.0093)
Tangibility	-0.1719***	-0.2526***	-1.3434*	-3.7031
	(0.0232)	(0.0159)	(0.7495)	(2.5904)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	13,968	14,160	13,968	14,160
R Squared				

Number of firms	1,793	1,711	1,793	1,711
AR (2) test (p-value)	0.214	0.165	0.116	0.101
Sargan test of over-identification (p-value)	0.456	0.901	1.000	0.818
Diff-in- Sargan test of Exogeneity (p-value)	0.937	0.129	0.303	0.407

Note:

(1). This table examines the effects of CEO Experience on Corporate financial policy and how these effects will change after the financial crisis of 2008 compared with pre-crisis (2000-2007) using of static and dynamic model. Robust standard errors are in brackets and Standard errors clustered at firm levels; T-statistics are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

(2). Subsample Analysis regarding financially constrained and unconstrained firms measured by KZ Index. We regard firms with a high KZ index as financially constrained companies, otherwise financially unconstrained firms. According to the subsample analysis, we can identify the different impact of CEO outside experience on firms under different financial conditions.

5.7.2.2 Different level of Bankruptcy possibility firms

Table 5-8 reports that CEOs with outside experience in firms with low/medium bankruptcy possibility have robusted results with full sample regressions, whereas CEOs with outside experience in firms with high bankruptcy possibility have contradicted results with full sample regressions. Specifically, CEOs with outside experience in high bankruptcy possibility firms hold less cash in post-crisis period, which indicates that firms are more likely to take great risks to undertake value-increasing projects that might otherwise be bypassed for survival instead of avoiding potential loss (Dennis & Sibilkov, 2010). The result is consistent with Kim et al. (1998) and Teruel et al. (2009) find that firms with high bankruptcy risks are expected to have low cash holdings for strategic need.

Besides, CEOs with outside experience have no impact on corporate leverage in firms with high bankruptcy possibility. However, for firms with low/medium bankruptcy possibility would use more leverage in pre-crisis to build business empire and thus improve their own reputation in terms of agency motive in pre-crisis (Teti, Acqua, Etro & Volpe, 2017). While CEOs with outside experience in such firms have no impact on corporate leverage in post-crisis since business environment volatility and uncertainty leads to financial distress and great difficulty to raise fund. The findings are consistent with corporate financial policy measured as cash holdings that firms with low/medium bankruptcy possibility must hold more cash to reduce the risk of financial distress, in order to reduce the cost of financial distress (Ferreira & Vilela, 2004; Garca- Teruel & Martnez-Solano, 2008). If other sources of funding are unavailable or prohibitively expensive, a company can use its liquid assets to finance its activities, and capitalizing on growth opportunities (Denis, 2011). In summary, firms with low/medium bankruptcy possibility are more consistent with full sample results, which indicates agency problems in pre-crisis, but precautionary motive in post-crisis.

Table 5-8 Impact of CEO Outside Experience and Board Governance and Other Firm Characteristics on Corporate Financial Policy -Cash holdings and Leverage. Subsample Analysis bankruptcy possibility of companies---Z-Score.

Panel A:	Cash holdings			Leverage		
	GMM			GMM		
	High	Medium	Low	High	Medium	Low
	Bankruptcy	Bankruptcy	Bankruptcy	Bankruptcy	Bankruptcy	Bankruptcy
Corporate Financing	Possibility	Possibility	Possibility	Possibility	Possibility	Possibility
L1. Corporate	0.7388***	0.3815***	0.7603***	0.1579	0.5319***	0.4506***
Financing	(0.0721)	(0.0681)	(0.0671)	(0.0880)	(0.1841)	(0.0521)
CEO Outsider1	1.0233	-0.9075*	-0.7205*	-17.2660	2.1403*	125.4926*
	(0.6971)	(0.4806)	(0.3761)	(12.5479)	(1.2565)	(75.8234)
Post-crisis1 (2009-	0.7845*	-0.2468	-0.7177***	-34.2532	0.5853	45.4578
2011)	(0.4139)	(0.2510)	(0.2267)	(18.4478)	(0.8019)	(28.0935)

Post-crisis2 (2012-	0.6025*	-0.5037*	-0.3695**	0.0186	0.9120	47.2747
2019)	(0.3257)	(0.2821)	(0.1492)	(10.8125)	(0.7376)	(31.5948)
CEO Outsider1*Post-	-1.3237**	0.2919	1.4863***	62.2031	-1.9199	-112.6661*
crisis1	(0.6881)	(0.4181)	(0.5113)	(25.7649)	(1.2311)	(67.0862)
CEO Outsider1*Post-	-1.1577*	1.0560**	0.8643**	15.5695	-2.0771	-110.4345
crisis2	(0.7039)	(0.5094)	(0.3788)	(15.6677)	(1.2768)	(76.0958)
Board Governance	0.2287*	-0.1747	-0.0988*	-1.4890	0.3689	21.0734*
Index (BGI)	(0.1280)	(0.1081)	(0.0571)	(3.4336)	(0.3059)	(12.6098)
BGI*Post-crisis1	-0.3267*	0.0986	0.2734***	14.2001	-0.2450	-18.5025
	(0.1718)	(0.1030)	(0.0889)	(7.6490)	(0.3282)	(11.4025)
BGI*Post-crisis2	-0.2484*	0.2014*	0.1343**	0.1572	-0.3474	-19.3506
	(0.1320)	(0.1149)	(0.0596)	(4.3741)	(0.3044)	(12.7889)
CEO Outsider1*BGI	-0.4323	0.3584*	0.2872*	7.5411	-0.8504*	-49.7865*
	(0.2910)	(0.1900)	(0.1492)	(5.2476)	(0.4974)	(30.0969)
CEO Outsider1*BGI*P	0.5586**	-0.1252	-0.5814***	-25.9624	0.7620	44.9085*
ost-crisis1	(0.2799)	(0.1651)	(0.1992)	(10.7403)	(0.4875)	(26.6675)
CEO Outsider1*BGI*P	0.4818*	-0.4132**	-0.3389**	-6.6404	0.8270	44.5165
ost-crisis2	(0.2933)	(0.2002)	(0.1501)	(6.4208)	(0.5053)	(30.2435)
CEO Characteristics						
CEO Tenure	0.00004	-0.0007	-0.00004	0.0119	0.0011	0.1028*
	(0.0006)	(0.0005)	(0.0004)	(0.0273)	(0.0012)	(0.0540)
CEO Prior Tenure	0-0.00004	0.0012***	0.0003	0.0050	-0.0012	-0.0784*
	(0.0008)	(0.0004)	(0.0003)	(0.0256)	(0.0008)	(0.0421)
CEO Gender	0.0073	0.0231***	0.0039	-0.4529	-0.0301	0.0881
	(0.0119)	(0.0087)	(0.0058)	(0.6330)	(0.0188)	(0.4536)
CEO Age	-0.0005	-0.0008**	0.0004**	-0.0248	0.0006	-0.0197
	(0.0005)	(0.0004)	(0.0002)	(0.0160)	(0.0010)	(0.0195)

CEO Compensation	-1.06e-07	-6.61e-08	1.80e-	0.00005	2.36e-07	0.00001
(Pay)	(4.58e-07)	(3.20e-07)	07***	(0.00002)	(7.59e-07)	(0.00002)
			(2.23e-07)			
<i>Firm Characteristics</i>						
Firm Size	-0.0030	-0.0105***	-0.0066***	-0.5326	0.0102**	-0.0297
	(0.0029)	(0.0015)	(0.0020)	(0.0742)	(0.0040)	(0.0922)
Firm Age (IPO)	-0.00002	-0.0002***	-0.0001***	0.0035	-0.0002	0.0053
	(0.00005)	(0.00005)	(0.00005)	(0.0023)	(0.0001)	(0.0040)
Tangibility	-0.1974***	-0.2006***	-0.2405***	0.5667	0.0447	-0.4918
	(0.0213)	(0.0212)	(0.0241)	(0.6208)	(0.0280)	(0.7437)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,423	5,593	15,292	32,835	5,593	15,292
Number of firms	1.157	1,271	1,712	2402	1,271	1,712
AR (2) test (p-value)	0.149	0.133	0.121	0.494	0.219	0.104
Sargan test of over-identification (p-value)	0.749	0.187	0.420	1.000	0.527	0.832
Diff-in- Sargan test of Exogeneity (p-value)	0.797	0.267	0.112	0.456	0.770	0.772

Note:

(1). This table examines the effects of CEO Experience on Corporate financial policy and how these effects will change after the financial crisis of 2008 compared with pre-crisis (2000-2007) using of static and dynamic model. Robust standard errors are in brackets and Standard errors clustered at firm levels; T-statistics are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

(2). Subsample Analysis regarding financial constrained and unconstrained firms measured by Z-score. We regard firms with low Z-score as high bankruptcy possibility companies, high Z-score as low bankruptcy possibility, otherwise medium bankruptcy possibility firms. According to the subsample analysis, we can identify the different impact of CEO outside experience on firms under different bankruptcy possibilities.

5.7.2.3 Different level of growth opportunity firms

Table 5-9 reports that in firms with low growth opportunities have contradicted results with full sample regressions. CEOs with outside experience with new perspective and bold thinking hold less cash in post-crisis period because changing situations require new strategies (Shepherd et al., 2003, Starr and Bygrave, 1991), but hold more cash in pre-crisis period due to the agency problem of pursuing “quiet life” to remain financial stability (Bertrand & Mullainathan, 2003). Besides, CEOs with outside experience have no impact on corporate leverage in pre-crisis, whereas CEOs with outside experience is positively related to corporate leverage in post-crisis, as post-crisis with changed environment require strategic changes (Shepherd et al., 2003). Therefore, firms would like to initiate strategic change to adapt to the changed business environment. The findings are supported by Abor and Biekpe, (2005), Chen et al. (2018) and Kusnadi and Wei (2011) that firms with high growth opportunities are more likely to hold less cash due to investing in value-increasing projects to adapt to the changing business environment. When it comes to leverage, CEO with outside experience are more likely to use more leverage in post-crisis for firms with either high growth opportunity or low growth opportunity.

Table 5-9 Impact of CEO Outside Experience and Board Governance and Other Firm Characteristics on Corporate Financial Policy -Cash holdings and Leverage. Subsample Analysis growth opportunity of companies---Tobin's Q

Panel A:	Cash Holdings		Leverage	
	GMM		GMM	
	High Growth	Low Growth	High Growth	Low Growth
Corporate Financing	Opportunity	Opportunity	Opportunity	Opportunity
L1. Corporate Financing	0.6735*** (0.0624)	0.6092*** (0.0252)	0.1278 (0.0788)	0.0186 (0.0305)
CEO Outsider1	-1.1004 (0.6740)	0.7167** (0.3614)	-37.1312 (24.4639)	-26.3172 (16.5944)

Post-crisis1 (2009-2011)	-0.3409 (0.2580)	0.3061 (0.1992)	-30.3512** (15.1696)	-14.23*40 (8.4786)
Post-crisis2 (2012-2019)	-0.6609** (0.3126)	0.3316* (0.1707)	-25.4464** (11.7555)	-15.451*0 (8.7600)
CEO Outsider1*Post-crisis1	0.5226 (0.5891)	-0.7427** (0.3558)	54.5404** (27.005)	26.2035 (16.1830)
CEO Outsider1*Post-crisis2	1.1065 (0.7089)	-0.8344** (0.3674)	46.6451* (25.6184)	28.7988* (16.7254)
Board Governance Index (BGI)	-0.2564** (0.1206)	0.1119 (0.0685)	-6.8243 (4.1658)	-5.8740* (3.5439)
BGI*Post-crisis1	0.1339 (0.1060)	-0.1223 (0.0809)	12.3087** (6.1713)	5.8418* (3.4878)
BGI*Post-crisis2	0.2576** (0.1274)	-0.1345* (0.0695)	10.1648** (4.7566)	6.3326* (6.6697)
CEO Outsider1*BGI	0.4406 (0.2705)	-0.2895** (0.1453)	15.0455 (9.8293)	10.5898 (6.6697)
CEO Outsider1*BGI*Post-crisis1	-0.2143 (0.23666)	0.2974** (0.1432)	-21.6758** (10.8233)	-10.5519 (6.5298)
CEO Outsider1*BGI*Post-crisis2	-0.4440 (0.2832)	0.3304** (0.1475)	-18.4613* (10.2275)	-11.5131* (6.7312)
CEO Characteristics				
CEO Tenure	-0.0013** (0.0006)	-0.0003 (0.0003)	-0.0006 (0.0234)	-0.0112 (0.0093)
CEO Prior Tenure	0.0005 (0.0006)	-0.00008 (0.0003)	0.0361* (0.0216)	0.0050 (0.0071)
CEO Gender	0.0044 (0.0077)	0.0146*** (0.0055)	0.0875 (0.3645)	-0.2669 (0.1882)
CEO Age	-0.00002	-0.00003	-0.0018	-0.0054

	(0.0005)	(0.0001)	(0.0114)	(0.0035)
CEO Compensation (Pay)	-5.27e-07*	4.12e-07**	0.00004***	-2.80e-06
	(3.13e-07)	(1.76e-07)	(0.00001)	(4.56e-06)
<i>Firm Characteristics</i>				
Firm Size	-0.0047*	-0.0084***	-0.3955***	0.0032
	(0.0025)	(0.0007)	(0.0505)	(0.0140)
Firm Age (IPO)	-0.0001**	-0.00003	0.0027**	0.0001
	(0.00006)	(0.00002)	(0.0014)	(0.0005)
Leverage				
Tangibility	-0.3044***	-0.1341***	-0.1440	0.4384***
	(0.0235)	(0.0066)	(0.4062)	(0.1394)
Year fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	14,123	14,005	14,241	14,005
Number of firms	1,779	1774	1,785	1,774
AR (2) test (p-value)	0.118	0.132	0.169	0.173
Sargan test of over-identification (p-value)	0.474	0.291	1.000	1.000
Diff-in- Sargan test of Exogeneity (p-value)	0.476	0.651	0.211	0.113

Note:

(1). This table examines the effects of CEO Experience on Corporate financial policy and how these effects will change after the financial crisis of 2008 compared with pre-crisis (2000-2007) using of static and dynamic model. Robust standard errors are in brackets and Standard errors clustered at firm levels; T-statistics are in parentheses. Statistical significance at the 10%, 5%, and 1% levels is denoted by *, **, and ***, respectively.

(2). Subsample Analysis regarding high growth opportunity and low growth opportunity firms measured by Tobin's Q. We regard firms with high Tobin's Q as high growth opportunity companies, otherwise low growth opportunity companies. According to the subsample analysis, we can identify the different impact of CEO outside experience on firms under different growth opportunity.

5.7.3 Different measure of CEO outside experience

Refer to Chapter 3&4, we use the alternative measure of CEO outside industry experience. **Table 5-10** regarding corporate financial policy---i.e., cash holding, reports the regression results using CEO outside industry experience, which shows robust results to CEO outside firm experience. **Table 5-11** regarding leverage reports the regression results using CEO outside firm experience, which shows robust results to CEO outside industry experience.

Table 5-10. Impact of CEO Outside Experience (Outsider2) and Board Governance and Other Firm Characteristics on Corporate Financial Policy ---Cash Holding

Panel A:	OLS	FE	OLS	FE	GMM
Corporate Financing ---			(Triple)	(Triple)	
Cash Holding	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>	<i>(3)</i>	<i>(4)</i>
L1. Cash Holding					0.7011*** (0.0517)
L2. Cash Holding					
CEO Outsider2	-0.0119*** (0.0037)	0.0036 (0.0027)	-0.0371*** (0.0104)	-0.0019 (0.0071)	-1.0962* (0.5803)
Post-crisis1 (2009-2011)	0.0151 (0.0116)	-0.0771* (0.0447)	0.0260* (0.0135)	-0.0706 (0.0449)	-0.5098** (0.2081)
Post-crisis2 (2012-2019)	0.0373*** (0.0111)	-0.1450* (0.0744)	0.0456*** (0.0122)	-0.1502** (0.0745)	-0.4950** (0.2045)
CEO Outsider2*Post-crisis1	-0.0049 (0.0059)	-0.0034 (0.0035)	-0.0231 (0.0182)	-0.0179 (0.0110)	1.0641* (0.5730)
CEO Outsider2*Post-crisis2	-0.0195*** (0.0049)	-0.0120*** (0.0031)	-0.0350** (0.0153)	0.0011 (0.0097)	1.1051* (0.5767)

Board Governance Index (BGI)	-0.0061*** (0.0019)	-0.0043*** (0.0013)	-0.0094*** (0.0023)	-0.0051*** (0.0016)	-0.1894** (0.0846)
BGI*Post-crisis1	0.0106*** (0.0034)	0.0056*** (0.0020)	0.0067 (0.0043)	0.0030 (0.0026)	0.2035** (0.0856)
BGI*Post-crisis2	0.0011 (0.0027)	0.0034** (0.0002)	-0.0013 (0.0034)	0.0052** (0.0021)	0.1925** (0.0841)
CEO Outsider2*BGI			0.0105*** (0.0040)	0.0022 (0.0027)	0.4377* (0.2331)
CEO Outsider2*BGI*Post-crisis1			0.0065 (0.0069)	0.0056 (0.0041)	-0.4276* (0.2307)
CEO Outsider2*BGI*Post-crisis2			0.0045 (0.0056)	-0.0050 (0.0036)	-0.4449* (0.2323)
CEO Characteristics					
CEO Tenure	-0.0003 (0.0003)	0.0010*** (0.0002)	-0.0004 (0.0003)	0.0010*** (0.0002)	-0.0007** (0.0003)
CEO Prior Tenure	0.0004 (0.0002)	-0.0008 (0.0002)	0.0004 (0.0002)	-0.0008*** (0.0002)	0.0004 (0.0003)
CEO Gender	0.0301*** (0.0060)	0.0041 (0.0051)	0.0303*** (0.0060)	0.0042 (0.0051)	0.0024 (0.0047)
CEO Age	-0.0014*** (0.0001)	-0.0001 (0.0001)	-0.0014*** (0.0001)	-0.0001 (0.0001)	-0.0002 (0.0002)
CEO Compensation (Pay)	1.53e-06*** (1.81e-07)	-1.33e-07 (1.70e-07)	1.54e-06*** (1.81e-07)	-1.38e-07 (1.70e-07)	2.08e-08 (1.85e-07)
Firm Characteristics					
Firm Size	-0.0268*** (0.0006)	-0.0290*** (0.0012)	-0.0269*** (0.0006)	-0.0291*** (0.0012)	-0.0058*** (0.0016)
Firm Age (IPO)	-0.0004*** (0.00002)	0.0091** (0.0040)	-0.0004*** (0.00002)	0.0091** (0.0040)	-0.00008** (0.00004)

Tangibility	-0.3811*** (0.0065)	-0.4774*** (0.0077)	-0.3808*** (0.0065)	-0.4774*** (0.0077)	-0.1930*** (0.0151)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	30,873	30,868	30,873	30,868	28,128
R Squared	0.3812	0.8103	0.3818	0.8104	
Number of firms	2,102	2,097	2,102	2,097	2,097
AR (2) test (p-value)					0.136
Sargan test of over-identification (p-value)					0.158
Diff-in- Sargan test of Exogeneity (p-value)					0.544

Table 5-11. Impact of CEO Outside Experience (Outsider2) and Board Governance and Other Firm Characteristics on Corporate Financial Policy ---Leverage

Panel A:	OLS	FE	OLS	FE	GMM
Corporate Financing ---			(Triple)	(Triple)	
Leverage	(1)	(2)	(3)	(3)	(4)
L1. Leverage					0.3219** (0.1370)
L2. Leverage					
CEO Outsider2	0.1538 (0.4262)	-0.4568 (0.5046)	0.8405 (1.2049)	-1.5461 (1.3158)	-21.2486*** (6.7453)
Post-crisis1 (2009-2011)	1.0085 (1.3559)	-5.2973 (8.3308)	0.3748 (1.5682)	-4.7171 (8.3621)	-18.3617*** (5.233)

Post-crisis2 (2012-2019)	2.8227 (1.2940)	-4.8434 (13.8740)	-0.1716 (1.4212)	-8.1298 (13.8832)	-10.9091*** (3.0849)
CEO Outsider2*Post-crisis1	0.2073 (0.6886)	-0.1564 (0.6592)	1.5346 (2.1204)	-1.6593 (2.0499)	45.5446*** (13.4693)
CEO Outsider2*Post-crisis2	1.0755* (0.5671)	1.3902** (0.5835)	8.6621*** (1.7756)	9.1621*** (1.7986)	30.5198*** (9.6459)
Board Governance Index (BGI)	0.0056 (0.2251)	0.2434 (0.2469)	0.0915 (0.2705)	0.0887 (0.2946)	-2.9243*** (0.8512)
BGI*Post-crisis1	-0.4410 (0.3914)	0.0565 (0.3767)	-0.1969 (0.5039)	-0.2387 (0.4854)	7.2640*** (2.0797)
BGI*Post-crisis2	-1.0786*** (0.3176)	-1.1661*** (0.3183)	0.0131 (0.3943)	-0.0591 (0.3976)	4.3278*** (1.2106)
CEO Outsider2*BGI			-0.2835 (0.4694)	0.5018 (0.4981)	8.6386*** (2.7247)
CEO Outsider2*BGI*Post-crisis1			-0.5011 (0.8009)	0.5687 (0.7733)	-17.9553*** (5.3399)
CEO Outsider2*BGI*Post-crisis2			-2.7552*** (0.6572)	-2.9229*** (0.6642)	-11.9894*** (3.7738)
CEO Characteristics					
CEO Tenure	-0.0114 (0.0311)	0.0543 (0.0446)	-0.0069 (0.0311)	0.0594 (0.0446)	0.0039 (0.0083)
CEO Prior Tenure	-0.0161 (0.0289)	-0.0209 (0.0401)	-0.0184 (0.0289)	-0.0200 (0.0401)	0.0101 (0.0078)
CEO Gender	-0.4583 (0.7021)	-0.0371 (0.9457)	-0.4832 (0.7017)	-0.0434 (0.9453)	-0.0714 (0.1747)
CEO Age	0.0012 (0.0166)	-0.0103 (0.0257)	0.0012 (0.0166)	-0.0120 (0.0257)	-0.0129*** (0.0045)
CEO Compensation (Pay)	0.00005	-2.77e-06	0.00004**	-4.57e-06	0.00002**

	(0.00002)	(0.00003)	(0.00002)	(0.00003)	(6.22e-06)
<i>Firm Characteristics</i>					
Firm Size	-0.4358	-0.5913***	-0.4209***	-0.6029***	-0.1597***
	(0.0676)	(0.2239)	(0.0676)	(0.2239)	(0.0307)
Firm Age (IPO)	0.0037	0.4390	0.0035	0.4578	0.0011*
	(0.0026)	(0.7483)	(0.0026)	(0.7480)	(0.0006)
Tangibility	-1.2961	-10.3460***	-1.3055*	-10.3508***	0.2077
	(0.00002)	(1.4389)	(0.7510)	(1.4382)	(0.1858)
Year fixed effects	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Observations	30,873	30,868	30,873	30,868	28,128
R Squared	0.0054	0.2188	0.0069	0.2197	
Number of firms	2,102	2,097	2,102	2,097	2,097
AR (2) test (p-value)					0.474
Sargan test of over-identification (p-value)					0.995
Diff-in- Sargan test of Exogeneity (p-value)					0.115

5.8 Conclusion

This study presented conceptual explanations and empirical evidence about the relationship between CEO outside experience and corporate financial policy: CEOs with outside experience are more likely to hold less cash in pre-crisis due to agency motive to pursue self-interest, such as career concern and reputation but hold more cash in post-crisis with precautionary motive to wait for future value-increased project. However, CEO outside experience has no impact on corporate leverage in pre-crisis, but firms with outside experienced CEOs tend to use more leverage for strategic changes, as leverage is connected

to tax sheltering by the firm. Regarding board governance, in post-crisis full of uncertainty and changes, boards of directors tend to be cautious and risk-averse, opting to hold more cash reserves as a safeguard against unforeseen events (Finkelstein and Hambrick, 1996; Miller and Shamsie, 2001; Ferreira & Vilela, 2004; Opler et al., 1999). An effective board can also play a monitoring role against the agency problem of CEOs pursuing a "quiet life" for reputation and career reasons in pre-crisis. Thus, the board encourages greater investment and consequently encourages reducing cash holdings.

Besides, board governance positively moderates the relationship between CEO outside experience and corporate cash holdings/leverage in pre-crisis period because board trust the competence of outside experienced CEOs and work more collaboratively with such CEOs. Whereas board governance negatively moderates the relationship between CEO outside experience and corporate financial policy. Because CEOs tend to be cautious, preferring to hold more cash for unexpected downturns, emergencies, and opportunities in post-crisis, while boards may advocate for using cash holdings for strategic changes to benefit shareholders.

Further, this study argued that these relationships are especially driven by companies suffering from high financial constraints to reduce financial cost, and low/medium bankruptcy risk to avoid loss, which indicates agency problems in pre-crisis, but precautionary motive in post-crisis. Surprisingly, the study revealed that financial constraints are an alternative mechanism of corporate governance which can mitigate agency problems. Overall, the findings of this study provide a more nuanced explanation of the mechanisms through which CEO outside experience shapes corporate financial policy differently between pre- and post-crisis. From the managerial practice standpoint, these findings have important implications for executive succession and corporate financial policy in terms of exogenous shock.

6. Chapter 6 Conclusion

6.1 Results conclusion

I define CEO outside experience as the ability to think outside box that is more important when old rules of the game change, which leads to the question whether outside experience give managers and how CEO experience matters when the rules of the game or the business environment changes. Besides, as CEOs do not execute in a vacuum environment, corporate governance play significant role in resolving some of the agency problems firms face with respect to CEOs. Therefore, this study examines whether CEO experience and the relationship with the board matter differently before and after the crisis. As previous things are no longer valid and have to be renewed in terms of uncertainty and challenges, CEOs' responses to the new circumstance are crucial given how the rules of the game are changing. According to previous literature (Bhagat et al., 2015; Faccio et al., 2016; John & Litov, 2010; Zhang & Rajagopalan, 2010), managers definitely play a significant role in determining the competitiveness of companies, the performance, and strategic decisions. The individual questions in Empirical Chapter 1 focus on whether the impact of CEO experience on firm performance matter differently between pre- and post-crisis and whether the moderating role of board governance change. Then, individual research questions in Empirical chapter 2 focus on corporate investment decisions. In Empirical Chapter 3, I turn to corporate financial decisions related to corporate investment decisions and firm performance, where liquidity is an issue that are important in post-crisis period. Therefore the 3 Empirical chapters are closely connected.

This study uses a sample of 2402 US firms over pre-crisis period (2000-2007), immediately after the crisis (2009-2011) and post-crisis (2012-2019) to investigate the relationship between CEO experience and firm performance/corporate investment decisions /corporate financial decisions. The financial crisis of 2008 provides an appropriate context to answer the research questions.

In Empirical Chapter 1, companies with outside experienced CEOs perform worse in key performance measured as ROA and ROE. This is because CEOs with outside experience lack deeper knowledge of core competencies, familiarity of companies and ineffective integration of incumbent Top Management Team in a stable environment. After a crisis, however, the performance differences between these CEOs with outside and inside experience disappear, mostly because CEOs, regardless their background, do not know the correct course of actions in the challenged business environment due to great uncertainty and volatility. As for the role of a company's board, it has no direct impact on firm performance both pre- and post-crisis. Furthermore, board governance positively moderates the impact of CEOs with outside experience on firm performance in pre-crisis. Because vagrant board can effectively monitor CEOs with outside experience pursuing self-interest to mitigate agency cost, as agency problems were more prevalent in pre-crisis. Whereas in the aftermath of crisis, the board's moderating impact diminished, because they boards are struggling to make sense of the chaotic environment and suffer from knowing what the correct course of actions is and thus unable to effectively monitor the company. Overall, board governance plays a more important role in monitoring performance in pre-crisis period than post-crisis period. Interestingly, CEOs with outside industry experience, as opposed to just outside firm experience, are found to be more beneficial for a firm's performance in post-crisis. Their diverse skills and perspectives are more valuable in helping firms adapt to the disrupted environment.

In Empirical chapter 2, the results show that the impact of CEO outside experience, corporate governance on corporate investment matter differently between pre-and post-crisis. Particularly, CEOs with outside experience tend to invest less in capital expenditure but invest more in R&D investment/total investment after a crisis for strategic change to adapt to volatile conditions and foster growth. In contrast, CEOs with outside experience invest more in capital projects and less in R&D in pre-crisis due to agency problems, aiming to either build their empire and enhance their status or pursue "quiet life" and avoid risk-taking. Further, in post-crisis, boards tend to reduce capital expenditure but increase R&D

investments, focusing on long-term strategic changes. Whereas board positively affect capital expenditure and negatively affect R&D in pre-crisis. Interestingly, board governance doesn't directly impact overall corporate investment. Additionally, boards are more willing to work with CEOs with outside experience in post-crisis, allowing for more investment in capital expenditure, as boards are more open to taking risks and making tough decisions in a volatile environment. Whereas effective boards may constrain CEOs with outside experience due to agency problems in pre-crisis. As for capital expenditure, boards are generally more willing to take risks, tolerant risks and make uncertain strategic decisions in collaboration with CEOs in post-crisis (Claessens et al., 2002; Karaevli & Zajac, 2013), but constrain CEOs with outside experience due to agency problems in pre-crisis. For R&D and total investment, before a crisis, CEOs with outside experience often focus on short-term projects for immediate profits, avoiding long-term investment, such as R&D. In pre-crisis, vigilant boards can monitor such CEOs against under-investment, using their expertise to reduce information asymmetry and conflicted interest between managers and shareholders. After a crisis, however, boards become more cautious and thus against outside experience CEOs who invest more to initiate strategic change due to the unstable environment and may struggle to effectively guide R&D efforts, leading to reduced investment in such initiatives.

The results show a contradiction between capital expenditure and R&D/total investment. This is probably due to the fact that capital expenditure, which involves building tangible assets, is easier to justify, while R&D is considered riskier and less certain in creating concrete value. Additional test for sub-sample analysis indicates that CEO outside experience and board governance influence corporate investment decisions differently between pre- and post-crisis. The results demonstrate a significant difference under different mechanisms, such as financial constraints and bankruptcy possibilities. CEOs with outside experience have a more significant impact in financially constrained firms. On the other hand, board governance is more important for firms with a higher possibility of bankruptcy. Financial constraints can also help mitigate agency problems within the company.

In **Empirical chapter 3**, the results show that the impact of CEO outside experience, corporate governance on corporate financial policy change between pre- and post-crisis. In pre-crisis, CEOs with outside experience are likely to hold less cash due to agency motive to pursue self-interest focusing on career and reputation. In post-crisis, CEOs with outside experience are more likely to hold more cash, playing it safe while waiting for future profitable opportunities. In contrast, such CEOs don't affect the level of leverage the company takes on before a crisis but are more likely to use leverage for strategic change in post-crisis with changing business environment. Boards have precautionary motive to hold more cash after a crisis as a buffer for unexpected turndowns. An effective board also monitors and constrain CEOs, ensuring they invest wisely instead of self-interest pursuit. In pre-crisis, board governance enhances the influence of CEOs with outside experience on firms' cash holdings and leverage, as boards trust these CEOs and collaborate more closely with them. However, after a crisis, board governance dampens the impact of such CEOs on financial policies. This is because CEOs become more cautious, preferring to hold more cash, while boards encourage to use these reserves for strategic change and eventually benefit shareholders. Further, I find that these results are largely driven by companies suffering from high financial constraints to reduce financial cost, and low/medium bankruptcy risk to avoid loss. Surprisingly, the study revealed that financial constraints is an alternative mechanism of corporate governance which can mitigate agency problem.

The empirical results highlight that the CEO experience and the relationship with the board governance matter differently between pre- and post-crisis. It appears that the firms with outside experience are more likely to have a better performance in post-crisis period due to the adaptation in uncertain environment. Whereas firms with outside experience are less likely to have better performance due to the unfamiliarity of firm -specific circumstance. The findings also suggest some important implications for corporate investment decisions by an outside experienced CEO may foster the firm from the adaptive effects of high levels of

corporate investment and buff firms from disruptive effects due to better information processing in the post-crisis. Moreover, the changed relationship is more obvious when using different mechanisms, such as financial constraint, growth opportunities and bankruptcy possibilities.

My findings contribute to the CEO characteristics literature by modeling a more complex relationship between the CEO experience and firm performance considering the crisis effect. Therefore, the research extends the literature on CEO experience in terms of adaptation to the changed business environment. My findings also contribute to the corporate governance literature by addressing the changed function of board governance between pre- and post-crisis.

6.2 Limitation

I acknowledge a few limitations of my research that, in turn, suggest some interesting directions for future research. First, this research examines the relationship between CEO experience and corporate governance in the context of the U.S. system, which may limit the generalizability of our findings to other contexts. This system where dispersed shareholder structures are predominant suggests a special interaction between the CEO and the rest of the company's top executives. On the contrary, in emerging markets, particularly family-owned companies mitigate agency problems and create challenges for CEO succession. Family-owned companies dominate the decision-making process and have a low likelihood of employing outside CEOs. As such, the board's decisions may largely reflect the family's desires, potentially undermining the independence and effectiveness of corporate governance structures. The nature of corporate governance as a monitoring mechanism to keep the CEO address agency problems in pre-crisis period, but as an advising mechanism in terms of stewardship theory in post-crisis period. Such board cannot effectively mitigate agency conflicts in family firms, but stewardship theory plays the key role when the family's interests keep prevailing.

Second, like most research on executive leadership, our study relied on archival data rather than direct observations of CEO behaviors. I relied on CEO experience in terms of outside experience and inside experience to indicate unobservable differences in human capital between CEOs. While we found compelling evidence on the changed impact of CEO outside experience on firm performance, corporate investment decisions and corporate financing decisions between pre- and post-crisis, due to the heavily reliance on archival data my research is unable to examine the underlying reasons.

6.3 Future direction

This study seeks to determine whether the findings on CEO experience and corporate governance in the U.S. context can be generalized to different organizational structures, particularly those in emerging markets and family-owned companies. By understanding these relationships, we hope to provide valuable insights into the generalizability of our findings to other contexts (e.g., in emerging markets) and further contribute to the literature on CEO experience and corporate governance. Future research needs to replicate and extend our model in other organizational contexts and different countries.

Second, in order to fully comprehend the relationship between CEO experience and various types of companies, it may be necessary to supplement quantitative findings with qualitative research, such as case studies and management data analysis. Future research can combine various data sources and research approaches for a more thorough comprehension of the underlying dynamics.

6.4 Managerial implications

This research provides managerial implication for firms to make strategic decisions in terms of investment decisions and financing decisions of companies in the dynamic business, particularly experience the disruption caused by current COVID-19 pandemic, and thus survive and recover from the exogenous shocks after the exogenous shocks. Besides, corporate

strategy may drive the selection of a CEO either with outside experience or inside experience and whether such CEOs much fit in stable period or turbulent period and, in turn, have an impact on firm performance. Further, only when CEOs have power can their preference reflected by their certain characteristics reflect in corporate financial decisions. By presenting evidence of the role that CEO power had in corporate financing policy, corporate directors and policy makers will be empowered and more capable of designing and enacting governance that led to not just profitable but also sensible risk taking.

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