THE UNIVERSITY OF HULL

Corporate Governance in Banks: Empirical Evidence from European Banks

being a Thesis submitted for the Degree of

PhD in Finance

in the University of Hull

by

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MSc Financial Management

November, 2017

ACKNOWLEDGEMENTS

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List of Abbreviations

ASF	The amount of available stable funding
BCBS	Basel Committee on Banking Supervision
GMM	The generalized method of moments
M&A	Mergers and Acquisitions
NACD	National Association of Corporate Directors
NSFR	Net stable funding ratio available stable funding
PTOI	The ratio of pre-tax operating income to assets
OAD	The officials-and-directors
ROAA	Return on average assets
ROC	Return on capital
RWA/TA	The ratio of risk-weighted assets to total assets

CHAPTER 1

Introduction

1.1. Motivation of the thesis

Following the 2007-2009 global financial crisis, researchers widely consider that failures and weaknesses in corporate governance contributed to excessive risk-taking and poor performance of banks (Beltratti and Stulz, 2012, Diamond and Rajan, 2009). Bank governance may be an key cause of bank system failures which may lead to financial crisis. Therefore, the sound corporate governance practices in banks, and whether and how bank governance differs from non-financial firms is imperative for bank-level governance as well as for the country level financial system stability. For the shareholders and other relevant stakeholders, it is equally important to know how the corporate governance of banks affects their economic outcomes. Furthermore, failures of banks during the 2007–2009 financial crisis generated a costly stated-led resolution for tax-payers. Public financing used for bailouts of banks in developed countries on average accounted for 5% GDP, especially, during the period 2007–2009. For example, taxpayers of the United Kingdom, which have large banking sector industry relative to its GDP, had to pay around 19% of GDP for bank bailout cost during the period 2007-2009 (Dermine and Schoenmaker, 2010). Thus, bank governance is not only important for bank-level shareholders and depositors wealth but also crucial for the whole economic system's prosperity and stability.

The regulators and policy-makers also pay attention to sound corporate governance practices of banking organisations. Basel Committee on Banking Supervision (BCBS) published initial guidance for enhancing sound corporate governance practices of banking

organisations in 1999. Basel Committee on Banking Supervision (1999) point out that sound corporate governance practices are vital for banking stability and safety. Basel Committee on Banking Supervision (2006) revised the principles of corporate governance in banks. The Basel Committee on Banking Supervision (2006) documents that board is a crucial issue of bank governance. The board should carry out several responsibilities to enhancing sound corporate governance in banks, that is, the board of directors should be appropriately involved in approving and monitoring the bank's strategy, compensation policies and risk management (BCBS, 2006).

After 07-09 global financial crisis, the Basel Committee on Banking Supervision revisited the guidance and principle of corporate governance in 2010. Basel Committee on Banking Supervision (2010) suggests that effective corporate governance practices are critical to the stability of banking organisations and the economy as a whole. The sound corporate governance practices also display an essential role in maintaining public trust and confidence in the banking system (BCBS, 2010). Given the importance of effective corporate governance practices in banks, the Basel Committee on Banking Supervision (2010) argues that board effectiveness can be improved by appropriate setting of board composition and structure. For instance, the board should have the ability to exercise judgment independent of both the views of executives and outside stakeholders. Basel Committee on Banking Supervision (2010) highlights that board independence is an essential factor of sound bank governance and qualified non-executive members can enhance the board independence on the board. The qualified non-executive board members should have adequate knowledge and experience relevant to each of the financial decisions and business activities in order to enable effective governance and oversight in banks (BCBS, 2010).

The recently released guidance and the principle of corporate governance (BCBS, 2014; BCBS, 2015) provide the several views on the impact of board effectiveness on bank governance. European Central Bank providing guidance suggests that the composition of the board is one of the critical drivers of board effectiveness in banks (ECB, 2016). That is, board size, board independence, and diversity of board members could affect board functions as well as the sound bank governance. The board has ultimate responsibility for the bank's business strategy and financial soundness. Board also should have a duty to establish and monitor the business objectives and strategy, corporate culture, appropriate governance framework in banks (BCBS, 2014). Basel Committee on Banking Supervision (2014) documents that the board should also be a key role in the bank risk management framework. The board effectiveness is a function of bank risk managing outcomes, and as the board is required to ensure that the proper operation of the risk management, compliance and audit functions in banks (BCBS, 2014).

On the other hand, the existing literature on corporate governance of the bank is very limited. The majority of literature only focus on the corporate governance in non-financial firms due to the special nature of banking business and asset. Research on the corporate governance of banks is scattered that related papers are shown in diverse journals, and cross-references are normally lacking (Adams and Funk, 2012). Therefore, Haan and Vlahu (2015) suggest that it is important to extend the research on corporate governance in banks, as the corporate governance research based on non-financial firms' shareholder value could have limited applicability in research on the corporate governance of banks. Firstly, the shareholder value based research of corporate governance might ignore the regulatory distortions, debtholder (particularly depositors) and other stakeholders' interests. Secondly, banks are highly leveraged firms that more than 90 percentage of the

capital is held by debtholders and depositors, while they have less power to influence the bank governing decisions in order to protect their wealth and investment returns (Laeven, 2012). Thus, research of bank governance focused on maximizing the total value of the bank, the total market value of the equity and the debt is important. Moreover, the failures of banks could cause high cost for all participants in the economy who are not shareholders or debtholders of banks. It is also critical for researchers and policymakers to think about the role of bank governance in the society. Sound governance could have potential benefits for the safety of the financial system. The social planner (government and regulator) regulate and restrict the bank business strategy, capital structure, and investment activities in order to enhance the stability of the financial system (Walter, 2004). Therefore, bank governance based research could help policymakers, regulators and society in general to understand the interactions between banking regulation and bank governance as well as the soundness of the financial system as a whole.

As predicted by the Principal-agent theory, bank governance problems arise from the separation of ownership and management that managers might not act in maximizing owner's value (Jensen and Meckling, 1976). In this sense, corporate governance in banks faces problems and related agency cost similar to non-financial firms. However, corporate governance mechanisms could also be shaped and weaken by the banks' unique features. Hence, bank governance differs from the corporate governance of a non-financial firm in several ways. First, the effectiveness of corporate governance mechanisms might be challenged by the complex conflicts of interest among the equity holders, debtholders, regulators and policymakers. Commercial banks' performance is based on the maturity transformation in which the bank is financing its funding from short-term liquidity deposit and invest in long-term illiquidity investment projects (loan) to generate profits (Diamond

and Dybvig, 1983). This nature of banking business motivates the shareholder to favour stock return through risk-shifting from shareholders to debtholders. That is, shareholders prefer to invest in any excess risky projects to gain stock returns while creditors only can claim fixed interest payment but bear the excess risk. This traditional shareholder value based corporate governance might be ineffective in dealing with shareholder-debtholder conflicts in banks (Becht et al., 2011). Second, balance sheet opacity and banking business complexity could challenge the board's effectiveness since directors are appointed to the bank board to monitor management. Informational asymmetries in banks are more severe than non-financial firms (Levine, 2004, Laeven, 2013). This might hinder board directors to effectively monitor on bank loan projects as the loan quality could be readily hidden for long periods and the bank portfolios are difficult for the board to measure and verify risks (Flannery et al., 2013). The empirical literature documents the conventional identification of sound corporate governance for non-financial firms might work ineffectively in banks (Beltratti and Stulz, 2012). Because of the complexity and opacity the bank board features - such as size, expert composition, busyness, independence - are different from non-financial firms in order to govern bank well (Adams and Mehran, 2012). Third, in the banking industry, shareholder-managers conflicts could affect bank risk-taking. Bankers tend to choose less risky investment projects than desired by shareholders (Pathan, 2009). This is because bank managers hold nondiversifiable personal wealth investment (such as a career, human capital or stock grants) in the bank they run and their loss is substantial if the bank goes bankrupt. This different risk preference between managers and shareholders weaken the effectiveness of shareholder based corporate governance mechanisms in controlling risks in banks (Pathan, 2009). Finally, banks are highly regulated institutions under regulation and supervision. The regulator takes over the monitoring role to act in the interests of a large number of small depositors of banks as the monitoring is costly for dispersive depositors (Polizatto,

1992). The objective of regulators to participate in bank governance is to ensure the safety and soundness of the financial institution that might create conflicts between shareholders and outside supervisors and regulators (Adams and Mehran, 2003). Thus, the reactions between bank-level corporate governance mechanisms and regulations could have an effect on bank governance effectiveness. The regulations could impact firm-level monitoring, managerial discretion and managerial decisions process, while these impacts of regulation on bank governance effectiveness are unclear (Hagendorff et al., 2010).

Board is set as essential corporate governance mechanism for owners to control managers to act in best interest of owners and maximizing their value in firms (Fama, 1980a, Fama and Jensen, 1983b). The prime objectives for board directors are to perform the monitoring and advising functions. For the supervision objectives, the board directors work as the monitor on management team so as to ensure that their behaviour is in line with the interests of the shareholders (Adams and Ferreira, 2007, Bathala and Rao, 1995). The board directors are also considered as crucial human capital for a firm that they devote their professional skills, industry experience, and external resource to improve firm's managerial decision making as well as to maximize shareholder value (Bebchuk et al., 2008, Adams and Ferreira, 2007). In the context of the banking industry, the Basel Committee on Banking Supervision (BCBS) suggests that the board displays a key role in corporate governance in banks (BCBS, 2014). Given intense regulation, higher informational asymmetries, and complexity of the banking business, bank board becomes a key mechanism to monitor managers' behaviour and to advise them on banking business strategy and management (De Andres and Vallelado, 2008). The existing literature highlights the importance of board effectiveness for bank governance and provides several empirical studies to explain how various board attributes drive the effectiveness

of board directors in monitoring and advising managers in the banking industry (Pathan and Faff, 2013, Pathan, 2009, Elyasiani and Zhang, 2015, Adams et al., 2005a). However, empirical results on the link between board attributes and bank economic outcomes (such as risk-taking, performance, liquidity and capital quality) are mixed and limited. The next sub-section discuss in more detail about the research development and unanswered questions in this research field.

1.2. Research gap

Board directors are the cornerstone of an effective internal corporate governance approach that controls and manage the bank risk-taking at the top. Board directors take the prime roles as monitors and advisors to help bank managers to enhance the financial stability and safety. Board of directors should perform their responsibility effectively for monitoring bank investment strategy, bank asset quality and design the management framework. However, literature studying the relation between board characteristics and bank risk-taking is strikingly limited. Furthermore, the performance of the board director's acting as roles of the monitors and advisors cannot be observed directly. The majority of existing related research uses various features of board directors to measure the impact of the board on bank economic outcomes. The related research investigated relations between various board attributes, such as board independence (Akhigbe and Martin, 2006), board size (Pathan and Faff, 2013), board diversity (Berger et al., 2014), busy directors[1] (Elyasiani and Zhang, 2015), and bank risk-taking (Aebi et al., 2012). However, findings of the empirical research are inconclusive and ambiguous. For instance, Akhigbe and Martin (2006) provide evidence showing that board independence

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[1] The busy director is an independent director who holds more than two seats on different corporation boards (Ferris et al., 2003).

lowers the bank stock volatility over the long term. While Erkens, Hung, and Matos (2012) document that board independence has an insignificant impact on bank risk during the financial crisis. Therefore, further research on which board attributes matter more for the board effectiveness and how these features impact on bank risk-taking is essential.

Turning to the impact of board effectiveness on bank performance, the related research explored different board characteristics on the board monitoring effectiveness on manager behaviours and bank performance. Similar to research on bank governance and risk-taking, the empirical studies focusing on the relationship between the board directors and bank performance are mixed and limited. For example, Andres and Vallelado (2008) argue that there is an inverted U-shaped relation between board size and performance in large bank holding companies. The empirical evidence from US commercial banks presents a positive linkage between board size and bank performance (Aebi et al., 2012). On the other hand, Erkens et al. (2012) argue that board size might not have an impact on bank performance. Especially, board independence could work as an essential factor for board effectiveness in monitoring and advising performance. The independence of the board could be beneficial for bank performance as independent directors tend to focus on proper management monitoring in order to protect their reputation on competitive directorship market (Pathan, 2009, Fama and Jensen, 1983b). However, the empirical evidence focusing on the impact of board independence on performance are mixed. The board independence could have a negative impact on bank performance (Aebi et al., 2012), or could be positively related (Cornett et al., 2009). Thus, there is a need for further research to investigate how the board effectively monitors managers and relevant performance in banks.

Moreover, conventional independence board measures (i.e. number of outside board directors) fails to account for more nuanced board dynamics and board effectiveness. Recent social networks based research suggest that social ties between board members are important for board independence and its impacts on firm economic performance. Board members are likely to build personal networks with each other if they share various demography similarities including age, education, occupation, gender and nationality (McPherson et al., 2001b, Lee et al., 2014). There are extensive empirical studies documenting that board members' social ties have significant impacts on various economic outcomes of non-financial firms (Cooney et al., 2015, Ishii and Xuan, 2014, Fracassi, 2016). However, the impacts of the social ties on the effectiveness of bank governance and bank economic outcomes are still unknown. More importantly, chair and CEO take the vital roles on the bank board, and their social based relation could have potential impacts on bank governance and economic outcomes. Existing bank governance based research only pay limited attention to the impacts of Chair-CEO demography dissimilarities (social ties) on the bank performance and risk-taking.

The majority of literature on bank governance is focused on how board attributes affect banks' financial performance and risk-taking (García-Meca et al., 2015, Aebi et al., 2012, Pathan, 2009). However, as the bank assets is highly leveraged and opaque, bank liquidity and capital management are also crucial for bank corporate policies (Almeida et al., 2004). Board effectiveness and CEO power could also have impacts on the managerial decision of bank liquidity and capital management. Furthermore, banks are intensively regulated financial institutions that bank governance mechanisms could shape the prudential regulation and supervision by external regulators and policymakers. However, there is limited literature exploring the role of board features and CEO power in the bank

liquidity and capital management and the reaction between bank governance and external capital regulations.

The main body of bank governance based studies use US banking data set to study in corporate governance in US banking industry (Pathan and Faff, 2013, Adams and Mehran, 2012, Elyasiani and Zhang, 2015). The research exploring in corporate governance in European industry, where banks are operating under different external regulations and internal corporate governance mechanisms, are limited. For instance, as opposed to a US bank board model (one-tier), European bank board structure is mixed with both models of the one-tier and two-tier board. This feature of board structure in European banks shows that changing in average board size is more stable (Haan and Vlahu, 2016). The demography attributes of board directors in European banks also present more diversified (García-Meca et al., 2015). As the dimensions of governance structure are endogenous in various firms and the effectiveness of governance mechanisms could be shaped by a variety of firm-level dimensions (Hermalin and Weisbach, 2001).

Further, there is a need to explore the interactions between banking regulations and the various settings of the corporate governance mechanisms in European banks. Empirical research (Li and Song, 2013) reports that the difference in cross-country banking regulation could affect internal corporate governance mechanisms in individual banks. Thus, given the uniqueness of European banks, it is worth to explore the relation between board effectiveness and economic outcomes in European banks.

1.3. Research questions

Based on the abovementioned existing bank governance research, we address these following research questions that aim to explore the impact of various chair-CEO demography dissimilarities, bank board attributes, CEO power, and chair characteristics on bank risk-taking, performance, quality of capital and liquidity:

- How do chair-CEO demography dissimilarities impact on bank risk-taking and performance?

- How do chair characteristics impact on bank risk-taking and performance?

- How do bank board characteristics effect on bank risk-taking and performance?

- How does the powerful bank CEO affect the quality of bank capital and liquidity?

- How do bank board characteristics impact on the quality of bank capital and liquidity?

1.4. Contributions of the thesis to the literature

Our study contributes to the literature on bank governance by identifying chair-CEO demography dissimilarities that affect a board's ability to monitor and advice management. The research presented in the thesis extends existing bank governance research in several ways. Firstly, we use the demography dissimilarities between CEO and Chair to address chair-CEO relation and its impact on bank risk management. We provide initial empirical evidence showing that chair-CEO age dissimilarity could help to reduce bank risk-taking behaviour. Secondly, we also initially test the impact of chair characteristics on bank risk-taking. Our research fills a research gap by using measures that capture the group dynamics where existing bank governance research uses only conventional measures for board effectiveness. The social ties between CEO and board directors could effect on the

different group decision-making processes, such as the corporate policy, managerial financial decision and business strategy (Hwang and Kim, 2009). In the context of bank governance, the board of directors have the ultimate duty to display as the roles of monitors and advisors to monitoring on managerial investment decisions and risk-taking by CEO and top management team (Pathan, 2009, Hagendorff et al., 2007). Our results suggest that age difference between chair and CEO is a matter for corporate governance and related economic outcomes of the bank.

Thirdly, we contribute to the literature on the relationship between the board of directors and bank performance. There are only a few studies on the impact of board effectiveness on bank performance (Adams and Mehran, 2012, De Andres and Vallelado, 2008, Pathan and Faff, 2013). Our empirical findings extend this field by providing initial empirical evidence investigating the impacts of chair characteristics and chair-CEO dissimilarities on banks' performance. Fourthly, we also contribute to social networks literature by examining the effect of social ties impact of chair-CEO age dissimilarity on corporate governance and performance in banks.

Our study adds to a growing literature on the effect of bank governance on bank liquidity management. As a fifth contribution, to the best of our knowledge, our work might be the first study looking at the link between the CEO power and its impact on bank liquidity and capital quality. We initially test the shareholder controlled board and how it impacts the quality of bank liquidity and capital. Our findings suggest that the regulators and policymakers should mind the effect of conflicts between shareholders and debtholders in banks. European banks are running under different internal mechanisms structure and external supervisions, little is known about the determinants of board effectiveness in

European banks, our empirical findings also extend this research field and provide empirical evidence to help related stakeholders to understand and improve the bank governance in European banks. Finally, we contribute to the strand of the literature on the influence of board busyness on bank economic outcomes and corporate behaviours as the majority of existing literature excludes the sample of the financial companies.

1.5. Main findings of the thesis

Research questions presented above are explored in three empirical chapters (Chapters 3, 4 and 5) using a sample of the largest 96 listed banks in 16 European countries over the 2010 and 2014 period. In the first empirical chapter, we test how various dissimilarities between chair and CEO on a range of bank risks. We use age, gender and prior industry experience to measure dissimilarities between chair and CEO. We also test how chair characteristics, including chair tenure, power, and her busyness, influence on different banks risk-taking measures. We find that the age gap between chair and CEO have a negative effect on bank risks. We document that the difference of generation between chair and CEO can affect the outcome of the board governing as well as the managing bank risk-taking on the board level. Our results hold after controlling for various variables and other robustness checks.

In the second empirical chapter, we explore the relationship between various demography dissimilarities between chair and CEO and bank performance. We find that there is a significant and positive impact of chair-CEO age dissimilarity on bank performance measured as financial profitability. Our empirical results are consistent with previous studies (Goergen et al., 2015) that substantial chair-CEO age difference can increase board monitoring effectiveness on managers and improve firm performance. We further

confirm this effect in banks. We find that other demography dissimilarities, such as the difference in the gender and industry experience between the chair and the CEO, does not have a significant impact on bank performance.

In the third empirical chapter, we investigate the relationship between the board of directors and bank capital and liquidity quality. Our findings suggest that powerful CEO has a positive impact on the bank liquidity quality, measured by net stable funding ratio (NSSFR) and available amount of stable funding (ASF). The powerful CEO tends to hold more stable funding resources to improve bank liquidity quality. The shareholder controlled board (measured by board size and independence) could have a negative effect on bank capital quality. Moreover, the busy board of directors could improve the board effectiveness of bank capital management. Our results show that board busyness is positively related to bank capital quality as the busy board director offers quality monitoring and advising to bank governance.

1.6. Structure of the thesis

The remainder of the thesis is organized as follows. Chapter 2 reviews the literature on corporate governance in both non-financial firms and financial firms. We start by reviewing the theoretical framework of board directors in corporate governance and focus on the theory of board structure, board monitor and advisory functions. Subsequently, we discuss the characteristics of board directors and how board attributes influence corporate governance and firm economic outcomes. Chapter 3 is the first empirical study on the impact of the age difference between chair and CEO on a range of bank risks. Chapter 4 is the second empirical study reporting analyses of the relationship between chair-CEO

dissimilarities and bank performance, and the impact of another board attribute on bank performance. Chapter 5 is the third empirical study investigating the relationship between bank governance and bank capital and liquidity quality. Chapter 6 summarizes our findings and concludes.

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CHAPTER 2

Literature review

2.1. Introduction

The separation of ownership and control lead to the increasing of agency cost in organizations and corporations that results several potential agency problems continued to impair the value and performance of firm (Fama and Jensen, 1983). The agency problems in corporate governance are related to various ways in which that managers are not acting well in the owner's interests so as to destroy firm value and to affect economic performance of firm in the companies with strong managerial power and dispersed shareholders in Anglos-Saxon countries as well as those companies with a controlling shareholder and minority shareholders (Jensen and Ruback, 1983). In details, these agency problems are generally presented in different typical managerial behaviours including insufficient effort, extravagant investments, self-dealing and entrenchment building in firms (Tirole, 2010). In the principal-agent viewpoint, the board of directors are considered as essential a mechanism in which that represent the owners to work as the monitors on managers in order to align the various conflicts among between owners and managers (Fama and Jensen, 1983). Board effectiveness is crucial for corporate governance as the board directors take the two key roles, monitor and advisor, in the boardroom to ensure the investors can gain their returns from investment in the firm and to maximize shareholder value. The recent theoretical studies encompass at the optimal structure of board in which that theory predicts how owners and managers to produce the progress of structuring the corporation board in an optimal way to ensure effective governance (Adams and Ferreira, 2007). The existing literature explores the different features of the board of director, including board structure, independence, social networks

in the boardroom, board composition and board demography diversity, and how these various settings and characteristics impact on corporate governance quality and related firm economic outcomes (Raheja, 2005). Relevant investigations based on board directors provide an extensive empirical evidence based on both financial and non-financial companies to explain the importance of board directors in corporate governance, and to contribute to guide firms to practice good corporate governance in the real business world (Adams and Ferreira, 2009; Pathan, 2009; Minton et al., 2014;). In this chapter, we review the relevant theoretical and empirical research studying in the role of board director in corporate governance.

2.2. Board of directors: theoretical background

The board has the key role of ultimate legal authority in decision-making regarding the firm. The primary task for the board is to review and advise the corporation's plan, business strategies and financial decisions so as to represent shareholders' interest well. The agency theory argues that the management might not engage in maximizing shareholders value in the firm (Fama and Jensen, 1983). Thus, the board naturally takes on the role of the monitoring on management to prevent managers' behaviours.

Board of directors only have limited time to provide advice on the corporate policy and business strategy. The effectiveness of the board's advisory on management depends on the quality of information provided by the managers. The managers are unlikely to provide quality information to board directors if the board of directors intensively monitor on managers. The insider managers charge with the firm operation, business strategy, and corporate policy decision-making. Thus, the information cost for CEO is lower than outsiders including stakeholders and board directors (Fama and Jensen, 1983). The

informed CEO might not act well with the best interest of shareholders. This information asymmetry between internal managers and external shareholders might result in CEO self-sever behaviours that could destroy shareholder value (Tirole, 2010). Board is set as essential internal mechanisms to maximize the shareholder value (Jensen and Ruback, 1983). Adams and Ferreira (2007) argue that designing optimal board structure could be a useful way for a shareholder to dealing with this information asymmetry between CEO and board directors who are normally appointed by shareholders to present their interests in firms. The CEO can receive more helpful advice when he shares more information with the board. On the other hand, he has to face more intensive monitoring by the well-informed board. That is, the CEO faces a trade-off in providing information to the board (Adams and Ferreira, 2007).

The theory of "friendly board" (Adams and Ferreira, 2007) models that the shareholders might need to face a cost when the board is less independent. This is because a friendly board might provide better advice to managers as the board's preferences are aligned with those of the managers. Adams and Ferreira (2007) suggest that it might be better for shareholders to have the freedom to choose the optimal board structure. This will avail them to change the role of the board between monitoring and advising to match the firm's corporate governance needs. Meanwhile, it is important to also consider the board's advisory role when evaluating the board's effectiveness and composition. As the friendly board might not act in the shareholder's best interest, Adams & Ferreira (2007) also suggest that governance mechanisms, such as audit committee, might replace the board as the monitor when the friendly board is optimal.

The friendly board has both costs and benefits for corporate governance in firms. Empirical research (Schmidt, 2015) tests this impact on the friendly board on the M&A performance. Schmidt (2015) use the social ties between the CEO and board members to address the board's independence and find out that the bidder gain more return when the potential value of board advice is high. This evidence suggests that the contribution of friendly boards to the shareholder is more dependent on the firms' specific needs. Given the dual functions of board directors, it is also important to understand the impact of CEO power on the of board effectiveness. The board directors' failure to perform the dual function of monitoring the firm's management might be the major reason for corporate governance failures. Especially, regulators tend to support outside director dominated boards. Combs et al. (2007) provide the evidence shows that this may not always benefit shareholders and that CEO power should be considered when appointing the board of directors. This is because the powerful CEOs can use their power to control the information flow between the board of directors and management team. This inherent information asymmetry resulted from powerful CEOs could negatively effect board effectiveness (Tirole, 2010). Empirical evidence also finds that the influence of powerful CEOs could increase the cost of board monitoring as well as decline the value of board directors as the advisors on firm's decision-making process (Core, Holthausen, and Larcker, 1999a).

Theoretically, the board composition is driven by the board directors' nomination which is the result of the interaction between board composition and the allocation of the decision-making authority. Here, the board composition serves a strategic purpose, rather than the trade off the monitoring between advising functions. Relevant studies model various situations in which shareholders chose different board compositions to deal with

the cost of CEO entrenchment in firms (Baldenius, Melumad, and Meng, 2014; Chakraborty and Yilmaz, 2011; Harris and Raviv, 2010).

To explore the relation between board domination process and CEO power, Baldeniusa et al. (2014) develop a model outlining these links between the board effectiveness and CEO power. In their model, Baldeniusa et al. (2014) assess how CEO influences the flow of information within the firm as well as the board composition and show that there is a non-monotonic relationship between CEO effect and board composition where the firm's board election process is controlled by the shareholders. In the firms where shareholders control the nomination of directors, a shareholder may structure an advisor-heavy board. In firms with the entrenched CEO, the CEO could dominate the election of the board of directors. Thus, shareholders may assemble a monitor-heavy board against the powerful CEO in order to protect their investment and interests. Furthermore, in those firms where agency cost is high or corporate governance is affected by CEO entrenchment, shareholders may regulate prudent internal monitoring rules. Regarding this case, Baldeniusa et al. (2014) model predict that this intensive monitoring of the board cannot improve the quality of a firm's corporate governance.

The preference of the decision-making authority could be varied as shareholders maximize their value by selecting investment projects (Harris and Raviv, 2005). On the other hand, the CEO is biased toward larger investments, possibly due to empire benefits, and aims to maximize her/his personal wealth. Therefore the CEO may control the director nomination process due to her self-interest. The information takes an important role in the board director nomination process, as the shareholders can only design the board composition depending on their allocation of information from the management.

However, the intensive monitoring of managers may lead to the increasing cost of requiring information for shareholders and directors. Thus, powerful CEOs tend to assemble a board that is excessively focused on monitoring. In these type of board with the excessively intensive monitoring function, directors are less likely to generate incrementally new information and, therefore, more willing to delegate decision-making power to the CEO (Adams and Ferreira, 2007). The shareholder may choose a more advisory-heavy board in order to limit the threat of CEO entrenchment as well as to lower the cost of generating information from management. This desirability of biased board composition choice is set as a strategy for shareholders to react to the powerful CEO (Baldenius et al., 2014).

The model by Harris and Raviv (2010) studies the impact of the shareholders' control power CEO entrenchment on board members' election. Harris and Raviv (2010) suggest that private information, delegation, communication, and agency considerations display an important role in the process of shareholders controlling the corporate decisions. Shareholders are disadvantaged to generate private or managerial information, and this leads to shareholder failing to benefit themselves by controlling the major corporate decisions. Therefore, the shareholders may choose the board member whose investment preference is close to the management. This friendly board, where the board is focusing on the function of adviser on management, is likely to improve the communicational effectiveness and information flow between the board and the management team.

2.3. Board structure and CEO entrenchment

The unitary (single) board and two (dual) board are two typical structures of corporate board structures in the most countries. A unitary (single) board structure consists of both

managers and outside directors on board. The single board display the functions of the advisory and monitoring functions on the same group of board directors. A two-tier (dual) board structure consists of the management board and a separate supervisory board that excludes managers. The supervisory board performs the functions of monitoring and overseeing the firm's activities. Through law or tradition, most countries have mandated one of these two structures. Based on different law systems or traditions, the United States and the United Kingdom provide examples of unitary board structures, while the firms tend to provide examples of the two-tier board structure in Germany and Austria. The monitoring performance of the board and information cost for an outside director could be shaped by the board structure (Adams and Ferreira, 2007).

Adams and Ferreira (2007) suggest that the increasing intensive board monitoring raise in the single board structure and such intensive board monitoring could limit CEO's willingness to share information with outside directors on board. For the dual board structure, the needs for intensive monitoring are declined as the dual board structure has its separation of advisory and monitoring functions. For the closely held firms, Graziano, and Luporini (2012) provide the theoretical model presenting that a dual board structure is more efficient for the closely held firms with professional managers.

Empirically, Tušek, Filipović, and Pokrovac (2009) provide an empirical assessment showing that dual board with audit committee members could improve the quality of the firm's accounting information in the Republic of Croatia. By using the firm data from Germany and Australia, Velte (2010) find out the supervisory board independence could have a positive impact on firm performance. Wagner (2011) use a sample of 273 German firms to study the relationship between the number of the employee representatives on

the supervisory board and firm performance. Wagner (2011) reports that there is no significant relationship between a supervisory board with employee representatives and productivity or profit from firms. We find that firms with severe asymmetric information are more likely to opt for a unitary board structure, while firms with potential for private benefits extraction are more likely to utilize a two-tier board structure. The choice of board structure depends on the asymmetric information (Belot et al., 2014). By using of a sample of French listed firms, Belot et al. (2014) find out that firms with severe asymmetric information are more likely to choose a unitary board structure, and the dual board could have a greater monitoring intensity that improves the sensitivity of CEO turnover to firm performance.

Further, Ding, Wu, Li, and Jia (2010) find out the supervisory board activities, and board size had no effect on managers' pay-performance sensitivities before the amendment of the Company Law in 2005 in China. Thus, the board effectiveness might be depending on supervisor board characteristics and external regulatory factors (Ding, Wu, Li, and Jia, 2010). Shan (2013) studies the impact of supervisor board characteristics on direct transfer problem that the controlling shareholders transfer resources from the firm for their own benefit. Using hand-collected data of 117 Chinese listed companies, Shan (2013) find out various supervisor board characteristics, including supervisory board size, number of professional supervisors, and the number of supervisory board meetings, have no impact on director direct transfer problem in Chinese listed firms. However, Ran et al. (2015) provide empirical evidence showing that supervisory board with more accounting or academic background, and female supervisors could improve the accounting information quality in China.

Turn to CEO entrenchment; the managers are appointed to act in the interests of the shareholder, while agency problem increases when management is entrenched, and this destroys the shareholder value. Entrenched CEOs are subject to various pressures to increase the shareholder value. Those monitoring the managers include the managerial labour market (Fama, 1980), board directors (Fama and Jensen, 1983), product market competition (Hart, 1983) and the threat of takeover (Jensen and Ruback, 1983). If these governance mechanisms do not monitor CEOs effectively, then, for example, the powerful CEO can oppose investment projects that would increase the shareholder wealth (Morck, Shleifer, and Vishny, 1990).

To address the effect of manager entrenchment on firm value and its economic outcomes, related theories model the various behaviours of entrenched CEOs and the impacts of this managerial decision on the shareholder interests (Shleifer and Vishny, 1989). Powerful CEOs tend to choose manager-specific investment projects. These manager-specific investments may create a high cost for shareholders and are less likely to increase shareholder value. In contrast, CEOs can benefit themselves by making the manager-specific investment. Shleifer and Vishny (1989) suggest that the decision of manager-specific investment can increase the cost for shareholders to replace the managers. Thus, manager favoured investment could be set as the strategy for managers to increase their replacement costs or personal value for shareholders. Making the manager-specific investment also enhances the manager power as she can obtain greater power in firm strategy decision process.

Research on the relation between board monitoring on management performance and powerful CEO turnover sheds different explanations for CEO turnover process and its

impact on shareholder (firm) value. Shareholder effective control view argues that if the shareholder or board govern the firm in an effective way, then poor performance CEO should be replaced as such CEO will not be maximizing the shareholder value (Rajan, Servaes, and Zingales, 2000). The board or shareholders are likely to suffer transaction cost resulted from the CEO replacement, but this action can enable shareholders to ensure that they control the firm in an effective way (Shleifer and Vishny, 1986). On the other hand, market reaction view suggests that the corporate board could be reluctant to fire the under-performing CEOs in the public firms (Dow, 2013). As the replacement, the public firm's CEO could release a negative signal to the capital market that could lead to increase the shareholder capital cost. The news of firing CEO sends a negative signal to investors that market could conclude that replacement of CEO indicates the negative perspective on firm future. This firing decision also reflects the boards' inability and failure to incentive CEO to improve the performance of the firm. Dow (2013) documents that board takes an important role in the relation between CEO entrenchment and firm value. For large public firms, there is the information asymmetry between insiders and outside shareholders, Dow (2013) find out that newly appointed managers are likely to issue the new equity to destroy shareholder value.

The empirical research directly studies the influence of the CEO entrenchment, such as turnover, tenure, duality and retirement, on the corporate decision making, corporate governance, business strategy and firm performance. The CEO turnover might be determined by various factors, such as prior performance, board composition, firm characteristics, and industry effect (Brunello, Graziano, and Parigi, 2003; Jenter and Kanaan, 2015; Zajac and Westphal, 1996). The study by Weisbach (1988) investigates the relationship between corporate governance and CEO turnover and finds that the CEO turnover is associated with the monitoring by the outside directors. Weisbach (1988)

shows that the CEO turnover is driven by the composition of the board. CEO turnover is stronger in those firms where the outside directors dominate the board. The powerful board tend to control the election of the CEO and the board with more outside director prefer to change the CEO characteristics in the direction of their demographic profile (Zajac and Westphal, 1996). Empirical evidence (Brunello et al., 2003) from listed companies in the Italian stock market suggests that the CEO turnover is negatively related to the firm performance when the board is dominated by insiders or controlling shareholders. They argue that the board controlled by the CEO could increase the agency costs as the CEO ownership motives her or him to replace the outside directors on the board. That is, the powerful CEO might determine the shareholder value. Also, CEO turnover is a matter for the firm's optimal investment and financing policies. By analysing data consisted of 940 CEO replacements over the 1992–2002 period, Alderson et al. (2014) demonstrate that CEO turnover could impact the firm's managerial incentive policy and the changing of the firm's risk profile is significantly related to the CEO turnover. They argue that CEO power could increase the agency cost for a shareholder in interfering with the riskier policy-making process in the firm.

Likewise, evidence (Brickley, Linck, and Coles, 1999) focusing on the CEO retirement in largest U.S. companies report that there is a strong relation between CEO retirement and board selection process. Brickley, Linck, and Coles (1999) suggest that that large firms need to consider the potential impacts of CEO on the selecting outside directors. The research (Puffer and Weintrop, 1995) analyse the effect of CEO power on the composition of the board of directors report similar results showing that the CEO retirement could influence on the board member selection process for the board with a smaller proportion of internal director. The CEO retirement could influence the decision-making of the R&D investment policy in the firms (Barker and Mueller, 2002), suggesting

the importance of understanding the effect of CEO retirement on the board decision-making and corporate policy.

On the other hand, the separation of chair and CEO on the board might lead to a potential cost as well as the potential benefits for shareholders and regulators. This separation of CEO and chair will lower agency costs in the corporate governance and improve the board's monitoring performance on the management. On the other hand, the earlier empirical study (Brickley, Coles, and Jarrell, 1997) argues that this separation of CEO and chairman might face higher costs in the largest firms.

Empirically, the evidence (Nahar and Abdullah, 2004) from emerging market shows that there is no relationship between the CEO duality and the firm performance. Nahar and Abdullah (2004) employ various financial ratios, such as ROA, ROE, EPS and profitability ratios, to measure the firm performance and find out that CEO duality is unlikely to influence the firm performance. This result is consistent after controlling for the board structure and leadership. Using international data from 12 countries, Boyd (1995) argues that the CEO duality may not have a significant effect on the firm performance. They suggest that CEO duality might not lead to higher agency cost for shareholder and could have a negative impact on the firm performance. Similarly, Goyal and Park (2002) investigate the effect of CEO power on the firm performance and suggests that the powerful CEO might influence the board independence and the firm's economic outcomes. Goyal and Park (2002) also provide the evidence showing that the lack of independent leadership and CEO duality makes it hard for a shareholder to replace the underperforming managers in companies and the firm performance is significantly lower where the firm's CEO and Chairman positions are combined.

The literature argues that various board characteristics could limit the effect of the powerful CEO on company performance (Ramdani and Witteloostuijn, 2010). Ramdani and Witteloostuijn (2010) suggest that CEO duality is a matter for company performance under different corporate governance and corporate environments. The findings (Ramdani and Witteloostuijn, 2010) suggest that the board monitoring and CEO duality varies across the conditional quantiles of the distribution of firm performance. Moreover, a studying (Elsayed, 2007) in the Egyptian listed firms studying the relation between firm performance and CEO duality shows the various effects of CEO duality on the performance when they control for the industry effects in their model. Elsayed (2007) finds out that CEO duality is significantly related to the firm performance when the corporate performance is low.

Evidence on the relationship between the CEO duality and firm performance is mixed. (Dey, Engel, and Liu, 2011) uses the event study approach to explore the relationship between market reaction and firms' decisions when CEO duality is observed. They find that when investors push the board to split the role of CEO and chair, the firm receives a low stock return after the announcement as well as the subsequent corporate performance is lower. Their finding also shows that the separation of the CEO and chairman position has a significant negative impact on the pay-performance sensitivity of CEO compensation contracts. Thus, the implication of CEO duality in the corporate governance should take into account the market response for CEO duality related decisions.

Turning to the CEO power, the powerful CEO as measures of duality, turnover, retirement, and firm involvement is widely believed to be a key role in the corporate governance. The related study by Adams, Almeida, and Ferreira (2005b) aims to explore how the powerful CEO influences corporate decision-making and firm performance. They use different status of CEO to address the CEO power, such as the founder CEO, formal positions, and role on the board. Their main finding is that when the firm is run by a CEO who has more decision-making power, the firm suffers more variable stock return and poor financial performance. This implies that the organisational settings of CEO are a matter for the firm performance. In a similar vein, Bebchuk, Cremers, and Peyer (2006) also suggest that CEO power might increase agency costs. Bebchuk, Cremers, and Peyer (2006) provide evidence showing that the powerful CEO is associated with the lower firm value and poor accounting profitability. Further, Bebchuk, Cremers, and Peyer (2006) suggest that the powerful CEO might lead to more conflicts between management and shareholders and this increasing agency cost harms firm performance. The other evidence, Liu and Jiraporn (2010) provide evidence that CEO power related cost is a matter for the corporate financing cost. The powerful CEO also affect the firm's cash balance and cash holding policy. The firm with powerful CEO is likely to have a large gap between actual and target cash levels each year (Jiang and Lie, 2016). Their study shows CEOs decide cash policy by their personal preference. Thus, the entrenched firms carry higher cash balances or disburse cash in excess of the target.

Further, the powerful CEO also tends to harm the board monitoring quality. The empirical evidence (Morse, Nanda, and Seru, 2011) reports that the powerful CEO is likely to influence the board evaluating process on management performance and they tend to control the performance measure approach to rigging incentive pay. By using U.S. data, Morse, Nanda, and Seru (2011) find out that the powerful CEO increase their human

capital and firm volatility by controlling the board evaluating process on the firm performance. Meanwhile, the CEO power is widely believed to play a major role in the corporation's merger and acquisitions. The powerful CEO is likely to make more mergers and acquisitions (M&A) and invest more in the research and development projects (Fahlenbrach, 2009). Fahlenbrach (2009) suggests that firms hire the founder CEOs to receive the excess return. The CEO power might originate from the incentive structure, board monitoring ability and outside regulations (Weisbach, 1988). By using the CEO incentive proxy to address the CEO power, Weisbach (1988) finds that the powerful CEO is not related to the stock return after the M&A announcement. Weisbach (1988) underlines that CEO power does not contribute to the value creation in the takeover process.

The majority of existing literature which study various impacts of CEO entrenchment (power, turnover, duality, retirement, etc.) on corporate governance and firm economic outcomes is only focused on the non-financial companies. There are only a handful of studies that focus on the CEO and corporate outcomes in financial institutions. By studying the relationship between CEO power and microfinance firms, Galema, Lensink, and Mersland (2012) analyse the corporate governance mechanisms in the microfinance institutions demonstrate that powerful CEO tend to make bad corporate decisions and increase risk when they have more decision-making freedom.

The CEO characteristics based research suggest the CEO demography features are a matter for corporate governance and firm performance (Faccio, Marchica, and Mura, 2016; Khan and Vieito, 2013). The empirical studying (Khan and Vieito, 2013) from US-listed firms shows that the female CEO managed firm exhibited the same performance as

the firm managed by the male CEO. Khan and Vieito (2013) argue that relation between the female CEO and firm risk level could depend on the compensation structure that firm managed by female CEO has less risk level if CEO is paid by the compensation package with less risky components. Faccio et al. (2016) document that the CEO gender could affect the firm risk-taking and capital allocation efficiency, their international empirical analysis shows that the female CEO managed firm has lower leverage, less volatile earnings, and a higher chance of survival than otherwise similar firms run by male CEOs.

Turning to the banking industry, the CEOs in banks tend to hold concentrated wealth, such as non-diversifiable human capital or ownership incentive. So the managers are expected to protect these by selecting safe assets or diversified investment projects (May, 1995). On the other hand, the bank's shareholder normally holds a diversifiable portfolio, and they are likely to motive the manager to undertake any investment projects that might increase the bank risks (Guay, 1999). To test the effect of CEO power on the bank risk-taking, Pathan (2009) employs data from the U.S. banking industry to explore the relationship between bank risk-taking and CEO power. After controlling for different governance and bank characteristics, Pathan (2009) also finds that the CEO power is associated with lower bank risk. Onali et al. (2015) suggest that various types of CEO power, like internally hired CEO or ownership powerful CEO, has the negative impact on various measures of bank risk-taking. Recent evidence (Onali et al., 2015) from European banks shows the CEO power also impacts on the bank payout policy decisions. Onali et al. (2015) provide the finding showing that CEO power has a negative impact on dividend payout ratios and bank performance, suggesting that entrenched CEOs do not have the incentive to increase payout ratios to discourage monitoring from minority shareholders. Recent evidence (Dong, Girardone, and Kuo, 2015) from Chinese commercial banks shows that the powerful CEO tends to lower bank risk-taking.

Controlling for various corporate governance variables, Dong, Girardone, and Kuo (2015) find that the CEO power has a positive impact on the quality of the bank's loan portfolio. Their finding supports the hypothesis that powerful CEO is risk-averse in a high level of risk default and leverage banks.

In sum, CEO power could influence the corporate economic outcomes and the board's monitoring ability. Theoretically, powerful CEO has the advantage to control the information flow to the outside investors and to board directors to reduce board monitoring oversight of managers (Fama and Jensen, 1983; Jensen, 1993). CEOs can have more power from various sources, such as internally-hired CEO, CEO duality, and tenure. Existing studies show there is a negative association between CEO turnover and firm performance (Brunello et al., 2003; Goyal and Park, 2002). In theory, the CEO duality could increase the agency costs for corporate governance, while the related evidence shows mixed impacts of CEO duality on the firm performance. The CEO duality might not significantly impact the firm performance and the announcement of the decision for CEO duality could receive a positive response from the stock market. The powerful CEO is tending to harm the shareholder value and increase the agency costs in the firm. Further, the CEO with more power in the firm is likely to influence the board directors' monitoring ability. In the context of the banking industry, the powerful CEO reduces the various risks in banks and might have a negative impact on the payout policy.

2.4. Board independence: The value of the independent director

Fama and Jensen (1983) document that the board of directors display a key role in the decision control systems of organisations. Fama and Jensen (1983) also suggest that the board characteristics can work as a decision control mechanism to mitigate agency

conflicts between shareholders and managers. Raheja (2005) argues that a trade-off could determine the optimal board structure between outsiders monitoring ability and controlling of coordination cost among outsiders. Thus, minimizing the agency cost led by management could help the outsider controlled board to have an optimal structure. This also minimises the agency costs related to insiders since the outsider monitoring ability could help the insider-controlled board to be an optimal structure (Harris and Raviv, 2008). Further, the theory of "friendly board" documents that less independence of board (friendly board) might benefit shareholders to lower the agency cost when they obtain inside information from managers (Adams and Ferreira, 2007).

Following these theories, empirical studies provide a stream of evidence to show how the board independence affects various corporation economic outcomes. By studying a sample of the U.K. companies from 1989 to 1996, Dahya and McConnell (2007) present evidence on the link between board independence and firm performance and document that increasing number of outside board of directors is positively related to the corporate performance. Dahya and McConnell (2007) find out that the announcement of the outside board appointments significantly increases the firm's announcement return. The empirical evidence (Dahya and McConnell, 2007) from the corporate takeover process argues that the target's board independence contributes to increasing the shareholder value and gain. Dahya and McConnell (2007) suggest that the board with a high percentage of independent outside directors could increase the shareholder value and outside director denominated board is likely to enhance shareholder wealth through resistance strategies during the tender offers.

However, existing literature related to board independence and its impacts on firm performance is mixed. By using the stock price reactions to sudden deaths of directors, Nguyen and Nielsen (2010) find out that stock price had a negative reaction to sudden deaths of independent directors, underlying outside directors providing benefits for the shareholder. Several studies (Agrawal and Knoeber, 1996; Bhagat and Black, 2002; Park and Shin, 2004; Yermack, 1996) document that there is no significant relation between board independence and firm performance. Bhagat and Black (2002) employ data from large U.S. firms to study the relationship between the degree of board independence (the fraction of independent directors minus the fraction of inside directors on a company's board) on board and long-term firm performance. Bhagat and Black (2002) find out that there is no evidence to support that firms with more independent boards do not perform better than other firms. Agrawal et al. (1996) also suggest a negative effect of board independence on firm performance which there are too many outsiders on its board. By using the regulation shock to board composition to test the effect of board independence on firm performance. Duchin, Matsusaka and Ozbas (2010) indicate that the effectiveness of outside directors is limited by the cost of acquiring information from internal managers, suggesting the increasing number of the outside directors on board could have a negative effect on firm performance. The research (Park and Shin, 2004) investigating the effect of board independence on the practice of earnings management in Canada. Park and Shin (2004) find no evidence that outside directors reduce abnormal accruals, and they argue that adding outside directors to the board may not result in an improvement in corporate governance. Moreover, Shivdasani and Yermack (1996) also find out the negative stock price reactions to independent director appointments when the CEO is involved in director selections, suggesting that the selection of independent directors could matter for board independence.

On the other hand, recent single-country based studies show that there is a positive relationship between board independence and firm performance. To tackle endogeneity concerns, related research (Black and Kim, 2012) employs an exogenous shock to test the value of outside board director for shareholders. Their event study shows that increasing number of outside directors boost the large listed firms' share price at a time and the enhanced board independence also increase the firm' value (Tobin's q), underlining that the investors hold a positive insight of impacts of board independence. Similar evidence (Black and Khanna, 2007) has been reported from the Indian market that the board independence is beneficial for company performance. Black and Khanna (2007) use corporate governance reform as a shock treatment to explore the impact of independence board on the firm stock returns. Their findings also conclude that increasing board independence significantly improved firm performance in India. The empirical evidence from Chinese listed firms underlines that the independent directors play a vital role in the improving Chinese listed firms' corporate governance (Liu, Miletkov, Wei, and Yang, 2015). These authors find that there is a positive relation between firm performance and board independence, suggesting that this positive impact of independent directors is more significant in those government-owned firms and the firms with lower agency cost for outside owners.

The board of directors is a key internal mechanism of corporate governance to mitigate the conflicts of interest between owners and internal managers in the firms. Academics explore the impacts of board independence on the quality of corporate governance. The firms with more outsiders on their boards are likely to offer the directors more equity-based compensation and the firms with CEO or insider controlled boards tend to use less equity-based pay (Ryan and Wiggins, 2004). Ryan and Wiggins (2004) argue the independent director could have a bargaining advantage in reducing conflicts cost for the

shareholder. Miletkov et al. (2014) explore how the board independence effects the firm increasing capital from foreign investors also underlines that the independent directors can contribute to good corporate governance. Miletkov et al. (2014) provide the empirical evidence indicates that the firm with more independent directors on the board can attract more investment from foreign investors. This positive impact of independent directors on the firm's financing ability is stronger in the countries with poorer investor protection.

Further, several studies shed light on the impact of board independence on financial and non-financial firm risk-taking behaviours (Brick and Chidambaran, 2008; Eling and Marek, 2014; Ho, Lai, and Lee, 2013). Brick et al. (2008) report the board independence has a positive effect on the risks in the absence of external regulation. Similarly, Ho et al. (2013) have studied the impact of board composition on risk-taking behaviour in the U.S. property casualty insurance industry. Their research presents that board independence can lower the firm total risk. By employing the structural equation model to measure the quality of corporate governance in the UK and German insurance companies, Eling et al. (2014) report a negative link between the firm risk and intensive monitoring board as a measure of the high proportion of independent director and more meetings. Vafeas and Vlittis (2016) indicate that a high percentage of outside directors on board is positively related to low financial distress risk and pension plan funding levels.

Compared to non-financial firms, the banking business is more complex and opaque. This might lead to higher information cost for outsiders to collect inside information from managers. The board with a high percentage of outside board directors might be unlikely to be the optimal board structure for corporate governance in banks as the intensive board

monitoring could affect the quality of information provided by bank managers - increasing the conflict cost for shareholders (Adams and Ferreira, 2007).

Further, Evidence (Adams and Mehran, 2012) from large bank holding companies show that the impact of board independence on the bank performance (measured with Tobin's Q) is insignificant. Adams and Mehran (2012) suggest that the complexity of banking business could have special needs for designing governance reform in banks. Andres et al. (2008) also highlight the optimal percentage of independent directors could improve the board performance in advising and monitoring function. Andres et al. (2008) underline that excessive board independence might destroy bank value.

Recent bank governance based literature (Aebi, Sabato, and Schmid, 2012) study on the relationship between corporate governance and risk management during the financial crisis. Their findings show that the board independence is negatively linked to the bank performance, measured as buy-and-hold returns and ROE. Beltratti et al. (2012) argue that banks with a friendly board that has more independent directors showed a negative performance during the financial crisis. Adams (2012) finds out that the bank board with a high percentage of independent directors receive more funding from the TARP (Troubled Asset Relief Program), arguing that the board independence might contribute to poor bank performance. Further, Erkens et al. (2012) provide evidence showing that the board independence has an adverse impact on bank performance, peroxided by stock return. Their study finds that non-relation between market-based risk measures and independent board directors. The related empirical investigation (Minton, Taillard, and Williamson, 2014) exploring the role of independent directors with financial expertise during financial crisis reports that independent directors could increase the bank risk

before the crisis. Pathan et al. (2009) find that independent board of directors are negatively related to total risk, suggesting that stronger board determined by the higher ratio of independent director can enhance the board monitoring on bank managers.

Moreover, Liang, Xu, and Jiraporn (2013) studying emerging markets also support the hypothesis that board independence could positively relate to bank performance. By employing a small sample of 36 listed Chinese banks, their research shows that the proportions of independent directors have significantly positive impacts on both bank performance and asset quality. Similarly, recent evidence from a large sample of combined listed and unlisted Chinese banks by Dong et al. (2015) shows a positive impact of independence on bank profit efficiency and loan quality. By using of the two-step system dynamic Generalised Method of Moments (GMM) estimation approach to address potential endogeneity issues, Dong et al. (2015) also find incremental effects of board independence on banks' efficiency in those banks with more concentrated ownership structures and state-owned ones. Furthermore, Qian, Zhang, and Liu (2015) investigate the effect of officials-and-directors (OADs), who are commonly appointed by the Chinese government to the state-owned banks. Qian, Zhang, and Liu (2015) also find that the board with more OADs increase bank risk and the effectiveness of independent board directors can significantly weaken the effect of the officials-and-directors (OADs).

2.5. Board busyness: Are busy boards detrimental?

Investors and shareholders criticize the busy directors who hold multiple directorships in various firms. The busyness of directors might affect their monitoring performance and contribute their industry experience to the board in corporate governance of companies (NACD, 1996). The Council of Institutional Investors (1998) suggests that the number of

the directorships held by the directors should be limited. It argues that directors with full-time jobs should not serve on more than two other boards in most of the circumstances. National Association of Corporate Directors also argues that directors with full-time positions should not serve on more than three or four other boards.

On the other hand, the number of directorships held by the directors can signal their quality and reputational capital. Reputation hypothesis suggests that the appointment of a new director implies the quality of director served on the board of a well-performing firm. Such a director brings reputation when appointed as new directors on the other companies' board. In another word, the good performance of firms can be a signal that proxy for the quality of its directors and managers on the market for the directors and offers them additional chances to serve on more firm boards. Furthermore, this reputational effects can provide substantial incentives for outside directors (Fama and Jensen, 1983).

Studies focused on the relation between firm performance and the market for the director shows that poor performance links to the negative reaction from the market for the director. Outside directors hold fewer seats on the other boards after they leave a financially distressed firm. By employing the data from 2000 listed firms, Ferris, Jagannathan, and Pritchard (2003) find no evidence that busy directors evade their duties to serve on board committees. Ferris, Jagannathan, and Pritchard (2003) suggest that multiple directors might not have an effect on the effective monitoring on management.

The busyness hypothesis suggests that the busy board cannot monitor effectively. Directors holding multiple directorships might shirk their responsibilities, and the busy directors make less contribution to the board committees. The overboard director also limits their monitoring and advising actives on the board. Thus, the busy board might determine the value of firms and have a negative effect on the oversights of board capital. To support this busyness hypothesis, Fich and Shivdasani (2006) using a sample of large U.S. industrial firms, test whether directors that serve on numerous boards are related to weaker corporate governance at firms. Fich and Shivdasani (2006) document that the busy board, where the majority outside directors hold multiple directorships, is related to lower market-to-book ratios, weaker profitability, and lower sensitivity of CEO turnover to firm performance. Further, Fich and Shivdasani (2006) also find out the departure announcements of busy outside directors have a positive relationship with abnormal returns (ARs).

Similarly, the research (Core, Holthausen, and Larcker, 1999b) focusing on the U.S listed firms shows that the busy board is related to the poor performance and greater compensation for the CEO. Core, Holthausen, and Larcker (1999b) confirm that the busy board of directors might contribute to the weak corporate governance as well as worse performance as a result of the greater agency problems. Di Pietra et al. (2008) suggests that board directors holding more than two directorships might harm the firm market valuation and board effectiveness on firm's outcomes. Di Pietra et al. (2008) also report that this effect might also be shaped by the legal protection for shareholders and characterized ownership structure

Furthermore, DaDalt, and Ning (2009) argue that the busy board directors are likely to attend the board meeting at a low-frequency level. Moreover, this effect of board busyness on corporate governance cannot be mitigated by the ownership held by directors or meeting fee (Jiraporn, Davidson Iii, DaDalt, and Ning, 2009). Recent research using various monitoring measures for corporate governance indicates that busy board weak the managerial monitors (Fernández Méndez, Pathan, and Arrondo García, 2015). Their finding shows that busy board directors can decrease CEO turnover-performance sensitivity and CEO pay-performance sensitivity.

Empirical evidence (Ahn, Jiraporn, and Kim, 2010) from the corporate mergers and acquisitions also show that multiple directorships might influence the managerial oversight and agency cost in the takeover process. Ahn, Jiraporn, and Kim (2010) provide a finding indicates that the bidders with the busy board suffer lower abnormal returns after the M&As announcement. Ahn, Jiraporn, and Kim (2010) also suggest that this detrimental impact is a problem when the number of the board seats held by the directors increase over a certain level. A recent study by (Chen, Lai, and Chen, 2015) finds that there is a consistent horizontal S-shaped relation between the return from corporate M&As and busy board. Chen, Lai, and Chen (2015) document that the average number of directorships held by board directors hurts the M&A performance before the 2002 Sarbanes-Oxley Act.

Moreover, busy directors have limited time to devote to engaging in corporate governance in firms. When firm experiences a special period (such as deaths of CEO or director) , the firm could require its busy directors to spend more time to focus on their monitoring and advising job. In these circumstances, the interlocked firms, where outside board busy

directors serve on the board, might suffer a reducing director capital and directors' workload devoting to the monitoring and advising. Interlocked firms might receive a negative stock market reaction to the deaths of the directors. For instance, the deaths of directors and chief executive could generate exogenous shocks to the board workload in the interlocked firm. Falato, Kadyrzhanova, and Lel (2014) finds that this interlocked director busyness has a negative effect on the stock performance during the shock periods and interlocked firms suffer lower earning and monitoring quality following the shock periods.

The quality hypothesis argues that multiple board seats held by directors might positively influence the firm's economic outcomes (Fama, 1980; Fama and Jensen, 1983). The busy directors on the board can help firms to establish more networking with outside environment, providing more resources, information, and customers to the firms (Booth and Deli, 1996). By focusing on the emerging markets, find that the board, where the main outside board directors hold multiple directorships, is positively related to the firm value, Sarkar and Sarkar (2009) suggest that busy outside board directors are beneficial for corporate governance effectiveness by attending more annual meetings and presenting more than other directors at the meetings. Similarly, the number of the directorships held by the board of directors might be an incentive for the director to contribute to corporate governance in firms. Looking at French companies, Baccouche, Hadriche, and Omri, (2014) find out that there is a positive association between director busyness and board meeting quality and meeting attendance. Masulis and Mobbs (2011) also show that insider director is positively linked to the firm's performance and provides benefits for the shareholder wealth. Masulis and Mobbs (2011) find that there is a positive relationship between the insider director busyness and operating performance and market-to-book ratios. Masulis and Mobbs (2011) also suggest the insider directors holding outside

directorships help the firm to make better takeover decisions and have greater cash holdings.

Firm characteristics might also shape the impact of director busyness on the firm' value. Perry and Peyer (2005) find that inside director busyness adds value to the firm if they are employed as executives. Perry and Peyer (2005) show that the firm benefits from the better returns when its executives receive outside directorship from those high-growth, low agency cost or industry-related firms. However, this positive influence of insider directors' outside directorship might be limited when the executive's firm has greater agency problems.

Other studies show some advantages of busy directors for corporate governance in companies. Field, Lowry, and Mkrtchyan (2013) find out that busy directors are positively related to the firm value. Based on the quality hypothesis, the director busyness signals director quality. Experienced board directors can make significant contributions to the public firm, where the firm's management team lack related knowledge and information of capital market. Field, Lowry, and Mkrtchyan (2013) also document that IPO firms with more busy directors can improve performance on the capital market while this positive effect is limited among large corporations.

Turning to corporate governance in the financial industry, there are a few studies exploring the association between the board busyness and banking outcomes. Since the number of the directorship held by the director certify their quality, a larger number of the busy directors on bank's board would improve the quality of corporate governance by

sharing more industry skills, information and knowledge. Supporting this, evidence from U.S. bank holding companies shows that the bank benefits from the busy board directors on performance and the director busyness is negatively related to the bank's risk-taking (Elyasiani and Zhang, 2015). This positive influence of busy directors is enhanced during the period of the financial crisis while the benefits of bank risk managing are reduced during the same period. Finally, Elyasiani and Zhang (2015) show that busy directors are presenting less at the annual meetings of the banks.

Overall, the director busyness hypothesis suggests that busy director is ineffectively working on the board due to their over-workload and limited time spent on corporate governance. This view of board busyness argues that the governance performance of the busy director depends on the time they can spend in the boardroom. Meanwhile, the workload of the board director is a more effective approach to address the directors' competence and resources they can devote to the board. On the other hand, the quality hypothesis argues that director busyness can certify their personal quality and capital. The signal on the labour market for board directors can also be adapted to measure the quality of busy director. A succession of directors on the board can help her/him to gain more directorships from other firms. Director holding multiple directorships among firms implies her/his personal quality and remarkable governance records of the past. Empirical findings on the relationship between firm outcomes and director busyness are mixed. Especially, the little is known about the effect of busy directors in bank boards on bank performance and risk-taking. Only one empirical study (Elyasiani and Zhang, 2015) explored the role of busy director in the US bank holding companies, and the evidence supports the quality hypothesis of the busy director. That is, the board of more busy directors on bank boards can improve performance on profitability and risk management.

2.6. Social networking in the boardroom

There is a growing need for understanding the impact of social networks on the economic performance of organizations. The emerging research has explored the potential links between sociological and economic accounts of business behaviour. Several studies argue that social ties shape the various economic actions through the ways of the economic decision-making process, evaluating on projects and efficiency of the price system (Crosby and Stephens, 1987; Granovetter, 1985). The social relationship could drive the personal favourably intentions and actions (Uzzi, 1996). There is considerable evidence that social ties influence economic outcomes. For instance, The friendship ties between executives of firms are considered beneficial for firms (Westphal, Boivie, and Ming Chng, 2006). Empirical evidence (Uzzi, 1996) from the apparel industry suggests that the organization's cooperation can be improved by social ties. Social ties between sellers and buyers can create an external value for the manufacturer's cost and trading process (Uzzi, 1996). Social ties also have an impact on the bank lending markets. The firm's access to funding channel and its capital cost could be affected by the social ties between firms and their lenders (Uzzi, 1999). Ingram and Roberts (2000) also find out that hotel managers increase hotel yields by their collaboration and informative exchange rather than explicit collusion and price-fixing. Further, the top corporate executive prefers to maintain their informal ties with other firm's management group in order to manage uncertainty arising from resource dependence (Westphal, Boivie, Chng, and Han, 2006). The board ties among top corporate executives are used as a strategy to managing resource dependence for the corporations.

The social tie[2] is different from the family tie or business tie which that is neither legally defined nor straightforward to identify. There are two main approaches to identify social ties; one is to measure the individual's social ties through interviews or surveys that are used by the questioner to ask individuals to explain their social links and type of social ties. The other method depends on the principle of "homophily" (McPherson, Smith-Lovin, and Cook, 2001). McPherson et al. (2001) suggest that there is a high probability that people tend to react or contact with the others who share similar demography characteristics. Meanwhile, there is an increasing social connection between the people who share a similar background, such as education, nationality, age, gender, etc. Therefore, the alternative approach to address the personal social tie refers to identify whether a person shares the demography similarities with others. For instance, Hwang and Kim (2009) document several advantages of this method adopted to measure the social tie in the group.

Majority of existing literature argues that weak corporate governance, such as directors and CEOs have similar perspectives on corporate strategy or board with a low percentage of independent directors, is related to the higher pay for CEO and low sensitivity of compensation to performance (Faleye, 2007; Mehran, 1995; Yermack, 1996). Recent research related to social ties provides new evidence for us to understand the board independence and management compensation design progress. By using the social ties as a measure to identify the board of director independence subjected to CEO, Hwang and Kim (2009) find that the pay-performance elasticity is substantially weaker when boards

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[2] The social tie is the informal connection between individuals. In the context of corporate governance, this potential informal connection between a director and the CEO could be indicated by the mutual alma mater, military service, regional origin, academic discipline, and industry experience (Hwang and Kim, 2009).

are not both conventionally and socially independent of the CEO. Thus, Hwang and Kim (2009) suggest that social ties significantly influence the board independence as well as the sensitive of CEO pay-performance. Further, Hwang and Kim (2009) also find out the social networks between CEO and directors can affect the earning management and CEO turnover. Empirical research (Kramarz and Thesmar, 2013) relying on a large data set of executives and outside directors of French public firms finds that social networks between CEO and board directors have detrimental effects on firms' governance. Kramarz and Thesmar (2013) present that the labour market for board director might be distorted by social networks so as that director having a social connection with CEO are more likely to be hired. Moreover, Kramarz and Thesmar (2013) confirm that those social networks active in board might destroy the shareholder value as the social connections based board is less likely to fire the underperforming CEO and to pay higher CEO compensation. Related evidence from UK listed companies' also presents the similar negative impact of social networks on corporate governance and firm performance. Joanne et al. (2012) explore the relationship between social network of directorship-interlocks and executive compensation level in UK public firms and argue that executive and outside directors extract economic rents through their social connections, rather than providing external connections based resources for firms.

Turning to the social networks based research of corporate finance and governance; the CEO would prefer to enjoy her social tie with a director, resulting in a potential impact on the monitoring and disciplining of the CEO. Several studies (Chikh and Filbien, 2011; Fracassi and Tate, 2012; Horton, Millo, and Serafeim, 2012; Larcker, So, and Wang, 2013; Lee, Lee, and Nagarajan, 2014) explore the social networks between CEOs and board of directors provide the alternative explanation for intensive board monitoring and board director nomination process. In contrast to the existing literature examining the relation

between conventional measure of CEO power and corporate governance (Adams, Almeida, and Ferreira, 2005a; Bebchuk, Cohen, and Ferrell, 2008), Fracassi and Tate (2010) argue that the intensity of board monitoring might be weakened by the network ties between CEO and board directors. Using changes in board composition due to director death and retirement for identification, Fracassi and Tate (2010) find that CEO-director ties have a negative impact on firm value. For instance, firms with more CEO-director ties tend to make more value-destroying acquisitions, particularly in the firms with weak governance. Meanwhile, the well-connected CEOs have more power against the board monitoring. Chikh and Fibien (2011) use the connections of French elite schools' alumni to measure the CEOs external social ties, they document that those well-connected CEOs could complete takeover deal in spite of a negative market reaction to acquisition announcements.

Recent social network based studies examine the relationship between various forms of social ties and corporate governance. The social tie forms as the different social connections among the managers and board members might have an impact on corporate governance, corporation risk and firm value (Khanna, Kim, and Lu, 2015; Kim and Lu, 2017; Lee et al., 2014). Evidence (Lee et al., 2014) from a large sample of US firms shows that alignment in political orientation between the CEO and independent directors might weaken the corporate governance and lower the firm performance. After controlling the effects of board diversity, local director labour market and political conditions, Lee et al. (2014) find out that alignment in political orientation (political similarity) between CEO and independent directors is related to lower firm valuations, lower operating profitability, and lower CEO pay-performance sensitivity, and a greater likelihood of accounting fraud. Moreover, Khanna et al. (2015) find that CEOs who share social connections with directors could weaken the corporate governance through new appointments. This

appointment-based CEO connectedness among the top management and board directors increases the probability of committing fraud and decreases the likelihood of detection. They argue that shareholders, policymakers and corporate governance specialists should consider the impact of appointment-based CEO connectedness on corporate governance and risk management. While Khanna et al. (2015) research documents that various social connections which are based on past employment, education, or social organization memberships have insignificant effects on corporation fraud risk. The impact of social ties between board and CEO might be different from the one resulted from the social connections between CEO and top executives on firm performance. Kim and Lu (2017) use the changing in regulations that required the corporation board increasing independence as an external shock to examine the role of social ties in the independence of the executive and board of directors. Kim and Lu (2017) show that CEO increases her/his connections with top managers through appointments and pre-existing social ties to respond to the external shocks on which requires the dependent board to increase its independence. This dynamic causal relation between CEO-board ties and CEO-executives connections highlights that social ties display an important role in the overall governance independence of firms.

The executive and board members' social networks also display as an important determinant of firm managerial decision-making as well as corporate governance practices (Bouwman, 2011; Duchin and Sosyura, 2013; Fracassi, 2016; Stuart and Yim, 2010). The corporation top managers could be affected by their social connections with peers when they make corporate policy decisions. Fracassi (2016) employ the data of board directors and managers' current and past employment, education, and other activities to measure their social ties in the US-listed firms. Fracassi (2016) find that if the two firms share more connections with each other, these firms are likely to make more

similar capital investments. Interestingly, those central companies which that company share most social networks with other ones prefer to invest in less idiosyncratic projects and favour better economic performance. These empirical results highlight that the interpersonal linkages are an important role in the firm financial decision-making and information resources for firms. For the firm's internal capital budgeting, Duchin and Sosyura (2013) find that the divisional managers who share the social connections with the CEO can receive more capital in the internal capital budgeting process and these social networks between divisional managers and CEO have an impact on both managerial appointments and capital allocations. Duchin and Sosyura (2013) suggest that the influence of social connections on firm investment efficiency is depended on how the firm trades off the cost of agency and information asymmetry. That is, social connections could improve the investment efficiency and firm value through better information transfer under high information asymmetry. By focusing on the link between board social networks and firm governance decisions related to ownership transaction, Stuart and Yim (2010) provide evidence from listed firms showing that firms with board directors who share social networks have a high probability of being targeted in a private equity-backed, take-private transaction. Furthermore, social networks among board directors from different firms could partly affect corporate governance practices in which firms are likely to undertake similar corporate governance policy if their board directors share social connections, underlying that the directors' external social ties can create a channel for firms to share information on their governance practices (Bouwman, 2011).

Social ties do not only affect corporate governance and firm performance, but also work as the special channel for outsiders to gather firm's information (Cai, Walkling, and Yang, 2016; Cohen, Frazzini, and Malloy, 2008, 2010; Engelberg, Gao, and Parsons, 2012; Houston, Jiang, Lin, and Ma, 2014). Relevant research (Cohen et al., 2010) documents

that the social networks based information transformation could be important for investors to understand the information flow and price evaluation in security markets. Cohen et al. (2010) provide evidence from a security analyst's performance and find that social networks can enhance agents' ability to gather superior information about firms. Further, Cohen et al. (2010) document that equity analysts outperform on their stock recommendations when they share the educational networks to firm's top managers or board of directors. Social ties also display as an information transfer in stock markets. Cohen et al. (2008) investigate the role of the education networks between mutual fund managers and board directors as the information channel in the security markets. Cohen et al. (2008) find that those fund managers who share education connections with corporation board members perform significantly better on these holdings relative to their non-connected holdings. Cohen et al. (2008) report that the replicating portfolio of connected stocks outperforms non-connected stocks by up to 7.8% per year. Furthermore, recent social ties based research investigate the cost of the transfer of privileged information via social ties, Cai et al. (2016) use the investment connection deaths as natural experiments to explore the effect of social ties for the cost of stock trading. Cai et al. (2016) find out a decline in both trading cost and trading activities by the connected party after the exogenous severance of a company's social ties.

Furthermore, Engelberg et al. (2012) content that the social connection between banks and firms could create the better monitoring and information environment for banks. By using of large data from the public US firms and commercial banks, they find that bank lending costs are markedly reduced, and firm performance is improved when the management of banks and firms have interpersonal linkages, including attended college or previous employment. Further, Houston et al. (2012) demonstrate that the firm's political connections take an important role for their loan costs from banks. Houston et

al. (2012) provide the findings showing that firms with political connections can reduce the likelihood of a capital expenditure restriction or liquidity requirement commanded by banks at the origination of the loan, suggesting that social networks of the board in firms can improve their borrowing channel. Board ties could also add value to the firm by reducing the debt financing cost for a company where firm board directors share social ties with financial institutions. The board members have social connections with financial firms (financial ties) board whose firms enjoy a low cost of their debt financing as the board financial ties improve the investor perceptions of firm quality and reputation (Chuluun, Prevost, and Puthenpurackal, 2014). Evidence from the loan market confirms that the social networks improve the information environment for funding lenders. Empirical investigation (Kim, Surroca, and Tribó, 2014) from the syndicated loan market also exhibits that social ties between bank and borrowers have an impact on the loan rate. Kim et al. (2014) argue that those social ties, measured as the ethical similarity between lenders and borrowers, enhance the trust and familiarity in syndicated loan pricing progress in which that the borrowers are willing to repay their loan as well as to avoid the opportunistic behaviour. Kim et al. (2014) suggest the reduction in opportunistic behaviour caused by ethical similarity could contribute to lower information cost for banks, thereby presenting a lower loan interest rate.

In the M&A context, social tie focused research extends the literature that investigates the reasons for and performance of M&A transactions. Relevant studies highlight the role of social connections displaying an important role in the information flow and managerial decision-making in the firms' M&A transactions (Cai and Sevilir, 2012; Chikh and Filbien, 2011; El-Khatib, Fogel, and Jandik, 2015; Ishii and Xuan, 2014; Renneboog and Zhao, 2014; Schmidt, 2015). However, related empirical research studying the relationship between social ties and firm's takeover performance show mixed results.

Social connections could shape both individuals and organizations behaviours and performance (Uzzi, 1996). The information advantage view suggests that the extensive social ties across bidder and target firms could foster an enhanced flow of information and communication efficiency, resulting in the better decision-making as well as M&A performance. By examining the effects of the two types of social linkages between acquirer and target firms on the M&A performance. Cai and Sevilir (2012) find that social connections can benefit acquirers by providing greater information flows and communications for them to evaluate the true value of the target firm, limiting competition from outside less-informed bidders, and this advanced information flow can help the bidder to acquire underperforming firm at an attractive price. El-Khatib et al. (2015) find out that the CEO network centrality, measured by the extent and strength of CEO′s personal connections, has a positive impact on the M&A outcomes. This suggests that the greater social networks can allow CEOs to efficiently gather and control private information, facilitating value-creating acquisition decisions. Moreover, well-connected firms can reduce their negotiation cost and have a high likelihood to complete the deal in a shorter time (Renneboog and Zhao, 2014).

On the other hand, the familiarity bias view argues that the extensive social ties between an acquirer and a target could lead to flawed decision making due to these social networks among the board directors and executives could lead to less critical analysis, missed opportunities and inefficient deal making. First, social networks could cause a heightened sense of trust. The principle of homophily implies that people are more likely to build linkages with those ones who share similar demography characterises with them (McPherson et al. 2001). These similarities across team members could motivate people to do more comfortable decision-makings and interpretations of others' actions (Uzzi, 1996). Second, the familiarity bias could shape the firm's behaviours that the firms prefer

to cross-list their stocks in countries where investors are more familiar with them (Sarkissian and Schill, 2003). This familiarity bias can also lead to a tendency toward inefficient deal-making with firms M&A transactions that merger's top managers and directors have social ties (Ishii and Xuan, 2014). Third, the cohesive groups are likely to only consider the limited range of options, require less support from outside experts and insufficiently considering disadvantages of the favoured decision (Murray, 1983). Thus, well socially connected target and acquiring firm could miss the valuable potential merger opportunities and undertake flawed due diligence standards for the favoured deal.

Under this view, Chikh and Filbien (2011) find out that well-connected CEOs rely more on their networks than on the market reactions, they are even likely to complete the M&A deal that is not approved by market investors. Ishii and Xuan (2014) test the relation between merger performance measured as the announcement returns and the extent of social ties between the top managers and board members of the two merging firms. Ishii and Xuan (2014) find that social connections are associated with the lower acquirers′ announcement returns and the overpay for the target firms, underlying that the social ties could destroy value in the merger decisions. Furthermore, Schmidt (2015) documents that the impact of social connections on the merger performance could be shaped by the advice and monitoring needs from the management. Therefore, Schmidt (2015) suggest that social connections between acquiring and target firms are associated with lower returns when monitoring needs are high.

An IPO is a vital issue in the life-cycle of the firm as it transfers the relevant unknown private company to a public company, searching for external capital from a large pool of potential investors to finance its expansion (Certo, Holcomb, and Holmes Jr, 2009).

Existing studies suggest that the social networks of underwriters could impact on IPO pricing and performance (Chahine and Goergen, 2013, 2014; Chuluun, 2015; Cooney, Madureira, Singh, and Yang, 2015). By using a sample of U.S. IPOs issued between 1974 and 2007, Chuluun (2015) provides empirical evidence showing that book manager of IPOs underwritten with more social networks can increase the offer price revision and larger price revisions. Moreover, the book managers with more central networks are related to higher short-run share returns. Similarly, Chahine and Goergen (2013) find out that social ties could create value for firm IPO that the top management team with strong social ties is positively related to IPO performance. Their finding also documents that the effect of board independence on firm's IPO pricing and post-IPO operating performance is shaped by the social ties of the top management team. Social ties between investment banks and IPO firms also could affect the IPO underwriting syndicated formation. Cooney et al. (2015) find that an investment bank is more likely to be included in the underwriting syndicate when it shares the social connections with the respective executives and directors of the IPO firm and these interpersonal social ties between the investment bank and IPO firm increase the net wealth gains for its pre-IPO shareholders. By using various centrality measures from social network to analyse the information-related roles of social ties during the IPO process. Bajo et al. (2016) find that IPO underwriters with more central social networks are associated to better IPO performance and greater institutional investor shareholdings, implying that social networks of investment banks could work as the roles of information dissemination and information extraction during the IPO process. However, a limitation of the existing literature only pays little attention to the impact of social ties on the bank economic outcomes. Berger et al. (2013) employ a data of German financial institutions to analyse the cronyism problem in banks, in which that homophily (affinity for similar others) and social ties could impact on the labour market for executive board members in German banks. Berger

et al. (2013) find out that the social ties based on age and gender increase the likelihood of the outsider appointments, while the similar educational backgrounds low the probability of an outside appointment.

2.7. Gender diversity of board

The phenomenon of the gender diversity of corporate boards encompasses at least two significant viewpoints. The resource dependence perspective argues that the female board directors have special human capital, background, characteristics and external networks, which are a crucial resource for the board as well as the firm. The board is important for the firm to address its environmental dependencies as the board of directors can extend the firm's external links to other organizations (Pfeffer and Salancik, 2003). There are four potential beneficial resources provided by the external linkages: (1) provision of resources such as information and expertise; (2) creation of links of communication with expertise of importance to the firm; (3) provision of external support from important organizations or groups in the external environment; and (4) creation of legitimacy for the firm in the external environment (Hillman, Withers, and Collins, 2009). Different types of directors, such as the insiders, business experts, support specialists, and community influential, can provide various resources to the firm. Thus, the competent female directors have deserved appointment opportunities to serve on corporate boards (Hillman, Cannella Jr, and Harris, 2002; Stephenson, 2004). The more diverse board could provide more beneficial resources to the firm as well as improving its performance. Further, the human capital of board directors could be used to the benefit of an organization and the differences in gender results in directors having unique human capital (Terjesen, Sealy, and Singh, 2009). For instance, female board directors are qualified in terms of business experience and education and this unique female human

capital could affect the performance of the board as well as the firm economic outcomes. Give the board's role of producing the function of monitoring management, a more diverse board could be beneficial for board monitoring function as the diversity of board can enhance the board independence. This enhanced board independence driven by the gender diversity of the board is expected to improve firm performance (Carter, Simkins, and Simpson, 2003).

On the other hand, contingency viewpoint (Lawrence and Lorsch, 1967) argues that the human capital of board directors might be only used in the organization within limited internal and external circumstances. Female and other demographic minorities on board could be viewed favourably by the firm's stakeholders while these demographic minority directors could not successfully influence group decisions (Westphal and Milton, 2000). The demographic minority directors have a lower probability that they can influence the group decisions due to demographic differences of lower social cohesion between groups and that the social barriers could limit the demographic minority directors sharing their views with the board (Westphal and Milton, 2000). The effectiveness of the board also could depend on social-psychological processes, and the board diversity could have many conflicting and complex impacts on firm performance (Forbes and Milliken, 1999).

Empirically, the relation between the diversity of corporate boards and the financial performance of the firm has attracted the attention of researchers around the world (Adams and Ferreira, 2009; Campbell and Mínguez-Vera, 2008; Low, Roberts, and Whiting, 2015). Employing data from Asian companies based in Hong Kong, South Korea, Malaysia and Singapore, Low et al. (2015) find that there is a positive relationship between the percentage of female directors on the board and firm performance measured

by return on equity (ROE). Low et al. (2015) suggest that this benefit from female board directors appear to be diminished in those countries where the economic participation and empowerment for female are high, and the cultural element or tokenism could limit the impact of female director appointment on firm performance. The impact of female directors on the firm performance could be shaped by the firm ownership that different owners could use their power to affect the corporate governance control as well as the female director's participation in board decision-making process (Liu, Wei, and Xie, 2014). Liu et al., (2014) provide empirical evidence from listed firms in China, they find that the number of female directors on board is positively related to firm performance, especially in firms controlled by private investors. Liu et al., (2014) also show that the beneficial impact of women board directors appears to be limited in state-controlled firms. Campbell and Mínguez-Vera (2008) study the relationship between gender diversity on board and firm performance in Spain companies and provide the findings showing the positive impact of female directors on firm profitability, underlying that the importance of female board directors for the firm's economic gains. Board gender diversity based research (Carter et al., 2003) provides evidence to extend the explanations for the impact of the board composition on firm value. Carter et al. (2003) find that there is a positive association between a number of female directors on board and firm value. This positive impact of gender diversity on board can be held after controlling the size, industry, and other corporate governance measures. Carter et al. (2003) suggest that female board directors are important for improvement of firm financial value as they provide external and unique business recourse, strategy advice and beneficial information for firms to create value for shareholders. Moreover, the evidence from large Australian firms also exhibits that the female director ratio is positively associated with firm performance, as measured by return on equity and market-to-book value ratio (Bonn, 2004).

By contrary, Adams and Ferreira (2009) use data from US listed companies to investigate the impact of female board directors on the firm performance. Adams and Ferreira (2009) also find that female directors have, on average, a negative effect on the well-governance firm's performance, implying that the high percentage of female directors on board could lead to over monitoring that could destroy the firm value. Carter et al. (2010) employ a sample of US public firms to examine the relationship between the number of women directors and the number of ethnic minority directors on the board and important board committees and financial performance (return on assets and Tobin's Q). Carter et al. (2010) find out that there is no significant relationship between the gender diversity of the board, or the number of female directors on the important board committees and financial performance for a sample of major US listed companies. Moreover, Carter et al. (2010) argue that the gender diversity and firm financial performance appear to be endogenous. To respond to these mixed empirical results related to gender diversity of the board for firm performance, Gyapong et al. (2016) use the hand-collected data of South African listed firms to re-examine the linkage between gender diversity of board and firm performance and value. By controlling for self-selection and various forms of endogeneity, Gyapong et al. (2016) also document that there is a positive and significant effect of board gender diversity on firm value, and the firm value growth is greater when boards have three or more women directors.

Several studies explore how female directors on the corporation board impact on the corporate governance and corporation policy-making (Adams and Ferreira, 2009; Duong and Evans, 2016; Gul, Srinidhi, and Ng, 2011). Research focusing on the female board directors in the listed firm shows a positive impact of the female directors on the corporate governance. Adams and Ferreira (2009) find that the female directors can enhance the board monitoring performance that female directors have higher meeting attendance

records compared to male directors and firms with more gender-diverse boards have a higher pay-performance sensitivity of chief executive officer. Moreover, the firm with more female directors on the board is more likely to offer equity-based compensation for directors (Duong and Evans, 2016). By looking at the relation between board gender-diverse and corporate governance quality, Duong and Evans (2016) find out that the female directors might have a better performance in the boardroom. Board gender diversity could impact the group-decision making process so as that the female directors could help in to create shareholder value through their influence on acquisition decisions (Levi, Li, and Zhang, 2014). Levi et al. (2014) employ data from acquisition bids by S&P 1500 companies during the period of 1997 to 2009 to evaluate the impact of female directors on the acquisition performance. Levi et al. (2014) also find out that each additional female director on board can lead to fewer bids, and each additional female director on a bidder board is associated with lower bid premium paid.

Further, Gul et al. (2011) investigate the association between the board gender diversity and firm stock informativeness, and they find that board gender diversity can improve the firm's stock price informativeness. Gul et al. (2011) suggest that the firm with more female directors on board is likely to disclosure more firm-specific information through the mechanism of increased public disclosure in large firms. Lai et al. (2011) use a sample of US companies to test the impact of the presence of female directors on board and female audit committee members on the audit quality in terms of audit effort and auditor choice. Lai et al. (2011) provide the study shows that the female directors tend to pay higher audit fees and are more likely to choose specialist auditors compared to all-male boards (audit committees), suggesting that boards and audit committees with more female directors could increase the firm's demand for higher audit quality. Female board directors could be a matter of firms' corporate social responsibility (CSR) ratings and

related corporate reputation (Bear, Rahman, and Post, 2010). Bear et al. (2010) provide empirical evidence showing that the gender composition of the board could have a positive impact on the corporation CSR rating. This implies that female board directors could have an influence on the group dynamic progress through devoting unique resource, and information for corporate governance.

Recent gender diversity based research studies the association between board gender diversity and firm risk-taking behaviours (Adams and Funk, 2012; Cumming, Leung, and Rui, 2015). The decision maker's preferences and characteristics could play a role in the way of the firm investment selection choice process as well as its risk-taking behaviours (Adams et al., 2005a; McCormick, MacArthur, Shields, and Dicicco, 2016). Adams and Funk (2012) suggest that female directors risk aversion could be vanished due to the male-dominated corporation culture and glass ceiling problem. By employing a sample of Swedish companies to analyze the differences in risk attitude between the genders. Adams et al. (2005a) find that those female directors are more risk-seeking than their male counterparts. Cumming et al. (2015) empirically investigate public firms in China exploring the impact of board gender diversity on the broad spectrum of securities fraud. Cumming et al. (2015) argue that the board gender diversity can reduce the riskiness of fraud through operating as a significant moderator for the frequency of fraud and that gender diversity on board could ease the negative response from the stock market. Cumming et al. (2015) thereby suggest that women could be more effective in male-dominated industries in reducing both the frequency and severity of fraud. Further, using the large sample of S&P 500 companies to identify the potential causal relation between female director's representation on board and firm risk-taking Sila et al. (2016) document that there is an insignificant linkage between board gender diversity and equity risk. The

relation between gender diversity on board and firm risks could be driven by unobserved between-firm heterogeneous factors.

In the context of banking industry, an international study exploring the impact of female directors on microfinance institutions (MFIs) performance documents that the female representation on the board and top management could be beneficial for the microfinance institutions (Strøm, D'Espallier, and Mersland, 2014). For instance, Pathan and Faff (2013) use a sample of the large US bank holding companies to analyse how board gender diversity effects bank performance. Pathan and Faff (2013) find out that gender diversity improves bank performance in the pre-Sarbanes-Oxley Act (SOX) period (1997–2002), while this positive effect is diminished in both the post-SOX and the crisis periods. Emma et al. (2015) provide international evidence suggests that female directors on board can improve the bank performance and this positive impact of board gender diversity is enhanced by stronger legal and institutional protection for investors and prudent supervision on banks. (Berger, Kick, and Schaeck, 2014) study the relationship between board gender diversity and bank risk in German banks and find that the female director's representation on the bank board can reduce the risk.

2.8. The board nationality diversity

The nationality of directors is one of the main characteristics of board diversity. The influence of nationality diversity of board directors on corporate governance and firm economics outcomes attracts increasing attention from researchers. Given business and economic globalization in recent two decades, there is growing demand for board directors who produce professional skills knowledge in corporate governance. The diverse board of directors also devote their unique recourse to the firm in order to help

the firm build business links in various foreign markets (Carpenter, Sanders, and Gregersen, 2001). Foreign directors not only make financial contributions but also extend to the provision of managerial expertise and technical collaborations, increasing creativity and innovation to firms (Masulis, Wang, and Xie, 2012).

Nationality diversity of board directors could have "double-edged sword" effects on firm economic outcomes. The resources enriched viewpoint suggest that the foreign directors can use their unique personal profile, such as the information, international business experiences and heterogeneity of ideas, to improve the quality of corporate governance and firm economic outcomes through reduction of information asymmetry and the associated agency costs (Ezat and El-Masry, 2008). Further, diversity on boards can extend the firm linkages with external firms, stakeholders and investors that improve the financial flexibility of firms through increasing the pool of potential investors and financing opportunities; and expand cross-border flows of knowledge and technology for firms (Fogel, Lee, Lee, and Palmberg, 2013). On the other hand, the costly conflicts viewpoint argue that the nationality diversity of board might lead to a negative effect on the board communication and decision-making efficiency. The relations-oriented nationality diversity can lead to negative communication and effective consequences that could impair the board effectiveness as the lower decision speed, misunderstandings, and conflicts in the boardroom (Konrad and Kramer, 2006). Moreover, Westphal and Milton (2000) suggest that demographic differences lower social cohesion between groups and that social barriers lead to the minority viewpoints only having a small chance to influence group decisions. More specifically, foreign directors might not contribute to good corporate governance as their personal experience and skills might be not adapted to the national accounting rules, laws and regulations, governance standards, and management

methods. This could increase the cost for the board to evaluate managerial performance or provide advice on managerial decisions (Masulis et al., 2012).

Empirically, the nationality diversity of the board shape the board monitoring and advising performance as the foreign directors could impact on the group cohesion, decision-making and communication process in the boardroom (Masulis et al., 2012; Hahn and Lasfer, 2016). Masulis et al., (2012) find out that nationality diversity of board is related to the lower sensitivity of CEO turnover and poorer performance. Firms with a higher percentage of foreign directors on board are likely to design a higher compensation for CEO and also to produce intentional financial misreporting. Empirical evidence (Hahn and Lasfer, 2016) from UK listed firms also present that an increase in the proportion of foreign non-executive directors is associated with the fewer board meetings. The nationality diversity of board could destroy the shareholder value through paying excess compensation of the CEO and chairman. This suggests that increased board diversity could lower the monitoring through fewer meetings, weakens the internal governance mechanism, and exacerbates agency conflicts. Douma, George, and Kabir, (2006) explore the impact of foreign directors who represent foreign fund managers on firm performance in emerging market and document that foreign directors are related to poor firm performance. Masulis et al. (2012) also suggest that firms with foreign directors in the US exhibit significantly lower returns on assets, especially when they do not have a significant business presence in their home region. The study by (Engelen, van den Berg, and van der Laan, 2012) tests the relation between firm financial performance and nationality diversity of board by using a sample of the Dutch listed companies during the recent financial crisis. Engelen et al. (2012) find that nationality diversity has no impact on firm performance during crisis times, suggesting that the effect of diversity of board on firm performance could be complex and mixed, that is, focusing on only one

dimension of the full diversity vector or on linear effects only can lead to detrimental economic effects.

The globalization of ownership creates an opportunity for foreign directors on board to represent the shareholders to act with foreign investor's interest. Smaller shareholders face the high cost of getting involved to monitor managers, while the larger shareholders can afford active monitoring, for instance through foreign board membership (Shleifer and Vishny, 1986). Board representatives for large foreign shareholders are more likely to perform the arms-length monitoring that this should increase the value of the firm. In this respect, Carter et al. (2003) use a sample of large companies with headquarters in Norway or Sweden to investigate the relationship between the number of foreign directors on board and firm value. Their findings show that there is a significant positive relationship between the percentage of ethnic minority directors on the board and Tobin's Q. Similarly, Oxelheim and Randøy (2003) examine the impact of foreign (Anglo-American) board membership on firm value (measured by Tobin's Q). Oxelheim and Randøy (2003) find that foreign board director is associated to higher firm value as foreign board directors can improve the quality of corporate governance by providing external resource from Anglo-American corporate governance system and enhance the firm reputation in the financial market (Oxelheim and Randøy, 2003). Empirical evidence (Choi, Park, and Yoo, 2007) from firms in Korea also confirms this positive impact of nationality diversity of board on firm value and performance. Choi et al. (2007) use the reform of the capital market regulation as an external shock to test the effect of foreign directors on board on firm value, and they document that foreign directors have a positive impact on the firm value. Moreover, by employing data from the listed firms to explore the relationship between foreign independent directors and corporate governance and the corporation's policy-making, Masulis et al. (2012) find out that foreign independent

directors improve the board advising performance. Masulis et al. (2012) also suggest that firms with more foreign independent directors on the board can have better M&A performance when the targets are from the home regions of foreign independent directors.

Turning to bank governance, foreign board membership could contribute to the bank's corporate strategy and the internal cost management through the provision of external business resource and industrial knowledge (Gulamhussen and Guerreiro, 2009). Gulambussen and Guerreiro (2009) examine the relationship between foreign board membership and corporate strategy and the management of internal costs of banks headquartered in Portugal. Gulambussen and Guerreiro (2009) show that board nationality diversity can lower the internal cost in terms of both total and operating costs. Foreign board directors can redirect bank business strategy that domestic banks tend to devolve and gain revenues from non-traditional areas of business. Using a sample of 159 banks in nine countries during the period 2004–2010, García-Meca et al. (2015) find that nationality diversity of board has a negative effect on bank performance. They suggest that the effect of diversity of board could be moderated by the investor protection and bank regulatory regime. Further, García-Meca et al. (2015) argue that nationality diversity board could exacerbate the risk-shift problems in banks. Because foreign minority directors prefer to encourage managers to increase shareholder returns through excess risk-taking as they are free from social costs of financial institution failures. The social barriers could make the minority viewpoints have a low chance to influence on group decisions so as to affect the board effectiveness and bank performance (Carter et al., 2010; García-Meca, García-Sánchez, and Martínez-Ferrero, 2015).

2.9. Conclusion

As an essential corporate governance mechanism, board effectiveness in corporate governance raises increasing interests from academics. Commonly investigated attributes of board s are size, busyness, CEO, diversity, and board independence. The research focused on the relation between board size and firm performance provide mixed empirical evidence. The small board could avoid the free-rider problem and shareholders can control the firm effectively through the small board. While the small board could fail to provide decent advisory for management in the firms with complex business. Several studies focus on busy directors suggest that board busyness is important for board effectiveness. There are two views try to explain the effects of directors busyness on firms outcomes. The quality view documents that a number of directorships held by the directors might mark their personal capital and managerial quality which they can contribute to the board. The busyness view advice that busy director might destroy the quality of corporate governance in firms as their time and workload devoted to the board is limited. The existing studies relating to the effects of board busyness is mixed, and only a few studies are investigating the role of a busy director in bank governance. Similarly, board diversity based research provides mixed results show that board diversity has disruptive effects on corporate governance effectiveness. The diverse board could improve board decision-making as they can provide unique recourse and human capital for the board. On the other hand, demographic diversity on board could reduce board effectiveness in the way of increasing conflicts and communication's cost for board members. Bank governance differs from non-financial firms. The bank is highly leveraged firm, this risk-taking nature of bank is beneficial for shareholders but detrimental for debtholders. The board could be an essential internal governance mechanism to mitigate these conflicts and control bank risk-taking. The main body of current bank governance based research provides limited and mixed empirical evidence to explain the role of board directors in bank governance and performance. Thus, there is

a need to assess the impact of different board attributes on risk-taking and corporation financial decisions.

Moreover, there is extensive literature on board independence and monitoring effectiveness in nonfinancial firms. Outsider board directors are considered as more independent and more efficient for monitoring on managers. While related research fails to find out the link between board independence and firm value or performance in nonfinancial firms. There is a growing body of research exploring social independence (social ties) of board directors and firm economic outcomes. Social networks based research suggest that social dissimilarities or similarities could impact on board efficiently monitor management. The research studying in board effectiveness and its impacts on bank economic outcomes is limited. Given the complexity and opacity nature of banks, board effectiveness is set as a vital mechanism to conduct monitoring and advisory on managers. The board independence, including business and social connections between board members, could be a significant determinist of board efficiently monitor on managers. While little is known about is that impact of demography dissimilarities between board members on bank economic outcomes. Thus, there is a need to explore the role of social connections in the corporate governance of banks. The literature on social ties and bank governance not only contribute to improved corporate governance for bank owners but also provide a well understanding of governance mechanism design for outsider stakeholders (regulators, policy-makers and taxpayers)

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CHAPTER 3

The impact of chair-CEO demographic dissimilarities on bank risk-taking

Abstract

Literature finds that age dissimilarity between the chair and the CEO causes cognitive conflicts between them, leading to more independence of the chair when monitoring the board. For the first time, we test this argument in a banking setting and investigate whether age and other demographic dissimilarities between the chair and the CEO matter for managing bank risk-taking behaviour. We find that an age gap between the chair and the CEO reduces bank risks. On the other hand, differences in gender or past experience are not significant.

3.1. Introduction

The global financial crises of 2007-09 exposed how banks excessive risk-taking behaviour may cause instability in the banking sector and catalyse turmoil in the financial system as a whole leading to global financial instability. Inadequate governance practices of banks are highlighted as one of the culprits of the crisis (Diamond and Rajan, 2009; Beltratti and Stulz, 2012). In the post-crisis period, it is stressed that effectiveness of corporate governance has a vital role in curbing banks' excessive risk-taking behaviour which is critical to the soundness of banking sector and the economy as a whole. The policymakers and regulators highlight the important board effectiveness for sound bank governance. For instance, the Basel Committee on Banking Supervision (2010) suggests that it is overall responsibility for board directors to provide insights over the bank business and risk strategy, organisation, financial soundness and governance. Basel Committee on Banking Supervision (2014) documents that bank board members should have qualified knowledge, industrial experience and varied professional backgrounds to promote diversity of views. In particularly, Basel Committee on Banking Supervision (2014) argue that bank governance should mind that individual board members' attitude is important for the board to facilitate communication, collaboration and critical debate in the decision-making process. The regulators also suggest that qualifications of board members are a matter for sound bank governance, and board of directors should also have the ability to promote a smooth interaction between board members (BCBS, 2014). These guidelines and principles provided by regulators require a further empirical assessment to revisit the role of board directors in the corporate governance of banks.

Board of directors is an essential component of banks' internal corporate governance and primarily responsible for monitoring of risk-taking and the adequacy of risk management

systems. As the opacity and complexity of banks' business limits shareholders and other stakeholders ability to monitor managers' activities, boards' function and interaction of its members is critical for maintaining banks' soundness. Given the importance of board's influence on risk-taking in banks, recently a number of studies have investigated the link between various board attributes and bank risk-taking behaviour (Adams, 2012; Fortin et al., 2010; Pathan, 2009; Peni and Vähämaa, 2012; Akhigbe and Martin, 2008; Beltratti and Stulz, 2012; Wang and Hsu, 2013; Faleye and Krishnan, 2015; Erkens, Hung, and Matos, 2012; Berger, Kick, and Schaeck, 2014). There are also studies that examine how board demographics, such as age, gender and educational degree can have an impact of bank risks (Berger, Kick, and Schaeck, 2014; Elyasiani and Zhang, 2015; Minton, Taillard, and Williamson, 2014). However, there is limited knowledge on how demographic dissimilarities and the interaction between the chair and the CEO, two key roles of the board, affect this behaviour. We address this gap in the literature by examining the relationship between the chair and the CEO in banks. In particular, we investigate whether the relationship between the chair and the CEO and their demographic dissimilarities matter for bank risk-taking behaviour.

Our main focus is the age difference between the chair and the CEO. Studies find that age-related differences can effect on individuals work-related motives, attitudes, decision-making and behaviour (Morris and Venkatesh, 2000, Rhodes, 1983, Kooij et al., 2011). Others test the difference between the age of the board members and various performance outcomes for non-financial companies (Bantel and Jackson, 1989, Pelled et al., 1999, Wagner et al., 1984, Harrison et al., 1998, Goergen et al., 2015). They find that board directors are mentally connected, and similarly minded, in the corporate governance process when they are from the same generation sharing similar historical events and social trends. As a consequence, directors of a similar age are likely to decline

the cognitive conflicts among the directors on board which may lead to a worse performance of chair's monitoring duty. On the other hand, a greater age dissimilarity between chair and CEO can cause more cognitive conflicts between the board members. In such cases, the chair tends to be more independent when monitoring the board (Goergen et al., 2015, Adams and Ferreira, 2007).

We test whether chair-CEO age difference leads to different risk outcomes in a bank setting. We theorise that an increase in a cognitive conflict triggered by age differences can be beneficial for controlling and reducing bank risk-taking behaviour. Other demographic dissimilarities, including gender and prior industry experience, may also lead to a similar outcome. We test this hypothesis utilising a unique sample of the largest 96 listed banks in 16 European countries between 2010 and 2014 and examine the impact of various chair-CEO dissimilarities on a range of bank risks. We also test how chair characteristics –including tenure, power, and busyness– influence bank risk-taking. We measure bank risk by the loan portfolio risk, balance sheet risk and market-based risk.

We contribute to the literature in various ways. Firstly, we provide initial empirical evidence presenting the impacts of chair-CEO age dissimilarity as well as other demographic dissimilarities on bank risk-taking. Secondly, we contribute to the literature on corporate governance in European banks by examining the chair characteristics effects on bank risk-taking behaviours. Even though the chair of the board is a significant role, we only know little about the role of chair in corporate governance as well as its impact on the firm outcome (Waelchli and Zeller, 2013). In addition, we also look at the influence of chair-CEO interaction on bank risks. Thirdly, the majority of the literature on bank governance is focused on US banks, and we extend the literature by offering empirical evidence from European banks. Fourthly, we also examine the CEO power, chair

characterises and board busyness in bank governance and their effects on risk-taking. Finally, we contribute to the literature by using a unique dataset on European banks carefully hand collected from various resources. Non-uniform disclosure requirements of banks' board information in Europe provide a limitation and a challenge for data collection for European banking research in the corporate governance area.

We use a number of alternative approaches to check the robustness of our results and control for potential heterogeneity and dynamic endogeneity issues common to corporate governance research. Firstly, CEO's possible influence on the composition of the board as well as on board's governing activities could lead to increasing demographic dissimilarities among board directors and managers (Fracassi and Tate, 2012, Shivdasani and Yermack, 1999, Goergen et al., 2015). To address the unobserved heterogeneity problem, we utilise ex-CEO (chair being the CEO of the same bank prior to the appointment) and CEO retirement as alternatively fixed effect variables. Secondly, previous poor risk management performance could motive shareholders to replace chair or CEO (or both), which may result in changes in demographic dissimilarities between chair and CEO. In other words, previous dependent variables (e.g., bank risk level) could impact on current independent variables leading to dynamic endogeneity issues. We use the Generalized Method of Moments (GMM) regressions to mitigate (Blundell and Bond, 1998) this concern. Our results hold in all models.

The remainder of the paper is organised as follows. The next section reviews the existing literature and drives our main hypothesis. We present the data and methodology in Section 3 and discuss the main results in Section 4. Section 5 addresses the endogeneity issues and provides robustness test. Section 6 concludes.

3.2. Literature review

3.2.1. The link between the board's attributes and bank risk-taking

In the post-crisis period, there is an increasing interest from researchers on the link between the board of directors and bank risk-taking.[5] However, the findings of this literature are not uniform and, therefore, inconclusive. Several studies examine this link in the US financial institutions during the crisis period and find that larger boards generally lead to higher risk (Adams, 2012; Minton, Taillard, and Williamson, 2014; Fortin et al., 2010; Pathan, 2009; Peni and Vähämaa, 2012). Others looking at the pre-crisis US data report a negative association between board size and the level risk in financial institutions (Minton, Taillard, and Williamson, 2014; Akhigbe and Martin, 2008; Faleye and Krishnan, 2015). Wang and Hsu (2013), covering a longer time period that covers the crisis and pre-crisis period, find that banks are riskier when financial institutions have larger boards. In multi-country settings, Beltratti and Stulz (2012) find that a larger boards increase the bank risks during the crisis period while Erkens, Hung, and Matos (2012) do not find a significant relationship for the pre-crisis period. Literature also reports that board independence reduces the risk-taking the behaviour of banks (Beltratti and Stulz, 2012; Erkens, Hung, and Matos, 2012; Minton, Taillard, & Williamson, 2014; Faleye and Krishnan, 2015).[6] Bank risks can also be affected by various executive board demographics such as age, gender and educational degree. For example, bank boards with a higher representation of younger or female executive members increase the portfolio risk while boards with more executives who hold

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[5] In the context of non-financial institutions, there is a wide academic discussion related to impacts of board characteristics on firm outcomes (Boone, Casares Field, Karpoff, and Raheja, 2007; Cheng, 2008; Dahya & McConnell, 2007; Harris and Raviv, 2008; Levi, Li, and Zhang, 2014).

[6] Also, given that banks are complex and regulated firms, it might require a larger board with greater proportions of outside directors to add value on advising and monitoring on corporate governing process (Coles, Daniel, and Naveen, 2008; Klein, 1998).

doctorate degrees reduce the portfolio risk (Berger, Kick, and Schaeck, 2014). Boards with more busy directors are associated with lower market and idiosyncratic risk (Elyasiani and Zhang, 2015), whereas higher financial expertise leads to more risk-taking (Minton, Taillard, and Williamson, 2014).

3. 2.2. Age and decision making

Age is found to be a significant factor that can continuously affect an individual's attitude, investment behaviour, decision making and information processing (Bucciol and Miniaci, 2011; Chevalier and Ellison, 1999; Hong, Kubik and Solomon, 2000; Rhodes, 1983; Serfling, 2014; Taylor, 1975; Yim, 2013). Empirical evidence finds that there is a negative relationship between an individual age and their risk-taking behaviour. For example, older executives take less risk (MacCrimmon and Wehrung, 1990) and younger individuals are more likely to make mistakes when they make financial decisions through lifecycle patterns (Agarwal et al., 2009).

At a group level, theories of social identity and self-categorization (Turner et al., 1987) hypothesise that individuals tend to classify themselves and others into groups by using personally meaningful dimensions which might include various demographic categories. Age demography plays an important role when group members interact among themselves (Ferris et al., 1991). Group members of similar ages are likely to have similar historical experience and values, which also fosters them to hold similar perceptions, attitudes and beliefs. Empirical evidence finds that age similarity impacts on group process, communication and cohesion.

3.2.3. Board member similarities, corporate governance and bank risk-taking

Board attributes drive board competence and enable the board to undertake its role as advisors and also monitor the governance process. The effectiveness of the board as a decision-making group can be influenced by its cognitive independence. This is because members of the board should make judgements and evaluation more cognitively on those important strategic and policy issues proposed by executives. In other words, cognitive conflict results in more disagreements among board members that can contribute to enhancing the quality of decision-making in uncertain environments (Forbes and Milliken, 1999). On the other hand, the "similar attraction" phenomenon (or homophily) argues that people are more likely to communicate and interact with others who have similar social or demographic attributes (McPherson et al., 2001a). Moreover, these similarities ensure more affirmative interaction between board members which limits cognitive conflict as well as leading to a more critically evaluation in interaction processes. Consequently, chair-CEO similarities can decline the intensity of boards monitoring and effectiveness.

Literature has empirically investigated the relationship between board member similarities and efficiency of corporate governance. When board directors have social ties with the CEO, the effectiveness of board monitoring is likely to be undermined (Hwang and Kim, 2009). In the context of M&A transactions, CEOs with higher network centrality are more likely to pursue acquisition deals that generate lower returns (El-Khatib et al., 2015). IPO's perform better when top management team has stronger social ties with the board members (Chahine and Goergen, 2013). Looking at German listed non-financial firms, Goergen et al. (2015) show that age dissimilarity increases both firm value and monitoring intensity.

The complexity and opacity of the banking business challenge the corporate governance in banks. This is because there are more informational asymmetries between managers and stakeholders in banking due to the nature of the banks business. Banks absorb short-term liquid deposits and transform them into long-term illiquid loans. Informationally opaque bank assets may motivate managers to take excessive risk without being adequately monitored and evaluated by external stakeholders (Becht, Bolton, and Röell, 2011; Diamond, 1989; Morgan, 2000). Hence, banks boards should play an important role in the bank's risk management and in enhancing bank stability through effective monitoring and evaluating on various bank's risk-taking behaviour (Srivastav and Hagendorff, 2015).

In this paper, we aim to provide further evidence investigating the relationship between board dissimilarity and bank risks. Goergen et al. (2015) suggest that greater age dissimilarity stimulates the cognitive conflicts between the chair and the CEO as well as increases internal monitoring intensity. We, thereby, hypothesise that substantial age gap between the chair and the CEO can improve the chair's monitoring performance on board, curbing bank excessive risk-taking.

H1: there is a negative relationship between chair-CEO age gap and bank risk-taking.

We also examine the impact of dissimilarities in gender and previous industry experience on bank risks. Literature document the importance of gender impacting on the governing process and firm outcomes (Carter et al., 2003, Adams and Ferreira, 2009, Gupta and Raman, 2013). For example, female board directors can have an impact on CEO

appointment process by constituting a supply of viable candidates for the CEO position (Barker and Mueller, 2002) and announcement of female executives can cause a negative stock market's reaction (Lee and James, 2007). As banking business is more opaque, complex and specialized, the prior industry experience of directors is also mattered for risk management in banks (Von Meyerinck et al., 2015, Minton et al., 2014). The dissimilarities in terms of gender and prior industry experience could mitigate the interaction between chair and CEO, which increase the independence of the chair on his or her monitor duty.

H2: The difference in gender and prior industry experience between chair and CEO could have the negative impact on bank risk-taking behaviour.

3.3. Data, methodology and descriptive statistics

3.3.1. Sample

Our sample consists of listed banks (commercial banks, bank holding companies and savings banks) from 16 European countries over the period 2010-2014. Collecting data for all banks is not possible due to non-uniform disclosure requirements of banks' board information in Europe. This provides a limitation and a challenge for data collection for European banking research in the corporate governance area. We collate the data from different sources. Most of the board characteristics are carefully hand collected from various resources that provide board information including annual reports, Bloomberg and banks' websites. Bank financial data is collected from the Bank scope and Datastream. Our final dataset includes 96 listed European banks and 480 bank-year observations. Our data covers most of the largest listed banks in Europe. It is important to note that in our

regressions we exclude any observations where the chair and the CEO are the same people in our data.

3.3.2. Measures of bank risk-taking

We use multiple proxies of bank risk to examine the impact of chair-CEO dissimilarities on bank risk-taking. In particular, we distinguish between the loan portfolio risk, balance sheet risk and market-based risk.

We use two proxies, the ratio of *loan loss reserves to gross loans* and the ratio of *impaired loans to gross loans*, which are commonly used in the literature to measure the loan portfolio risk (see for instance, Angbazo,1997; Kwan and Eisenbeis, 1997; Konishi and Yasuda, 2004; Shiers, 2002; Cebenoyan and Strahan, 2004; Gonzalez, 2005; Altunbas et al., 2007; Lepetit et al., 2008; Casu et al., 2011). *Loan loss reserves to gross loans* include bank managers' evaluation of the quality of the loan portfolio, including performing and non-performing loans (Abedifar et al., 2013). This takes into account the past performance and the expectation for the future performance of the existing loan portfolio. It takes into account the past performance and the expectation for the future performance of the existing loan portfolio and its periodic adjustment is reflected in the income statement in the form of loan-loss provision (Abedifar et al., 2013). *Impaired loans to gross loans* is a backwards-looking proxy for credit risk.

We also use the ratio of *Risk-weighted asset to total asset* (*RWA/TA*) which includes all assets with non-negligible credit and market risk and captures the overall riskiness of bank portfolios at any point in time (Gropp et al., 2011; Delis and Kouretas, 2011). RWA/TA weights on- and off-balance sheet assets and activities according to their

perceived risk to allow inferences about the soundness of the bank (Berger et al., 2014). It is widely used as a standard risk measure to evaluate impacts of bank investment projects selections on bank risk-taking (Berger et al., 2014).

Finally, we use *Total risk* which measures the volatility of banks' stock price (Anderson and Fraser, 2000; Pathan, 2009; Peni and Vähämaa, 2012). This indicator is the standard deviation of the bank's daily stock price of the current (t) and the following year ($t + 1$). The stock price is adjusted for any capital adjustment including dividend and stock splits. *Total risk* captures the overall variability in bank stock returns and reflects the market's perceptions about the risks inherent in the bank's assets, liabilities, and off-balance-sheet positions (Pathan, 2009). Minton et al. (2014) suggest that the measure of the bank stock variability provide the market-based approach to capture comprehensive risk-taking by the bank. Minton et al. (2014) explore the independent directors who are the financial experts on bank risk-taking. The stock market can reflect this information of financial experts on board and its potential impact on bank risk-by changes of bank stocks (Minton et al., 2014). Therefore, we use the Total risk to measure the market's perceptions about the risks inherent in the internal corporate governance mechanisms in banks.

3.3.3. Measures of chair-CEO age dissimilarity

We utilise the same age dissimilarity measures as Goergen et al. (2015) to measure chair-CEO age dissimilarity. Four variables are used to proxy the age gap between the CEO and the chair. *Chair-CEO age difference* is the age of the chair minus the age of the CEO. This difference can be positive or negative indicating that cognitive conflict between the chair and the CEO may arise both in the cases when the chair is considerably older or younger than the CEO. *Chair-CEO age difference absolute* is the absolute value of the

age difference between the chair and the CEO. This variable captures the age difference between the chair and the CEO regardless of whoever is older (or younger). We also employ *Chair–CEO age difference squared* to capture any non-linear relationship between age difference and bank risk-taking.

Goergen et al. (2015) argue that cognitive conflict between the chair and the CEO should be strongest if both are from different generations. A generational age gap is defined as an age difference of at least 20 years (Strauss and Howe, 1997). We use *Chair-CEO Gap20* to capture the generational age gap between the chair and the CEO. *Chair-CEO Gap20* is a dummy variable and equals to 1 if the age gap between chair and CEO is larger than 20 and 0 otherwise.

We also utilise a set of control variables that measure other dissimilarities between the chair and the CEO characteristics. We use a dummy variable, *Chair-CEO different gender*, which equals to 1 if the chair and the CEO are different genders and 0 otherwise, to proxy the gender differences. The dummy variable *Chair-CEO different industry experience* aims to proxy the differences in the industrial experience between the chair and the CEO. This variable equal to 1 if the chair and CEO are from different industrial backgrounds and 0 otherwise. We also use the *Chair-CEO joint tenure*, which is the number of years that the chair and the CEO have been working together, to reflect the interaction between the chair and the CEO.

3.3.4. Measures of board, CEO and chair characteristics

We use a set of variables that are common in the corporate governance literature to measure the board characteristics including *Board size*, *Board independence* and *Busy board*. *Board size* is the number of board director on the board (see for instance Elyasiani & Zhang, 2015; Fich & Shivdasani, 2006; Field, Lowry, & Mkrtchyan, 2013; Fortin et al., 2010; Minton et al., 2010; Adams, 2012; Peni and Vähämaa, 2012) . *Board independence* is the percentage of an independent director on the board. *The busy board* is a dummy variable that identifies whether more than 50 percentage of board director hold more than one director role in other companies and 0 otherwise.

Following the literature, we measure CEO power by *CEO tenure* and *CEO retriment* (Adams et al., 2005b, Pathan, 2009, Onali et al., 2015, Kaplan et al., 2012). *CEO tenure* is the number of years the CEO has been serving as CEO of the bank. *CEO retriment* is a dummy variable 1 if the CEO's age is over 60. We use *Chair tenure* to capture the chair's power, which equals the number of years the chair has been serving as the chair of the board. *Ex-CEO* is a dummy variable that equals to 1 if the chair is the former CEO of the bank (Andres, 2014). *The busy chair* is a dummy variable which equals to 1 if the chair takes more than one board seat in other firms and 0 otherwise. *CEO change* and *Chair change* are dummy variables which equal to 1 if the CEO or the chair changed during the period of observation in a given year.

Prior studies suggest that bank size, capital and activity have an impact on its profitability and risk-taking (Berger and Bouwman, 2013, Bennett et al., 2015, Adams and Mehran, 2012, Demirgüç-Kunt and Huizinga, 2010, Laeven and Levine, 2009). To control for these factors we use the bank characteristics as control variables. *Bank size* is measured

as the natural logarithm of the total asset of the bank. *Bank capital* is the total capital ratio of the bank. *Bank activity* is the growth of total gross loan for each year. We also use *GDP growth*, *public debt* (expressed as a percentage of GDP) and *year* dummy variables to control for the macroeconomic environment. Goergen et al. (2015) document that the age difference between chair and CEO could improve the firm financial performance. As age difference between chair and CEO could enhance the board monitoring performance. Thus, Chair-CEO age difference might be correlated to bank performance (Goergen et al., 2015). To avoiding the potential multicollinearity problem, our control variables exclude the profitability variables. We introduce the empirical assessment of the relationship between chair-CEO demography dissimilarities and bank performance in Chapter 4. All variable definitions are presented in Appendix 3.A.

Moreover, the index could be the alternative measure to indicate the firm-level governance attributes. Aggarwal et al. (2008) select the forty-four attributes of firm-level governance mechanisms to construct the index of corporate governance to measure the minority shareholder protection. To construct an effective and comprehensive index of the firm-level governance, Aggarwal et al. (2008) suggest that index should cover four broad subcategories of corporate governance attributes including the board (twenty-five attributes), audit (three attributes), anti-takeover (six attributes), and compensation and ownership (ten attributes). For our research, we are unable to obtain sufficient information to cover the corporate governance attributes due to the limited data closured in European banks. Further, our main interest variable is demography difference between chair and CEO, which that could not be adopted in index-based measure as there are only three attributes can be constructed. There are few index-based measures of corporate governance are used in corporate governance research (Aggarwal et al., 2008; Bebchuk et al., 2008). The shareholder self-selection and miss-matching problems could result in

a weak adoption of the index-based measure. To matching high ranked corporate governance index, the controlling shareholders could intentionally increase the governance index by changing the internal corporate governance mechanisms. The index might not indicate the value of corporate governance in an efficient way. For instance, by using the index to measure the quality of bank-level governance attributes, Beltratti and Stulz (2012) provide the empirical assessment presenting that banks with more shareholder-friendly boards (higher G-index) performed significantly worse during the crisis. As the above reasons, we use the various individual corporate governance attributes as explanatory variables rather than constructed index or score.

3.3.5. Empirical model

Here, we aim to establish a link between chair-CEO age dissimilarity and bank risk-taking. Following earlier literature presented above we model bank i (i = 1, 2, …, 96) at time t (t = 2010, 2011, …, 2014) as a function of the factors explained above and estimated the following empirical model:

$$Bank\ risk\ taking_{i,t} = \beta_0 + \beta_1 Chair - CEO\ age\ dissimilarity_{i,t}$$

$$+ \beta_2 Chair - CEO\ gender\ dissimilarity_{i,t}$$

$$+ \beta_3 Chair - CEO\ industrial\ experience\ dissimilarity_{i,t}$$

$$+ \sum_{j=1}^{J} \beta_j \times Chair\ characteristics_{j,i,t} + \sum_{h=1}^{H} \beta_h \times CEO\ characteristics_{h,i,t}$$

$$+ \sum_{s=1}^{S-1} \beta_s \times Board\ characteristics_{s,i,t} + \sum_{k=1}^{K-1} \beta_k \times Bank\ characteristics_{k,i,t}$$

$$+ \sum_{l=1}^{L-1} \beta_l \times Country\ characteristics_{l,i} + \sum_{y=1}^{Y-1} \beta_y \times Year_{i,y} + \mu_i + e_{i,t}$$

where;

The dependent variables *Loan loss provisions to total loans, Impaired loans to total loans, RWA/TA,* and *Total risk* are used interchangeably for bank risk-taking, μ denotes the fixed effect of bank i and e denote the remaining disturbance term. We are using fixed effects regressions as the main estimator. All regressions are based on the strongly balanced panel. We provide robustness checks with alternative estimators in Section 5.

3.3.6. Descriptive statistics

Descriptive statistics for dependent and independent variables are presented in Table 3.1. Panel A reports bank risk measures. Mean *RWA/TA* is 46% while mean *Total risk*, which is measured as standard deviation of the daily bank stock, is 25.6. Averages for *loan loss reserves to gross loans* and *impaired loans to gross loans* are 3.9% and 8.1%, respectively.

Panel B shows various chair-CEO dissimilarities in European banks over the period of 2010 to 2014. The average age gap between chair and CEO, measured by the *chair–CEO age difference*, is 7.512 years. The average of the absolute differences for this variable is 9.6 years. We observe a generational age gap between the chair and the CEO (*Chair-CEO gap 20*) for 11.4% of all banks in the data. For other chair-CEO dissimilarities, we find that there is a gender difference between the chair and the CEO for 3% of all observations. The chair and the CEO have different industry experience for 24% of all observations. The average CEO tenure is 6.3 years while a slightly shorter average year of 5.9 is observed for the chair tenure. The percentage of CEO whose age is older than 60 is 22.1%. In 9% of all observations the CEO also serves as the chair of the board, and in 10% the chair is the former CEO. Chairs are busy for 71% of all observations.

Panel C reports the board characteristics of the companies in our sample. Mean board size is thirteen. On average independent directors constitute 64% of the board, and this figure is in line with earlier studies (Beltratti and Stulz, 2012, Pathan and Faff, 2013, Wang and Hsu, 2013). Boards, where at least 50% of directors hold more than one directorship with other firms, constitute 88% of all observations. In Panel D, we present statistics for bank characteristics and macroeconomic indicators. Mean of the total asset is 336.8 billion US dollar. Average total capital ratio and growth in the gross loans are 16.32% and 3.33%, respectively.

Table 3.1: Descriptive statistics

Variable	Obs.	Mean	Std.Dev.	Min.	Max.
Panel A: Bank risk measures					
Loan loss reserves to gross loans (%)	427	3.96	4.08	0.06	21.70
Impaired loans to gross loans (%)	359	8.12	8.99	0.06	48.06
RWA/TA (%)	395	0.47	0.20	0.02	0.94
Total risk	434	25.70	57.52	0.01	536.60
Panel B: Chair-CEO dissimilarities					
Chair-CEO age difference	447	7.5	9.4	-25.0	32.0
Chair–CEO age difference absolute	447	9.6	7.2	0.0	32.0
Squared chair–CEO age difference	447	144.3	183.6	0.0	1024.0
Chair-CEO gap 20	442	0.1	0.3	0.0	1.0
Chair-CEO different gender	444	0.0	0.2	0.0	1.0
Chair-CEO different industry experience	442	0.2	0.4	0.0	1.0
Panel C: CEO power and chair characteristics					
Chair-CEO joint tenure	448	4.1	3.1	1.0	19.0
CEO retirement	480	0.22	0.42	0.00	1.00
CEO tenure	477	6.36	5.25	1.00	27.00
Ex CEO	480	0.10	0.31	0.00	1.00
Chair tenure	474	5.98	5.81	1.00	41.00
BusyChair	479	0.72	0.45	0.00	1.00
CEO Change	475	0.11	0.31	0.00	1.00
Chair Change	475	0.11	0.32	0.00	1.00
Panel D: Board characteristics					
Board size	480	13.15	5.61	3.00	34.00
Independence (%)	480	0.65	0.18	0.13	1.00
Busy board	480	0.89	0.32	0.00	1.00
Panel E:Bank characteristics and macroeconomic environment					
Total assets (log)	472	4.48	1.16	2.19	6.45
Total capital ratio (%)	409	16.32	4.74	-5.10	37.10
Gross loan growth (%)	449	3.33	19.76	-100	171.00
GDP real growth (%)	480	0.84	1.99	-8.86	5.70
Public debt (%)	480	71.09	33.42	19.20	177.10

3.4. Results

3.4.1. Age dissimilarity variables

We present the results of the estimations to test the relationship between chair-CEO age dissimilarity and bank risk-taking in Tables 3.2 to 3.5. In all specifications, we include all the control variables, firm-fixed and year-fixed effects. Table 3.2 presents results for the loan portfolio risk variable *Loan loss reserves to total gross loans*. In Columns 1 to 4, we employ each of our four age dissimilarity variables separately without the dissimilarities in gender and prior industry experience. These variables are introduced in Columns 4 to 8. We find that the coefficient of *Chair-CEO Gap20* is statistically significant at 1% level and has a negative sign (Columns 1 and 4). We do not find *Chair-CEO age difference*, *Squared chair–CEO age difference* and *Chair-CEO age difference absolute* to be significant in any of the models in Table 3.2. These results show that an age difference between the chair and the CEO leads to lower bank loan portfolio risk but only when there is a generational gap of 20 years age difference.

In Table 3.3 we report the results of the regressions for the *Impaired loan to gross loans*. Similar to results in Table 3.2, out of the four chair-CEO age dissimilarity variables, we only find the coefficient of *Chair-CEO Gap20* to be significant and have a negative impact on *Impaired loan to gross loans* ratio. A generational age gap between the chair and the CEO leads to lower levels of impaired loans. Results on current and expected credit risk (*Loan loss reserves to total gross loans*) and past credit risk (*Impaired loan to gross loans*) indicators complementary and show the consistency of the relationship between the chair-CEO generational age gap and loan portfolio risks.

Table 3.2: Loan loss reserves to gross loans

This table presents fixed effect regression results of bank loan quality on chair-CEO age dissimilarity, other chair-CEO dissimilarities, CEO and chair characteristics, board characteristics, bank characteristics and macroeconomic variables for banks listed in 16 European countries for the period between 2010 and 2014. Chair-CEO age dissimilarity and bank loan quality (Loan loss reserves/ gross loans) of listed banks in 16 European countries in the sample period 2010 to 2014. This table contains fixed effect regression results of bank loan quality on chair-CEO age dissimilarity, other chair-CEO dissimilarities, CEO and chair characteristics, board characteristics, bank characteristics and macroeconomic variables for banks listed in 16 European countries in the sample. Regression (1)-(8) set the Loan loss reserves/Gross Loans as dependent variables; All dependent and independent variables are defined in Appendix 3.A. Robust t-statistics are based on standard errors clustered by bank-level. The constant is included in all regressions, but not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	Loan loss reserves to / gross loans							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Chair-CEO Gap20	-1.657***				-1.648***			
	(-2.66)				(-2.60)			
Chair-CEO age gap difference		0.0002				0.0009		
		(-0.00)				-0.03		
Chair-CEO age difference absolute			-0.0303				-0.0307	
			(-1.08)				(-1.05)	
Chair-CEO age difference squared				-0.0008				-0.0008
				(-0.75)				(-0.71)
Chair-CEO different gender					0.3433	0.5019	0.3824	0.409
					-0.28	-0.4	-0.3	-0.32
Chair-CEO different industry experience					-0.1983	-0.1524	0.1281	-0.0501
					(-0.19)	(-0.14)	-0.12	(-0.05)
Chair CEO joint tenure	0.0946	0.1521*	0.1468*	0.1436*	0.0891	0.1450*	0.1430*	0.1387*
	-1.2	-1.89	-1.83	-1.77	-1.09	-1.73	-1.71	-1.65
CEO retirement	0.2388	0.6206	0.4524	0.488	0.2508	0.6566	0.483	0.5183
	-0.57	-1.25	-1.04	-1.1	-0.58	-1.29	-1.08	-1.13
CEO tenure	-0.068	-0.0554	-0.0631	-0.0605	-0.066	-0.0519	-0.0604	-0.0574
	(-1.44)	(-1.12)	(-1.28)	(-1.23)	(-1.38)	(-1.03)	(-1.21)	(-1.15)
Ex CEO	-0.4822	-0.0157	-0.069	-0.073	-0.4872	-0.0193	-0.075	-0.0757
	(-0.62)	(-0.02)	(-0.09)	(-0.09)	(-0.62)	(-0.02)	(-0.09)	(-0.10)
Chair tenure	-0.0706*	-0.087**	-0.0800*	-0.0819*	-0.0571	-0.0711	-0.072	-0.0698
	(-1.69)	(-1.97)	(-1.83)	(-1.87)	(-1.02)	(-1.21)	(-1.24)	(-1.20)
Busy Chair	0.5998	0.9191	0.8773	0.8805	0.6076	0.9315	0.8894	0.8906
	-0.96	-1.43	-1.37	-1.37	-0.96	-1.43	-1.37	-1.36
CEO Change	0.0218	0.0628	0.0335	0.0505	0.0109	0.0503	0.0171	0.0383
	-0.07	-0.18	-0.1	-0.15	-0.03	-0.14	-0.05	-0.11
Chair Change	-0.2203	-0.1826	-0.1915	-0.1875	-0.2138	-0.1708	-0.1814	-0.1771
	(-0.68)	(-0.54)	(-0.57)	(-0.56)	(-0.65)	(-0.50)	(-0.54)	(-0.52)
Board size (log)	0.5497	0.3932	0.4712	0.4217	0.5107	0.3672	0.4472	0.3989
	-0.75	-0.52	-0.62	-0.56	-0.68	-0.47	-0.58	-0.52
Independence	-3.2731**	-2.2654	-2.1347	-2.1863	-3.2735**	-2.2214	-2.0804	-2.141
	(-2.32)	(-1.63)	(-1.54)	(-1.57)	(-2.29)	(-1.57)	(-1.47)	(-1.52)
Busy board	-0.5398	-0.8090*	-0.8062*	-0.7982*	-0.5438	-0.8105*	-0.8100*	-0.8018*
	(-1.16)	(-1.69)	(-1.69)	(-1.67)	(-1.16)	(-1.67)	(-1.68)	(-1.66)
Total assets (log)	-2.9848**	-2.4946	-2.4619	-2.4877	-2.7066*	-2.2062	-2.2044	-2.2144
	(-2.03)	(-1.64)	(-1.62)	(-1.64)	(-1.78)	(-1.40)	(-1.40)	(-1.41)
Total capital ratio	-0.121***	-0.089**	-0.090**	-0.090**	-0.121***	-0.089**	-0.092**	-0.091**
	(-3.00)	(-2.22)	(-2.26)	(-2.25)	(-2.95)	(-2.20)	(-2.25)	(-2.24)
Gross loan growth	-0.0063	-0.0093	-0.0097	-0.0095	-0.0065	-0.0095	-0.0099	-0.0097
	(-1.02)	(-1.47)	(-1.53)	(-1.50)	(-1.03)	(-1.48)	(-1.54)	(-1.51)
GDP real growth	0.5686***	0.6502***	0.6501***	0.6519***	0.5729***	0.6511***	0.6523***	0.6537***
	-6.58	-7.59	-7.61	-7.62	-6.45	-7.4	-7.44	-7.44
Public debt	0.0996**	0.096***	0.099***	0.099***	0.099***	0.097***	0.099***	0.099***
	-5.26	-4.96	-5.06	-5.02	-5.18	-4.92	-5.02	-4.97
Fixed effects	Year	Year	Year	Year	Year	Year	Year	Year
Number of observations	361	366	366	366	356	360	360	360
Within R-squared	0.228	0.227	0.231	0.229	0.222	0.223	0.226	0.225

Table 3.3: Impaired loans to gross loans

This table presents fixed effect regression results of bank loan quality on chair-CEO age dissimilarity, other chair-CEO dissimilarities, CEO and chair characteristics, board characteristics, bank characteristics and macroeconomic variables for banks listed in 16 European countries for the period between 2010 and 2014. This table contains Dependent and independent variables are defined in Appendix 3.A. Robust t-statistics are based on standard errors clustered by bank-level. The constant is included in all regressions but not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

Independent variables	Impaired loans to gross loans							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Chair-CEO Gap20	-3.6900***				-3.792***			
	(-2.68)				(-2.70)			
Chair-CEO age difference		-0.0253				-0.0246		
		(-0.38)				(-0.37)		
Chair-CEO age difference absolute			-0.09				-0.092	
			(-1.49)				(-1.43)	
Chair-CEO age difference squared				-0.001				-0.002
				(-0.95)				(-0.93)
Chair-CEO different gender					-1.4169	-1.2018	-1.422	-1.379
					(-0.56)	(-0.45)	(-0.54)	(-0.52)
Chair-CEO different industry experience					-1.1471	-1.099	-0.393	-0.865
					(-0.52)	(-0.47)	(-0.17)	(-0.37)
Chair CEO joint tenure	0.1452	0.2771	0.29	0.26	0.1688	0.2995	0.3063	0.2807
	(-0.75)	(-1.36)	(-1.43)	(-1.29)	(-0.85)	(-1.43)	(-1.49)	(-1.36)
CEO retirement	-0.2032	0.4481	0.1	0.3	-0.369	0.3267	0.0027	0.1744
	(-0.22)	(-0.4)	(-0.1)	(-0.3)	(-0.39)	(-0.29)	(-2.18)	(-0.17)
CEO tenure	-0.0393	-0.0093	-0.02	-0.02	-0.0448	-0.0131	-0.028	-0.021
	(-0.32)	(-0.07)	(-0.19)	(-0.13)	(-0.36)	(-0.10)	(-0.22)	(-0.16)
Ex CEO	-1.3099	-0.2883	-0.4	-0.41	-1.3097	-0.2577	-0.383	-0.383
	(-0.81)	(-0.18)	(-0.24)	(-0.25)	(-0.80)	(-0.15)	(-0.23)	(-0.23)
Chair tenure	-0.30**	-0.32**	-0.34**	-0.32**	-0.32**	-0.33**	-0.366**	-0.346**
	(-2.37)	(-2.44)	(-2.55)	(-2.45)	(-2.20)	(-2.23)	(-2.40)	(-2.28)
Busy Chair	0.7219	1.0885	1.07	1.08	0.5835	0.958	0.9708	0.9541
	(-0.52	(-0.75)	(-0.74)	(-0.75)	(-0.41)	(-0.64)	(-0.66)	(-0.64)
CEO Change	0.0977	0.226	0.18	0.21	0.169	0.2903	0.2203	0.2707
	(-0.14)	(-0.3)	(-0.23)	(-0.28)	(-0.23)	(-0.38)	(-0.29)	(-0.35)
Chair Change	-0.5961	-0.5556	-0.52	-0.53	-0.5943	-0.5406	-0.523	-0.516
	(-0.82)	(-0.73)	(-0.70)	(-0.70)	(-0.80)	(-0.70)	(-0.69)	(-0.67)
Board size (log)	0.809	0.5282	0.61	0.5	0.7996	0.4648	0.5567	0.4431
	(-0.49)	(-0.3)	(-0.35)	(-0.29)	(-0.47)	(-0.26)	(-0.31)	(-0.25)
Independence	-8.26**	-5.0252	-4.62	-4.82	-8.25**	-5.1191	-4.689	-4.904
	(-2.48)	(-1.53)	(-1.41)	(-1.47)	(-2.43)	(-1.52)	(-1.40)	(-1.46)
Busy board	-0.1696	-0.8918	-0.9	-0.87	-0.2084	-0.9178	-0.934	-0.904
	(-0.16)	(-0.84)	(-0.85)	(-0.82)	(-0.20)	(-0.85)	(-0.87)	(-0.84)
Total assets (log)	-5.1712	-4.0681	-4.01	-4.04	-4.9338	-3.7544	-3.757	-3.754
	(-1.65)	(-1.24)	(-1.23)	(-1.24)	(-1.51)	(-1.10)	(-1.11)	(-1.10)
Total capital ratio	-0.33***	-0.26***	-0.26***	-0.26***	-0.32***	-0.25***	-0.26***	-0.26***
	(-3.88)	(-2.96)	(-3.02)	(-3.01)	(-3.73)	(-2.83)	(-2.91)	(-2.88)
Gross loan growth	-0.0162	-0.0243*	-0.0253*	-0.0245*	-0.0163	-0.0242*	-0.0253*	-0.0245*
	(-1.23)	(-1.78)	(-1.86)	(-1.80)	(-1.22)	(-1.75)	(-1.83)	(-1.77)
GDP real growth	0.95***	1.12***	1.12***	1.13***	0.97***	1.14***	1.14***	1.15***
	(-5.15)	(-6.15)	(-6.14)	(-6.17)	(-5.12)	(-6.05)	(-6.07v	(-6.08v
Public debt	0.20***	0.20***	0.211***	0.210***	0.209***	0.201***	0.209***	0.208***
	(-4.99)	(-4.81)	(-4.97)	(-4.91)	(-4.87)	(-4.68)	(-4.84)	(-4.77)
Fixed effects	Year	Year	Year	Year	Year	Year	Year	Year
Number of observations	315	319	319	319	310	313	313	313
Within R-squared	0.184	0.171	0.18	0.17	0.175	0.16	0.167	0.163

Results for the broader bank risk measure, *RWA/TA*, are presented in Table 3.4. In this set of regressions, we do not find any significant relationship between *Chair-CEO Gap20* and *RWA/TA*. However, we report a negative and statistically significant (at 10% level)

coefficient for the simpler *Chair-CEO age difference* variable. These findings show that the amount of risk-weighted assets decreases as the age difference between the chair and the CEO increase[7]. We do not find significant coefficients for the other chair-CEO age. Results for *Total risk*, a proxy based on the market's risk perception, are presented in Table 3.5. We only find *Chair-CEO age difference* to be statistically significant at 5% level with a negative sign. A larger age gap between the chair and CEO leads to a lower *total risk* in banks.

Overall, we find that age difference between chair-CEO is negatively related to various bank risk-taking measures. A greater age gap between the chair and the CEO, where the chair is older, is associated with the lower levels of bank risks. This result is in line with our hypothesis that a cognitive conflict, caused by the large age difference between the chair and the CEO, leads to more independent and prudent monitoring of the risk-taking activities of the managers by the chair, which in turn deduces overall bank risks. The effect of cognitive conflict on risk mitigation is particularly evident in the credit risk of the loan portfolio, which is the core business activity of banks.

3.4.2 Gender and industrial experience dissimilarity

We do not find gender and industrial experience dissimilarities to have a significant effect on any of the bank risk measures in estimations reported in Tables 3.1 to 3.5. Literature has shown that gender as an impacting on firm outcomes (Adams & Ferreira, 2009; Carter, Simkins, & Simpson, 2003; Gupta & Raman, 2013). However, the dissimilarities in terms

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[7] Note that Chair-CEO age difference is a positive number when the chair is older than the CEO.

of gender and prior industry experience between the chair and the CEO does not seem to have a relationship with bank risks.

Table 3.4: Risk-weighted assets to total assets (RWA/TA)

This table presents fixed effect regression results of RWA/TA on chair-CEO age dissimilarity, other chair-CEO dissimilarities, CEO and chair characteristics, board characteristics, bank characteristics and macroeconomic variables for banks listed in 16 European countries for the period between 2010 and 2014. This table contains Dependent and independent variables are defined in Appendix 3.A. Robust t-statistics are based on standard errors clustered by bank-level. The constant is included in all regressions but not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	RWA/TA							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Chair-CEO Gap20	1.903				1.896			
	(-1.28				(-1.29			
Chair-CEO age difference		-0.124*				-0.127*		
		(-1.87)				(-1.94)		
Chair-CEO age difference absolute			-0.0237				-0.0271	
			(-0.38)				(-0.42)	
Chair-CEO age difference squared				-0.0004				-0.0005
				(-0.18)				(-0.20)
Chair-CEO different gender					0.0284	-1.0557	-0.8567	-0.7935
					-0.01	(-0.39)	(-0.31)	(-0.29)
Chair-CEO different industry experience					0.346	0.3927	0.4349	0.2381
					-0.15	-0.17	-0.18	-0.1
Chair CEO joint tenure	-0.0606	-0.0546	-0.0867	-0.0866	-0.0661	-0.0398	-0.0758	-0.0759
	(-0.32)	(-0.29)	(-0.45)	(-0.45)	(-0.35)	(-0.21)	(-0.40)	(-0.39)
CEO retirement	0.8352	-0.7877	0.2696	0.3272	0.8199	-0.8601	0.217	0.2826
	-0.88	(-0.72)	-0.28	-0.33	-0.86	(-0.78)	-0.22	-0.29
CEO tenure	0.1978*	0.14	0.1785	0.1815	0.1896*	0.1335	0.1726	0.1759
	-1.82	-1.25	-1.61	-1.64	-1.76	-1.21	-1.57	-1.6
Ex CEO	0.9115	0.1635	0.2705	0.2819	0.9199	0.1963	0.2974	0.3151
	-0.52	-0.09	-0.16	-0.16	-0.53	-0.12	-0.17	-0.18
Chair tenure	0.0472	0.0882	0.0528	0.0499	0.031	0.0461	0.0147	0.0169
	-0.5	-0.9	-0.54	-0.51	-0.25	-0.36	-0.12	-0.13
Busy Chair	0.7837	0.5132	0.7465	0.766	0.971	0.6528	0.8958	0.9073
	-0.54	-0.35	-0.5	-0.51	-0.67	-0.45	-0.61	-0.61
CEO Change	0.2139	0.137	0.1716	0.1878	0.213	0.1828	0.2081	0.2306
	-0.28	-0.18	-0.22	-0.24	-0.28	-0.24	-0.27	-0.3
Chair Change	-0.3845	-0.8132	-0.6107	-0.6073	-0.4684	-0.8941	-0.6868	-0.6806
	(-0.50)	(-1.05)	(-0.79)	(-0.79)	(-0.62)	(-1.17)	(-0.90)	(-0.89)
Board size (log)	3.38*	3.69**	3.39*	3.34*	3.61**	4.13**	3.82**	3.75**
	-1.97	-2.12	-1.93	-1.91	-2.11	-2.38	-2.18	-2.15
Independence	-2.7467	-0.3318	-0.6282	-0.6892	-2.0686	0.7425	0.4565	0.378
	(-0.84)	(-0.10)	(-0.20)	(-0.22)	(-0.64)	-0.24	-0.14	-0.12
Busy board	0.9506	0.7571	0.7304	0.728	1.0402	0.8065	0.7842	0.7808
	-0.84	-0.67	-0.64	-0.64	-0.94	-0.72	-0.7	-0.7
Total assets (log)	-32.1***	-31.4***	-31.2**	-31.2**	-34.58**	-33.94**	-33.65**	-33.68**
	(-8.93)	(-8.67)	(-8.54)	(-8.56)	(-9.47)	(-9.24)	(-9.10)	(-9.11)
Total capital ratio	-0.67**	-0.61***	-0.61**	-0.61**	-0.66**	-0.59***	-0.60***	-0.60***
	(-7.18)	(-6.56)	(-6.54)	(-6.53)	(-7.08)	(-6.44)	(-6.41)	(-6.40)
Gross loan growth	0.0226	0.015	0.0163	0.0165	0.0265*	0.0186	0.0199	0.0201
	-1.5	-1	-1.08	-1.09	-1.79	-1.25	-1.33	-1.35
GDP real growth	-0.1442	0.0993	0.0778	0.0764	-0.2053	0.0586	0.035	0.0318
	(-0.68)	-0.49	-0.38	-0.38	(-0.97)	-0.29	-0.17	-0.16
Public debt	-0.11**	-0.11***	-0.11**	-0.11**	-0.11***	-0.11***	-0.112**	-0.113**
	(-2.71)	(-2.68)	(-2.60)	(-2.60)	(-2.74)	(-2.65)	(-2.56)	(-2.57)
Fixed effects	Year	Year	Year	Year	Year	Year	Year	Year
Number of observations	337	342	342	342	333	337	337	337
Within R-squared	0.308	0.295	0.285	0.285	0.33	0.316	0.305	0.305

Table 3.5: Total Risk

This table presents fixed effect regression results of bank total risk on chair-CEO age dissimilarity, other chair-CEO dissimilarities, CEO and chair characteristics, board characteristics, bank characteristics and macroeconomic variables for banks listed in 16 European countries for the period between 2010 and 2014. This table contains Dependent and independent variables are defined in Appendix 3.A. Robust t-statistics are based on standard errors clustered by bank-level. The constant is included in all regressions but not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	Total Risk							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Chair-CEO Gap20	-0.0302				-0.0232			
	(-0.11)				(-0.08)			
Chair-CEO age difference		-0.026**				-0.025**		
		(-2.05)				(-1.99)		
Chair-CEO age difference absolute			0.0016				0.0034	
			-0.13				-0.26	
Chair-CEO age difference squared				0.0001				0.0002
				-0.23				-0.33
Chair-CEO different gender					0.1001	0.0645	0.1172	0.1227
					-0.19	-0.13	-0.23	-0.24
Chair-CEO different industry experience					-0.1322	-0.0396	-0.1536	-0.1423
					(-0.30)	(-0.09)	(-0.34)	(-0.33)
Chair CEO joint tenure	0.0129	0.015	0.0147	0.0155	0.0098	0.0128	0.0115	0.0125
	-0.38	-0.46	-0.44	-0.46	-0.28	-0.38	-0.34	-0.36
CEO retirement	-0.0285	-0.2457	-0.0065	0.0032	-0.025	-0.2394	0.0053	0.0136
	(-0.15)	(-1.20)	(-0.03)	-0.02	(-0.13)	(-1.15)	(-0.03)	-0.07
CEO tenure	-0.0018	-0.0094	-0.0003	-0.0001	-0.0013	-0.0092	0.0003	0.0004
	(-0.09)	(-0.47)	(-0.02)	(-0.01)	(-0.06)	(-0.45)	(-0.01)	(-0.02)
Ex CEO	0.1661	0.1314	0.18	0.1849	0.1703	0.1329	0.1841	0.1891
	-0.5	-0.41	-0.56	-0.57	-0.51	-0.41	-0.57	-0.58
Chair tenure	0.0011	0.0102	0.0008	0.0005	0.006	0.012	0.0061	0.0058
	-0.06	-0.56	-0.05	-0.03	-0.25	-0.51	-0.26	-0.24
Busy Chair	-0.0881	-0.1185	-0.0835	-0.0808	-0.0888	-0.1152	-0.079	-0.0759
	(-0.33)	(-0.45)	(-0.32)	(-0.31)	(-0.33)	(-0.43)	(-0.29)	(-0.28)
CEO Change	0.2077	0.1799	0.2112	0.211	0.2136	0.184	0.2174	0.2157
	-1.42	-1.24	-1.45	-1.45	-1.43	-1.25	-1.47	-1.46
Chair Change	-0.0832	-0.1195	-0.0772	-0.0765	-0.0845	-0.122	-0.0789	-0.0787
	(-0.59)	(-0.85)	(-0.55)	(-0.55)	(-0.59)	(-0.86)	(-0.56)	(-0.56)
Board size (log)	0.0449	0.1518	0.0554	0.0562	0.0919	0.1826	0.0836	0.0865
	-0.14	-0.46	-0.17	-0.17	-0.27	-0.55	-0.25	-0.26
Independence	-0.6025	-0.4619	-0.5274	-0.5313	-0.6271	-0.4919	-0.5682	-0.5686
	(-0.97)	(-0.80)	(-0.90)	(-0.91)	(-1.00)	(-0.84)	(-0.96)	(-0.96)
Busy board	0.1989	0.1895	0.1863	0.185	0.2049	0.1924	0.1905	0.1888
	-0.95	-0.93	-0.91	-0.9	-0.97	-0.94	-0.92	-0.91
Total assets (log)	3.79***	3.828***	3.797***	3.799***	3.595***	3.649***	3.630***	3.63**
	-5.58	-5.77	-5.67	-5.68	-5.13	-5.32	-5.25	-5.25
Total capital ratio	0.0406**	0.0387**	0.0387**	0.0387**	0.0406**	0.0389**	0.0392**	0.0392**
	-2.28	-2.32	-2.3	-2.3	-2.25	-2.29	-2.29	-2.3
Gross loan growth	-0.0029	-0.0034	-0.003	-0.003	-0.003	-0.0035	-0.0031	-0.0031
	(-1.08)	(-1.28)	(-1.13)	(-1.13)	(-1.09)	(-1.31)	(-1.14)	(-1.15)
GDP real growth	-0.0679*	-0.0618*	-0.0670*	-0.0672*	-0.0754*	-0.0674*	-0.0730**	-0.0734**
	(-1.81)	(-1.75)	(-1.89)	(-1.89)	(-1.97)	(-1.87)	(-2.02)	(-2.02)
Public debt	-0.0104	-0.0087	-0.0098	-0.0099	-0.0106	-0.0089	-0.0102	-0.0104
	(-1.26)	(-1.07)	(-1.19)	(-1.20)	(-1.27)	(-1.09)	(-1.23)	(-1.24)
Fixed effects	Year	Year	Year	Year	Year	Year	Year	Year
Number of observations	344	349	349	349	339	343	343	343
Within R-squared	0.40	0.41	0.42	0.42	0.35	0.36	0.41	0.40

3.4.3. Significance of control variables

Turning to other control variables, we report insignificant coefficients for a large number of variables. This is similar to many studies in the area of corporate governance. In regressions where we look at loan portfolio credit risk in Table 3.2 and Table 3.3, we find that *CEO retirement*, *CEO tenure*, *Ex-CEO*, *Busy Chair*, *CEO Change*, *Chair Change*, *Board size* and *Busy board* are not statistically significant. In other words, this chair, CEO and board characteristics do not seem to have an impact on the credit risk of the bank. On the other hand, we find that in most of our results reported in Table 3.2 and Table 3.3 for loan portfolio credit risk indicators the coefficient of *Chair tenure* is negative and statistically significant. This shows that a longer tenured chair is able to reduce credit risk in banks. We also find that in *Chair CEO joint tenure* is statistically significant (albeit at 10% level only) and has a positive relationship with *Loan loss reserves to total gross loans* (Table 3.1) in six of the models. However, we do not find this variable to be significant when it is employed in the model with an *Impaired loan to gross loans.* This provides some tentative evidence that a longer working relationship between the chair and the CEO may reduce the chair's ability to monitor the CEO effectively.

Similarly, in Table 3.2 we find that the coefficient of the *Busy chair* is significant and negative in most of the models. Although we do not find this variable to be significant in Table 3. This finding provides some cautious evidence that busy outside directors on the board can contribute to managing portfolio risks well, a results inline with (Elyasiani and Zhang, 2015). Board with a larger portion of busy outside directors are expected to have better board capital by providing financial skills, connections, and industry knowledge, those in which avoiding higher coordination cost and free-rider of the board in the bank. Furthermore, similar to earlier studies (Pathan, 2009, Berger et al., 2014), we find that

board independence is associated with lower loan portfolio risk in European banks. It is important to note that this is variable is only significant in Models 1 and 5 in Tables 3.2 and 3.3.

3.5 Endogeneity and robustness test

3.5.1 Endogeneity issues

Corporate governance studies are often prone to potential endogeneity problems. The potential unobserved heterogeneity of chair-CEO age dissimilarity could result in spurious regression results (Goergen et al., 2015). That is, the characteristics of the chair or CEO, such as CEO retirement, the chair being the previous CEO (ex-CEO) of the bank might be correlated with chair-CEO age dissimilarity variables. In this section, we address these issues. To test this potential unobserved heterogeneity and endogenous matching, we set the Ex-CEO and CEO retirement as the control variables and re-run the fixed effect regressions for full models for each of the bank risk indicators. Results, reported in Tables 6, confirm our previous findings. Both the *Chair-CEO Gap20* and *Chair-CEO age difference* variables are still statistically significant and have a negative impact on bank risks. This test shows that serious unobserved heterogeneity or endogenous matching problems are unlikely to have an effect on our results.

To address the potential dynamic endogeneity issues, we apply a two-step system GMM estimations to control the potential endogeneity problems in our model (Arellano and Bond, 1991). This is because current realisations of independent variables might be affected by past dependent variables. In the context of corporate governance, dynamic endogeneity issues exist since past firm performance may have an influence on both current board structure and firm performance (Wintoki et al., 2012). In the context of our

work, past bad management of bank's risks could cause a change in current board structure or a replacement for chair or CEO (or both). This, in turn, may have an impact on the age gap between chair and CEO.

Table 3.6: Testing potential unobserved heterogeneity and endogenous matching

This table presents fixed effect regression results of bank risks on chair-CEO age dissimilarity, other chair-CEO dissimilarities, CEO and chair characteristics, board characteristics, bank characteristics and macroeconomic variables for banks listed in 16 European countries for the period between 2010 and 2014. This table contains Dependent and independent variables are defined in Appendix 3.A. Robust t-statistics are based on standard errors clustered by bank-level. The constant is included in all regressions but not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	(1)	(2)	(3)	(4)
	Loan loss reserves to gross loans	Impaired loans to gross loans	RWA/TA	Total risk
Chair-CEO Gap20	-1.6487***	-3.7924***		
	(-2.60)	(-2.70)		
Chair-CEO age difference			-0.0013*	-0.0259**
			(-1.90)	(-1.99)
Chair-CEO different gender	0.3433	-1.4169	-0.0134	0.0645
	(0.28)	(-0.56)	(-0.47)	(0.13)
Chair-CEO different industry experience	-0.1983	-1.1471	0.0012	-0.0396
	(-0.19)	(-0.52)	(0.05)	(-0.09)
Chair CEO joint tenure	0.0891	0.1688	-0.0001	0.0128
	(1.09)	(0.85)	(-0.05)	(0.38)
CEO retirement	0.2508	-0.3690	-0.0086	-0.2394
	(0.58)	(-0.39)	(-0.74)	(-1.15)
CEO tenure	-0.0660	-0.0448	0.0014	-0.0092
	(-1.38)	(-0.36)	(1.22)	(-0.45)
Chair tenure	-0.0571	-0.3207**	0.0004	0.0120
	(-1.02)	(-2.20)	(0.28)	(0.51)
Busy Chair	0.6076	0.5835	0.0076	-0.1152
	(0.96)	(0.41)	(0.49)	(-0.43)
CEO Change	0.0109	0.1690	0.0033	0.1840
	(0.03)	(0.23)	(0.42)	(1.25)
Chair Change	-0.2138	-0.5943	-0.0100	-0.1220
	(-0.65)	(-0.80)	(-1.24)	(-0.86)
Board size (log)	0.5107	0.7996	0.0482***	0.1826
	(0.68)	(0.47)	(2.65)	(0.55)
Independence	-3.2735**	-8.2533**	0.0239	-0.4919
	(-2.29)	(-2.43)	(0.74)	(-0.84)
Busy board	-0.5438	-0.2084	0.0079	0.1924
	(-1.16)	(-0.20)	(0.68)	(0.94)
Total assets (log)	-2.7066*	-4.9338	-0.3402***	3.6493***
	(-1.78)	(-1.51)	(-9.40)	(5.32)
Total capital ratio	-0.1218***	-0.3298***	-0.0048***	0.0389**
	(-2.95)	(-3.73)	(-5.03)	(2.29)
Gross loan growth	-0.0065	-0.0163	0.0002	-0.0035
	(-1.03)	(-1.22)	(1.19)	(-1.31)
GDP real growth	0.5729***	0.9737***	0.0008	-0.0674*
	(6.45)	(5.12)	(0.38)	(-1.87)
Public debt	0.0994***	0.2009***	-0.0012***	-0.0089
	(5.18)	(4.87)	(-2.76)	(-1.09)
Fixed effects	Chair-bank,year	Chair-bank,year	Chair-bank,year	Chair-bank,year
Number of observations	356	310	340	343
Within R-squared	0.222	0.175	0.268	0.265

The results of GMM regressions are represented in Table 3.87. We find that our main age gap variable, Chair-CEO Gap20, as chair-CEO Gap20 is still statistically hold significantly and has a negative impacts on bank risks related to the loan portfolio risks, reported in columns 1 and 2, measured as ratios of loan loss reserve to gross loan and impair loan to gross loan, a significant level of 5% and 10% respectively. We also find out that the chair-CEO age difference at, it still has negative and significant effects (at the 5% level) on banks portfolio risk and total risk (reported in columns 3 and 4). Hence, we can confirm that our results are findings are not prone to have serious dynamic endogeneity and omitted variable bias problems.

3.5.2. Robustness tests

In this sub-section, we run robustness tests for our results. As a limitation of using age difference variables, Goergen et al.(2015) argue that change of chair-CEO age dissimilarity might be caused by a change in the CEO or the chair (or both), those in which could lead to a parameter identification problem. To test whether our results are affected by this potential issue, we re-run the regressions using random effects estimators (instead of fixed effects). Results are presented in Table 3.8. We find that the coefficients of chair-CEO age gap variables are still significant in three of our models.

We also use an alternative credit risk measure for banks risk-taking to adjust for foreclosing assets which may have an impact on the ratio of impaired loans to gross loans. Banks may foreclose the assets that are pledged as collateral for the loan. The alternative variable is calculated as *impaired loans + foreclosed assets / gross loans + foreclosed assets*. Results for this alternative risk variable are reported in Table 3.9. We find that the *Chair-CEO age difference* remains to be negative at 1% significant level. In unreported

results, we also find similar findings when we re-run fixed-effect regression controlling

for CEO-bank and chair-bank as well as in random effect regressions.

Table 3.7: GMM regressions to address the potential dynamic endogeneity

This table contains results of the dynamic, system Generalized Method of Moments (GMM) regressions of bank risk-taking on chair-CEO age dissimilarity, other chair-CEO dissimilarities, CEO and chair characteristics, board characteristics, bank characteristics and macroeconomic variables for banks listed in 16 European countries in the sample. All dependent and independent variables are defined in Appendix 3.A. The system GMM includes two sets of regressions: (i) regressions in levels with the lagged differences (t − 2) of the dependent and independent variables as instruments and (ii) regressions in first differences with the lagged levels (t − 3) of the dependent and independent variables as instruments. We use the year dummies as strictly exogenous variables. The GMM style variables are set chair-CEO age dissimilarity variables, CEO–chair different gender, Chair-CEO different industry experience, Board size, Board independent and Total assets as well as dependent variables. The macroeconomic variables of GDP real growth and Public debt are set as strict exogenous variables. AR(1) and AR(2) are tests for first-order and second-order serial correlation, respectively, in the first-differenced residuals under the null of no serial correlation. The Hansen test of over-identification is based on the null that all instruments are valid. The Diff-in-Hansen test of homogeneity is based on the null that the instruments used for the equations in levels are exogenous. The constant is included in all regressions, but not reported. ***, **, * denote statistical significance at the 1%, 5%, and 10% level, respectively.

	(1)	(2)	(3)	(4)
	Loan loss reserves to gross loans	Impaired loans to gross loans	RWA/TA	Total risk
Chair-CEO Gap20	-0.0582**	-8.4462*		
	(-0.17)	(-1.86)		
Chair-CEO age difference			-0.2149**	-0.0107**
			(-2.41)	(-2.32)
Lag Loan loss reserves to gross loans	1.0511***			
	(26.42)			
Lag Impaired loans to gross loans		0.680***		
		(4.41)		
Lag RWA/TA			0.955***	
			(16.37)	
Lag Total risk				0.89***
				(23.96)
Chair-CEO different gender	-2.9432	-34.7548*	11.5401***	-0.2399
	(-4.38)	(-1.82)	(4.55)	(-1.12)
Chair-CEO different industry experience	0.6627	2.6070	0.2194	-0.1017
	(1.25)	(0.38)	(0.09)	(-0.42)
Chair CEO joint tenure	0.0081	-0.9155	-0.0346	-0.0245
	(0.09)	(-0.55)	(-0.12)	(-0.97)
CEO retirement	0.3588	-6.4391	-3.1289*	-0.46***
	(1.10)	(-1.13)	(-1.93)	(-3.92)
CEO tenure	-0.1028*	0.4466	0.0310	0.0141
	(-1.84)	(0.68)	(0.25)	(0.67)
ExCEO	0.4871	-16.8527*	-0.3507	-0.0407
	(0.66)	(-1.90)	(-0.10)	(-0.22)
Chair tenure	0.0065	-0.1873	0.2668**	0.0198*
	(0.17)	(-0.33)	(2.06)	(1.82)
Busy Chair	-0.2221	-7.6554	1.0313	-0.0803
	(-0.61)	(-1.46)	(0.66)	(-0.72)
CEO Change	0.2287	1.2531	-1.9435	0.232***
	(1.37)	(0.41)	(-1.22)	(4.90)
Chair Change	-0.1809	-0.9434	-2.0859	-0.19***
	(-0.59)	(-0.31)	(-1.52)	(-2.77)
Board size (log)	0.2367	-1.1883	1.7841	-0.0150
	(0.93)	(-0.21)	(0.88)	(-0.08)
Independence	-1.5513**	-8.7484	0.7781	-0.4177
	(-2.52)	(-1.58)	(0.37)	(-1.22)
Busy board	0.4523	-5.6246	2.0915	0.0595
	(0.96)	(-1.40)	(0.93)	(0.26)
Total assets (log)	-0.4403**	2.3739	1.3437	-0.0417
	(-2.14)	(0.90)	(0.84)	(-0.52)
Total capital ratio	-0.1432***	0.3054	-0.2726	-0.0060
	(-3.47)	(0.87)	(-1.18)	(-0.88)
Gross loan growth	-0.0056	0.0003	-0.0644	0.0031
	(-0.48)	(0.01)	(-1.66)	(1.56)
GDP real growth	-0.1555***	0.1499	-0.3456*	0.0332
	(-5.18)	(0.42)	(-1.77)	(1.56)
Public debt	0.0006	0.1303**	-0.0005	-0.0019
	(0.14)	(2.22)	(0.03)	(-0.93)
Number of observations	285	243	265	274
Arellano-Bond test AR(1) (P-value)	0.072	0.027	0.006	0.049
Arellano-Bond test AR(1) (P-value)	0.618	0.623	0.334	0.497
Hansen test for overidentif. restric. (P-value)	0.526	0.645	0.733	0.346
Diff-in-Hansen test GMM (P-value)	0.533	0.528	0.746	0.466

Table 3.8: Random effects regressions

This table presents fixed effect regression results of bank risks on chair-CEO age dissimilarity, other chair-CEO dissimilarities, CEO and chair characteristics, board characteristics, bank characteristics and macroeconomic variables for banks listed in 16 European countries for the period between 2010 and 2014. This table contains Dependent and independent variables are defined in Appendix 3.A. The constant is included in all regressions but not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	(1) Loan loss reserves to gross loans	(2) Impaired loans to gross loans	(3) RWA/TA	(4) Total risk
Chair-CEO Gap20	-1.3523**	-3.4462***		
	(-2.31)	(-2.63)		
Chair-CEO age difference			-0.0009	-0.0265**
			(-1.25)	(-2.15)
Chair-CEO different gender	0.6956	-0.5855	0.0092	-0.0159
	-0.66	(-0.26)	-0.32	(-0.03)
Chair-CEO different industry experience	0.0259	0.9455	0.0034	0.4906
	-0.04	-0.6	-0.15	-1.47
Chair CEO joint tenure	(0.0887)	(0.1427)	(0.021)	(0.0433)
	-1.18	-0.78	(-0.98)	-1.32
CEO retirement	0.3401	0.1408	0.0059	-0.352*
	(0.84)	(0.16)	(0.48)	(1.72)
CEO tenure	-0.0897**	-0.1309	0.0012	0.008
	(2.04)	(1.17)	(0.95)	(0.41)
Ex CEO	0.0602	-0.1379	0.0109	0.1219
	(0.08)	(0.09)	(0.57)	(0.39)
Chair tenure	-0.0324	-0.2402*	0.0016	-0.0091
	(-0.70)	(-1.90)	(-1.25	(-0.43)
Busy Chair	0.4985	0.1713	-0.0038	-0.0678
	-0.93	-0.14	(-0.25)	(-0.28)
CEO Change	0.048	0.1055	0.0009	0.2436
	(0.14	(0.14)	(0.1)	(1.62)
Chair Change	-0.1026	-0.3786	-0.0079	-0.0839
	(-0.31)	(-0.52)	(-0.91)	(-0.58)
Board size (log)	0.3469	0.6833	0.056**	0.0516
	(0.52)	(0.45)	(3.04)	(0.17)
Independence	-3.04**	-8.02***	-0.004	-0.51
	(2.44)	(2.77)	(0.12)	(0.94)
Busy board	-0.4178	0.0614	-0.0037	0.1626
	(0.92)	(0.06)	(0.29)	(0.79)
Total assets (log)	-1.7768***	-4.261***	-0.142***	0.1428
	(4.69)	(5.05)	(9.94)	(0.77)
Total capital ratio	-0.1168***	-0.306***	-0.006***	0.0402**
	(-3.13)	(-3.78)	(-6.24)	(-2.49)
Gross loan growth	-0.0097	-0.0196	-0.0001	0.0006
	(-1.58)	(-1.49)	(-0.35)	-0.24
GDP real growth	0.5228***	0.8989***	-0.0016	-0.0477
	(-6.3)	(-5.01)	(-0.74)	(-1.35)
Public debt	0.0722***	0.1453***	-0.0002	-0.019***
	(-7.05)	(-6.59)	(-0.72)	(-3.95)
Fixed effects	Year	Year	Year	Year
Number of observations	356	310	340	343
Within R-squared	0.43	0.41	0.39	0.41

Table 3.9: Alternative risk indicator with foreclosed assets

This table contains fixed-effect regression (1)-(4) and random effect regression (5) results of bank loan quality on chair-CEO age dissimilarity, other chair-CEO dissimilarities, CEO and chair characteristics, board characteristics, bank characteristics and macroeconomic variables for banks listed in 16 European countries in the sample. In the regression (3) and (4), we use the omitting time-invariant variables for EX Chair and CEO retirement and year as control variables. All dependent and independent variables are defined in Appendix A. Robust t-statistics are based on standard errors clustered by bank-level. The constant is included in all regressions, but not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	Impaired loans + foreclosed assets / gross loans + foreclosed assets							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Chair-CEO Gap20	-3.641***				-3.74***			
	(-2.64)				(-2.67)			
Chair-CEO age difference		-0.0233				-0.0227		
		(-0.35)				(-0.34)		
Chair-CEO age difference absolute			-0.0932				-0.0938	
			(-1.51)				(-1.45)	
Chair-CEO age difference squared				-0.0022				-0.0023
				(-0.95)				(-0.93)
Chair-CEO different gender					-1.4653	-1.2512	-1.4774	-1.4312
					(-0.57)	(-0.47)	(-0.56)	(-0.54)
Chair-CEO different industry experience					-1.0697	-1.0252	-0.3045	-0.7879
					(-0.48)	(-0.44)	(-0.13)	(-0.34)
Chair CEO joint tenure	0.1639	0.2930	0.3027	0.2744	0.1875	0.3156	0.3237	0.2978
	(0.85)	(1.44)	(1.52)	(1.37)	(0.94)	(1.51)	(1.57)	(1.45)
CEO retirement	-0.0995	0.5596	0.1877	0.3933	-0.2641	0.4384	0.0868	0.2667
	(-0.11)	(0.51)	(0.19)	(0.40)	(-0.28)	(0.39)	(0.09)	(0.26)
CEO tenure	-0.0408	-0.0105	-0.0266	-0.0189	-0.0464	-0.0145	-0.0307	-0.0235
	(-0.34)	(-0.08)	(-0.21)	(-0.15)	(-0.38)	(-0.11)	(-0.24)	(-0.18)
Ex CEO	-1.2773	-0.2680	-0.3829	-0.3902	-1.2791	-0.2385	-0.3682	-0.3662
	(-0.79)	(-0.16)	(-0.23)	(-0.24)	(-0.78)	(-0.14)	(-0.22)	(-0.22)
Chair tenure	-0.31**	-0.34**	-0.35***	-0.34**	-0.335**	-0.354**	-0.381**	-0.36**
	(-2.47)	(-2.53)	(-2.64)	(-2.54)	(-2.30)	(-2.32)	(-2.50)	(-2.37)
Busy Chair	0.7363	1.0976	1.0832	1.0911	0.5998	0.9685	0.9823	0.9653
	(0.53)	(0.76)	(0.75)	(0.75)	(0.42)	(0.65)	(0.66)	(0.65)
CEO Change	0.1413	0.2680	0.2167	0.2519	0.2108	0.3308	0.2587	0.3103
	(0.20)	(0.36)	(0.29)	(0.34)	(0.29)	(0.43)	(0.34)	(0.40)
Chair Change	-0.6115	-0.5694	-0.5409	-0.5420	-0.6115	-0.5561	-0.5411	-0.5343
	(-0.84)	(-0.75)	(-0.72)	(-0.72)	(-0.83)	(-0.72)	(-0.71)	(-0.70)
Board size (log)	0.7766	0.4916	0.5757	0.4657	0.7691	0.4308	0.5311	0.4150
	(0.47)	(0.28)	(0.33)	(0.27)	(0.45)	(0.24)	(0.30)	(0.23)
Independence	-8.2289**	-5.0444	-4.6199	-4.8281	-8.21**	-5.1372	-4.6890	-4.912
	(-2.46)	(-1.53)	(-1.41)	(-1.47)	(-2.41)	(-1.53)	(-1.40)	(-1.46)
Busy board	-0.2080	-0.9203	-0.9286	-0.9009	-0.2482	-0.9476	-0.9639	-0.9330
	(-0.20)	(-0.86)	(-0.88)	(-0.85)	(-0.24)	(-0.87)	(-0.89)	(-0.86)
Total assets (log)	-5.2381*	-4.1480	-4.0912	-4.1268	-5.0055	-3.8420	-3.8497	-3.8464
	(-1.66)	(-1.27)	(-1.25)	(-1.26)	(-1.53)	(-1.13)	(-1.13)	(-1.13)
Total capital ratio	-0.34***	-0.26***	-0.27***	-0.27***	-0.334**	-0.262**	-0.26***	-0.26**
	(-3.92)	(-3.02)	(-3.08)	(-3.07)	(-3.78)	(-2.89)	(-2.98)	(-2.95)
Gross loan growth	-0.0162	-0.0241*	-0.0252*	-0.0244*	-0.0163	-0.0241*	-0.0251*	-0.023*
	(-1.22)	(-1.76)	(-1.85)	(-1.79)	(-1.21)	(-1.73)	(-1.82)	(-1.76)
GDP real growth	0.9481***	1.1249***	1.1183***	1.1266***	0.9727**	1.1435***	1.1415***	1.148***
	(5.13)	(6.13)	(6.12)	(6.14)	(5.10)	(6.03)	(6.05)	(6.06)
Public debt	0.2078***	0.208***	0.215***	0.214***	0.205***	0.206***	0.214***	0.21***
	(5.10)	(4.92)	(5.08)	(5.02)	(4.98)	(4.78)	(4.95)	(4.88)
Fixed effects	Year	Year	Year	Year	Year	Year	Year	Year
Number of observations	315	319	319	319	310	313	313	313
Within R-squared	0.190	0.177	0.185	0.180	0.181	0.167	0.175	0.170

3.6. Conclusion

Employing a sample of 96 listed from European banking industry for a period of 2010 to 2014, we investigate the impacts of difference in age between chair and CEO of the board

on bank risk-taking. We provide initial evidence that there is a negative relationship between various bank risks and chair-CEO age dissimilarity. A larger age gap between chair and CEO contributes to the intensity of board monitoring due to increasing cognitive conflicts between chair and CEO leading to lower bank risks. Results of various robustness tests show that our findings are consistent. Similar results are obtained between chair and CEO and bank risk-taking when we employ estimations with fixed effects and random effect panel data estimations.

The failure of financial institutions in the 2007-2009 global financial crisis highlight the importance of corporate governance in risk management for the banking sector (Kirkpatrick, 2009). There are a number of studies exploring impacts of corporate governance mechanics on bank risk-taking (Aebi et al., 2012; Fahlenbrach and Stulz, 2011; Minton et al., 2014). As a vital component of corporate governance, board directors of banks are primarily responsible for improving risk management by providing their industry insight, special skills, and knowledge. However, we know little about the impact of chair characteristics and the interaction between the chair and CEO of corporate governance in banks. Thus, we contribute to the literature by studying the relationship between social connections measure as chair-CEO age dissimilarity and corporate governance and risk-taking in European banks. Our study expands the existing literature on the impact of corporate governance and controlling risk in banks. We address the importance of optimal chair-CEO relation in corporate governance and risk management in banks. These findings have great implications for relevant stakeholders both under two-tier or single-tier board system. First, when the policy makers or shareholders consider a new appointment of a chair or CEO or both, they should consider the impact of age dissimilarity between chair and CEO. Second, external investors, and internal risk

manager, or board, should notice the importance of chair-CEO's social connections and

effect of their reactions on the bank risk-taking.

Appendix 3.A.

Table 3.10: Variable Definitions

Variable	Definition
Panel A: Bank risk measures	
Loan loss reserves to gross loans (%)	The ratio of loan loss reserves to total gross loans.
Impaired loans to gross loans (%)	The ratio of impaired loans to total gross loans.
RWA/TA (%)	The ratio of risk-weighted assets to total assets.
Total risk	This indicator is the standard deviation of the bank's daily stock price of the current (t) and the following year (t + 1).The volatility of banks` stock price, which is computed as the standard deviation of the bank daily stock price covering the current year and next year.
Panel B: Chair-CEO dissimilarities	
Chair-CEO age dissimilarities	
Chair-CEO age difference	Age of the chair minus the age of the CEO.
Chair–CEO age difference absolute	The absolute value of the age of the chair minus the age of the CEO.
Squared chair–CEO age difference	The squared value of the age of the chair minus the age of the CEO.
Chair-CEO gap 20	Dummy variable that equals to 1 if the age difference between the chair and the CEO is at least 20 years, and 0 otherwise.
Other chair-CEO dissimilarities	
Chair-CEO different gender	Dummy variable that equals to 1 if the chair and the CEO have a different gender, and 0 otherwise.
Chair-CEO different industry experience	Dummy variable that equals to 1 if the chair and the CEO have worked in different industries previously, and 0 otherwise.
Panel C: CEO power and chair characteristics	
Chair-CEO joint tenure	The number of years that chair and CEO have been working together on the board.
CEO retirement	Dummy variable that equals to 1 if CEO is older than 60, and 0 otherwise.
CEO tenure	The number of years the CEO has been serving as the CEO in the bank.
Ex- CEO	Dummy variable that equals to 1 if the chair has worked as the CEO previously in the same bank.
Chair tenure	The number of years that the chair has been serving as the chair on the board.
Busy Chair	Dummy variable that equals to 1 if more than 50% percentage of board directors are busy directors, and 0 otherwise.
CEO Change	Dummy variable that equals to 1 if CEO has been changed in a given year, and 0 otherwise.
Chair Change	Dummy variable that equals to 1 if the chair has been changed in a given year, and 0 otherwise.
Panel C: Board characteristics	
Board size	The total number of the directors on the bank's board.
Independence (%)	The percentage of outside directors on the bank's board.
Busy board	Dummy variable that equals to 1if more than 50 percent of board director hold more than one director role in other companies, and 0 otherwise
Panel D:Bank characteristics and macroeconomic environment	
Total assets	The book value of the total asset of the bank at the end of the fiscal year.
Total assets (log)	The natural logarithm of The book value of the total asset of the bank at the end of the fiscal year.
Total capital ratio (%)	The ratio of banks capital to its assets.
Gross loan growth (%)	The ratio of gross loan growth per year.
GDP real growth (%)	The ratio of growth of GDP.
Public debt (%)	The ratio of public debt to GDP.

Table 3.11: List of EU 16 countries

Country	Bank
Austria	5
CH	12
Belgium	2
Denmark	22
Finland	2
France	6
Germany	7
Greece	5
Ireland	2
Italy	6
Luxembourg	1
Netherlands	4
Portugal	2
Spain	6
Sweden	4
United Kingdom	10
Total	96

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CHAPTER 4

Chair-CEO dissimilarities and bank performance

Abstract

The social capital theory predicts that the demography similarities breed connection. These demography dissimilarities among board members might shape the corporate governance in the banks. The age gap between chair and CEO can enhance the board monitoring intensive so as to be beneficial for performance in non-financial firms (Goergen et al., 2015) We initial provide the evidence shows that substantial age gap between chair and CEO is positively related to bank performance. Consisted with existing study, the impacts of chair's characteristics on bank performance are insignificant.

Keywords: Chair-CEO relation, bank performance, Chair-CEO dissimilarities, cognitive conflict, European banks

JEL classification: G3, G21, G28, G39

4.1. Introduction

Banks have an imperative role within an economy by acting as intermediaries between borrowers and depositors transforming illiquid assets into liquid deposit contracts through reducing idiosyncratic risks and performing the role of delegated monitors for less informed investors (Diamond, 1984, Ramakrishnan and Thakor, 1984, Bhattacharya and Chiesa, 1995, Holmstrom and Tirole, 1997). Sound banking system allocates resources efficiently to boost the economic growth whereas the fragile banking system may undermine real economic and banks' shareholder value. Mass bank failures during the 2007-2009 financial crisis and its subsequent impact and cost on the real economy has drawn significant attention to the importance of governance of banks since the financial crisis. The Basel Committee on Banking Supervision (BCBS) identifies sound governance of banks as critical for efficient operation, effective business strategy and risk management. Proper corporate governance in banks can also contribute to the cost-effective supervisory process by reducing needs of outside supervisory intervention (BCBS, 2014). Accordingly, academic research also recently paid more attention to different dimensions of corporate governance in banks in order to shed more light on improving and understanding governance mechanisms.

Lending business is opaque and complex, and in such a setting, stakeholders are less likely to impose effective governance (Levine, 2004), and this amplifies the vital role of internal governance mechanisms in banks. Board of directors is a crucial mechanism of corporate governance for monitoring managers and advising on strategy and decisions (Wilson et al., 2010). Good corporate governance requires a board of directors to fulfil its statuary duty to oversee the management of its company, to guard the interests of shareholders and to ensure conformity with regulatory requirements (Salim et al., 2016). BCBS also identifies the board as an essential part of a bank's regulatory reforms after

the 2007-2009 financial crisis and highlights the need to investigate and understand bank boards' functions in bank governance (BCBS, 2014). Regulatory bodies also emphasise that a successful corporate governance structure can create value and boost operational efficiency of banks (Fu et al., 2014). In response, research on bank board monitoring efficiency has intensified especially on how board structure, diversity and busyness influence banks' performance.

However, there is limited research to illuminate on whether chair's characteristics and demographic dissimilarities between the chair and CEO matters for corporate governance of banks. The emerging literature on the social tie among CEO and board members suggests that similarities play a critical role in firm's value, merger performance and M&A transactions (Cai and Sevilir, 2012, Nguyen, 2012, El-Khatib et al., 2015). These studies motive our paper to examine the interaction between the chair and the CEO by looking at their age and whether age differences between the two have an effect on corporate governance and bank performance. Age is one of the most important demography characteristics that shape individuals are thinking, behaviours, and economic outcomes (Agarwal et al., 2009, Ferris et al., 1991, Serfling, 2014). Homophily argues that people sharing a similar age, gender, employment history, and educational background are likely to establish social ties between each other (McPherson et al., 2001a). Thus, it is unlikely that strong connections will be built between chair and CEO if they have a greater age gap between the two.

The board of directors take the role as a role of the monitor on management activities in order to ensure managers act in line with the best interest with shareholders of banks. The independence of board is important for their monitoring performance, and board independence could have an impact on firm performance (Hillman and Dalziel, 2003,

Peng, 2004, Barnhart and Rosenstein, 1998). The chair takes a key role on board that she share leadership with other board directors and performs the functions of monitor and advisor on management. Given the complexity and opacity of the banking assets and activities, the information asymmetries are raising because of this idiosyncratic nature of the banking business (Furfine, 2001, Morgan, 2002).In such an environment it might be more difficult for the chair to monitor banking transactions and operations as the cost for the chair to obtain information from bank managers is high. Hence, in banks chair's independence and her being informed take an important role in bank governance. On the other hand, the previous literature on the relation between board independence and bank performance is mixed (Pathan and Faff, 2013, Adams and Mehran, 2012, Pathan et al., 2007). Social network-based research suggests that conventional measures of board independence might have disadvantages to evaluating board independence(Hwang and Kim, 2009). The demography dissimilarities between chair and CEO could impact chair independence and corporate governance quality (Goergen et al., 2015). This, in turn, demography dissimilarities enhances chair's monitoring functions in evaluating and monitoring CEO's proposed actions. This prudent scrutinizing and evaluation of CEO managerial behaviour facilitates chair duty of obtaining efficient information from the CEO and contributing to the effectiveness of monitoring and sound bank governance. (Adams and Ferreira, 2007). We hypothesise that dissimilarities between chair and CEO could limit the attraction between the two, and offers to strengthen to the cognitive independence as well as intensive monitoring function of the chair in the bank. These dissimilarities include age, gender and educational background. Related bank governance research (Elyasiani and Zhang, 2015, Haan and Vlahu, 2016, Salim et al., 2016) document that various attributes of board directors, such as busyness, tenure, independence, could impact on corporate governance and economic outcomes in banks. While little is known about the relation between the different chair features and bank performance. We thereby

also explore the association between the different chair's characteristics and bank performance. We look at the chair's characteristics such as tenure, busyness and previous career position in the bank.

In the social capital viewpoint, individuals prefer to build social networks with others who share the similar demography characteristics with them (McPherson et al., 2001b). These social ties between board directors and management could weaken board impendence (monitoring performance) and destroy shareholders value (Hwang and Kim, 2009). In this sense, the chair and CEO are less likely to build social ties with each other if they share different demography characteristics. These demography dissimilarities between chair and CEO could have a positive impact on corporate governance quality. Hence, we expect a positive relation between chair-CEO dissimilarities and bank performance. For example, Georgen et al. (2015), analysing German listed firms, provide evidence that sufficient chair-CEO age dissimilarity has a positive impact on firms' value. By employing a hand-collected data from 98 listed banks over 16 European countries, we find strong empirical evidence that there is a significant and positive impact of chair-CEO age dissimilarity on bank performance measured by profitability. This result is in line with existing literature (Goergen et al., 2015) that the difference in firm performance is particularly affected by the substantial chair-CEO age difference where there is a generational gap. We confirm this effect in banks. Our findings show that other demography dissimilarities, measured as the difference in gender and industry experience between the chair and the CEO, does not have an effect on banks' performance. We also find that chair' characteristics, in general, do not have a significant impact on bank performance.

Our study contributes to extending but the limited literature on the relationship between the board of directors (e.g., board structure and diversity) and bank performance. Studies on bank governance pay little attention to the effects of demographic dissimilarities on corporate governance and bank economic outcomes. We provide initial empirical evidence investigating the impacts of chair characteristics and chair-CEO dissimilarities on European banks' profitability. We also contribute to existing literature focusing on effects of the social tie between CEO and board members and how homophily effects on bank governance. Our study fills this gap. Our study has policy implications for regulators and supervisors to introduce and implement the regulation on bank board composition. Insights from social capital theory provide a different view for the board in the form of chair-CEO relation. Our findings show that banks as well as its stakeholders should pay attention to the impacts of the dissimilarities between chair and CEO on the bank's corporate governance.

The remainder of this paper is organized as follows. Section 2 presents a review of the literature and introduces our hypotheses. . Section 3 describes our sample, methodology and provides descriptive statistics. We discuss our main findings in Section 4. Section 5 addresses the endogeneity issues and robustness test and, finally, Section 6 concludes.

4.2. Literature review and hypothesis development

4.2.1. Corporate governance and bank performance

Corporate governance of banks differs from non-financial institutions (Becht et al., 2011, Jens et al., 2014). The agency theory (Jensen and Meckling, 1976) predicts conflicts between owners and managers because the manager might not act in the best interest of

the firm' owners. The institutional mechanism offers various tools, including concentrated ownership, board structure, and incentive, for investors to mitigate this agency conflict among stakeholders. However, the nature of banks' business and assets are opaque, complex and highly leveraged (Morgan, 2000)/. This challenges relevant stakeholders to governance bank effectively (Levine, 2004, Adams, 2012).

Board independence is essential for the soundness of corporate governance as independent directors not contribute to enhance the monitoring function of the board but also contribute as the human capital of the board (Fama and Jensen, 1983a). Empirical findings commonly suggest that non-financial firms benefit from independent directors in various firm outcomes. Increasing board independence is positively related to firm performance in both developed and emerging countries (Dahya and McConnell, 2007, Liu et al., 2015, Duchin et al., 2010). Furthermore, board independence also contributes to enhancing target shareholder gains during takeover transactions (Cotter et al., 1997), and improve board's monitoring performance on managers (Ryan Jr and Wiggins Iii, 2004). Higher information asymmetries in banking (Raheja, 2005) may weaken the advantages of independent directors in improving the advisory and monitoring function of banks' board. Empirical evidence, by (Pathan and Faff, 2013), from U.S banking holding company (BHC) shows a negative relation between board independence and bank performance suggesting that high performing independent directors provide limited value to the board in banks.

Bank's board is crucial for achieving well bank governance. Meanwhile, the board has the ultimate responsibility for governing bank well to act in the best interest of the shareholders, depositors, and other stakeholders. Several studies show how different board characteristics effect on bank performance, however, the results are inconclusive.

For example, (Adams and Mehran, 2012) finds a positive relationship between board size and bank performance, however, (Pathan et al., 2007) finds a negative relationship while (Andres and Vallelado, 2008) reports a concave relationship. Literature also emphasizes the influence of board diversity on bank performance. Garcia et al. (2015) provide international evidence and show that foreign directors have a negative effect on bank performance, while gender diversity increases it. Another study focusing on emerging markets reports increasing proportions of politically-connected directors on the board might decline bank performance (Liang et al., 2013). Moreover, the studies argue that the board also plays a vital role in other banking business, such as bank efficiency (Salim et al., 2016), bank capitalization strategies (Anginer et al., 2016) and acquisitions performance (Hagendorff et al., 2007).

4.2.2. Dissimilarities , corporate governance and bank performance

Various demographic characteristics, such as genders, races, age, class, education shape individuals' thinking, work attitude, risk-taking, and communication (Campbell, 2006; Jianakoplos and Bernasek, 1998; Bucciol and Miniaci, 2011). Meanwhile, the differences in these demographic attributes have a significant impact on peoples' behaviour in the social world(Uzzi, 1999; Cohen et al., 2008, Paul Ingram and Peter W. Roberts, 2000) because people tend to build a network with others who resemble themselves. The social scientists apply the principle of homophily to explain this ecology phenomenon, that is, the network distance is translated from the distance in different social characteristics (McPherson et al., 2001a). Thus, there is a higher rate of interpersonal reaction between similar people than among those dissimilar ones in the social world. Supporting this view a variety of studies suggests that the effect of homophily is crucial for leadership, labour market, communication, and organization (Ruef et al., 2003; Crandall et al. 2008; Balkundi and Kilduff, 2006; Mouw, 2003).

Board independence can enhance the effectiveness of corporate governance through cognitively evaluating on executives' performance and monitoring on CEOs' self-serving behaviours. Demographical or social similarities among board members could determine the effectiveness of corporate governance. According to the theory of homophily, people prefer to interact and contact with others who are similar to them. Since, board directors with similar attributes, such as age, political orientation or educational background, tend to hold similar attitudes, opinions and beliefs when they proceed decision-making of corporate governance. These, in turn, leads to fewer disagreements and limits the critical scrutinization on management's performance, strategy and suggestion during the board's decision-making progress.

Empirically, the evidence from Fortune 100 firms, shows that social ties between CEO and board directors shape various supervisory and disciplinary actions of the board (Hwang and Kim, 2009). It is found that the board when there are few social connections between directors and CEO, then there is more CEO's pay-performance sensitivity observed and CEO is offered a lower level of compensation. Furthermore, (Lee et al., 2014), studying U.S companies, suggest that the similarity in political orientation between independent directors and CEO is negatively related to firm value and performance. This political similarity between the CEO and board increases agency costs for the firms. Turning to the banking industry, similarities based on age, educational backgrounds, gender has an impact on appointments of the executives in the banks (Berger et al., 2013).

Compared to other demography characteristics, ageing continuously collects all possible changes in demography attributes of people in the life cycle. The evidence has demonstrated that ageing creates a salient basis for group categorization (Stangor et al.,

1992). Thus ageing-related difference limits individuals' social connections in a way that in the social organization people tend to be attracted to the others who are at a similar age. (Westphal and Zajac, 1995) suggests that age dissimilarity among board members affects the election of new board directors and CEO compensation contracts. They also find that the board with powerful CEO prefer to hire new directors who are demographically similar to the firm's current CEO. Furthermore, the board with increasing dissimilarity between CEO and board of directors are likely to offer more generous compensation for CEO. Goergen et al., (2015) provide evidence from German listed firms suggesting that a greater chair-CEO age dissimilarity in the form of a generational gap results in a more intensive monitoring and a higher firm value.

Given the importance of the effectiveness of the board in the bank, there is an increasing need for understanding how homophily might shape the board effectiveness and bank's outcome. In particular, dissimilarities between the chair and the CEO, two key roles in boards, may be important in determining the banks' performance. Chair and CEO significantly contribute to bank corporate governance, business strategies, risk management and day to day based operation. Dissimilarities between chair and CEO could lead to rising more cognitive conflicts enhancing board monitoring actions on CEO as well as provide benefits for banks performance.

We thereby expect that there is a positive relationship between various chair-CEO dissimilarity and bank performance.

H1: there is a positive relationship between chair-CEO age dissimilarity and bank performance.

H2: there is a positive relationship between chair-CEO gender difference and bank performance.

H3: The difference between the chair and CEO career could have a positive impact on bank performance.

4.3. Data, methodology and descriptive statistics

Our sample consists of listed banks (commercial banks, bank holding companies, and savings banks) from 16 European countries over the period 2010-2014. Collecting data for all banks is not possible due to non-uniform disclosure requirements of banks' board information in Europe. This provides a limitation and a challenge for data collection for European banking research in the corporate governance area. We collate the data from different sources. Most of the board characteristics are carefully hand collected from various resources that provide board information including annual reports, Bloomberg, and banks' websites. Bank financial data is obtained from the Bank scope and Datastream. Our final dataset includes 96 listed banks and 480 bank-year observations. Our data covers most of the largest listed banks in Europe. It is important to note that in our regressions we exclude any observations where the CEO takes the role of chair on board in our data.

4.3.2. Measures of bank performance

Following relevant literature (García-Meca et al., 2015, Pathan and Faff, 2013, Berger et al., 2010), we employ two proxies, return on average assets (ROAA) and pre-tax operating income (PTOI), of bank performance. ROAA is computed as net income before

interest and tax over the average book value of total assets. PTOI is a ratio of pre-tax operating income to the average book value of total assets.

4.3.3. Measures of chair-CEO dissimilarities

We measure demography dissimilarities in three attributes between the chair and the CEO characteristics as age, gender and industry experience. We apply the same age dissimilarity measures as Goergen et al. (2015) to measure chair-CEO age dissimilarity. As age is a major indicator for our analysis we use five variables to proxy the age difference between the CEO and the chairwoman/chairman. To track the generational difference between chair and CEO, we set a dummy variable, *Gap20 Chair-CEO,* which is a dummy variable equals to 1 if the age gap between chair and CEO is larger than 20 and 0 otherwise. *Chair-CEO age difference* is the age of the chair minus the age of the CEO. *Chair-CEO age difference absolute* is the absolute value of the age difference between the chair and the CEO. *Squared Chair–CEO age difference* is also utilized to capture the non-linear relationship between age difference and bank risk-taking. We use a dummy variable, *Chair-CEO different gender*, which equals to 1 if the chair and the CEO are different genders and 0 otherwise, to proxy the gender differences. The dummy variable *Chair-CEO different industry experience* aims to proxy the differences in the industrial experience between the chair and the CEO. This variable equals to 1 if the chair and CEO are from different industrial backgrounds and 0 otherwise.

4.3.4. Measures of the board, CEO and chair characteristics

Based on existing literature (Pathan and Faff, 2013, Elyasiani and Zhang, 2015, Adams and Mehran, 2012, Cashman et al., 2012, Andres and Vallelado, 2008), we employ three

variables to measure the characteristics of bank board. *Board size* is the number of board director on the board. *Board independence* is the percentage of an independent director on the board. The *busy board* is a dummy variable that identifies whether more than 50 percentage of board directors who hold more than one director role in other companies and 0 otherwise.

Several variables are utilised to measure the CEO and chair characteristics; *CEO tenure* is measured as the number of years the CEO has been serving as CEO of the bank (Goyal and Park, 2002). We use *Chair tenure* to capture the chair`s power, which equals the number of years the chairwoman/chairman has been serving as the chair of the board. *Ex-CEO* is a dummy variable that equals to 1 if the chair is the former CEO of the bank (Andres, 2014). The *busy chair* is a dummy variable which equals to 1 if the chair takes more than one board seats in other firms and 0 otherwise. *CEO change* and *Chair change* are dummy variables which equal to 1 if the CEO or the chair changed during the period of observation in a given year. Other control variables include bank size, bank capital, and countries' macroeconomic environment variables. *Bank size* is measured as the natural logarithm of the total asset of the bank. *Bank capital* is the total capital ratio of the bank. GDP growth is measured as GDP growth in each observed countries, and public debt is variable expressed as a percentage of GDP with each observed countries in our sample.

4.3.5. Empirical model

Here, we aim to establish a link between chair-CEO dissimilarities and bank performance. Following earlier literature presented above we model bank i ($i = 1, 2, \ldots,$

96) at time t $(t = 2010, 2011, \ldots, 2014)$ as a function of the factors explained above and estimate the following empirical model:

$$Bank\ performance_{i,t} = \beta_0 + \beta_1 ChairCEO\ dissimilarity_{i,t}$$

$$+ \sum_{h=1}^{H} \beta_h \times CEO\ characteristics_{h,i,t} + \sum_{j=1}^{J} \beta_j \times Chair\ characteristics_{j,i,t}$$

$$+ \sum_{s=1}^{S-1} \beta_s \times Board\ characteristics_{s,i,t} + \sum_{k=1}^{K-1} \beta_k \times Bank\ characteristics_{k,i,t}$$

$$+ \sum_{l=1}^{L-1} \beta_l \times Country\ characteristics_{l,i} + \sum_{y=1}^{Y-1} \beta_y \times Year_{i,y} + \mu_i + e_{i,t}$$

where;

The dependent variables *ROAA,* and *PTOI* are used interchangeably for bank performance, μ denotes the fixed effect of bank i and e denote the remaining disturbance term. We are using the fixed effects regressions as the primary estimator. All regressions are based on the strongly balanced panel.

4.3.6. Descriptive statistics

Descriptive statistics for dependent and independent variables are presented in Table 4.1. The board structure variables in Panel A of Table 1 reports that the maximum of ROAA and PTOI are 18% and 19% respectively. The average number of ROAA is 0.5% which is lower than the mean of PTOI at 0.64% in the sample. The return on capital (ROC) reported in Panel A of Table 1 shows that mean return on capital, ROC, is 0.16 with a minimum of -1.34% and a maximum of 14.3% during 2010 to 2014 period.

Various chair-CEO dissimilarities in European banks over the period of 2010 to 2014 are shown in Panel B in Table 1. The average age gap between chair and CEO, measured by the chair–CEO age difference absolute, is 9.6 years. There are 11.4% of all observed banks with the chai-CEO age gap (Chair-CEO gap 20) is larger than 20 years. Focusing on other chair-CEO dissimilarities, the Panel B in Table 1 reports that a number of observations where the chair differs from CEO in gender are for 3% of all observations and the chair and the CEO have different industry experience for 24% of all observations.

The descriptive statistics for measures of CEO power and chair characteristics are presented in Panel C. The average CEO tenure is 6.3 years while a slightly shorter average year of 5.9 is observed for the chair tenure. The chair who is the former CEO is 10% of all observed banks, and 71% of all observations have chair taking more than one board membership in other firms.

Panel C shows the descriptive statistics for the board characteristics of the banks in our sample. The percentage of the board where at least 50% of directors hold more than one directorship with other firms is 88%. The mean of board size is 13 with a maximum number of board directors at 34. Average outside directors are 64%, which is in line with earlier studies (Beltratti and Stulz, 2012, Wang and Hsu, 2013).

Moving onto bank characteristics and macroeconomic variables reported in Panel D, the mean of the total asset is 337 million US dollar, with a minimum of 156 million US dollar and a maximum of 2,799 million US dollar. The average growth in the gross loans is 3.32%. The average GDP growth is 0.84%, while the mean of public debt to GDP is 71%

across 16 countries in our sample. Furthermore, we report the correlation coefficients between variables in Appendix 4.A: Table.4.9. The multicollinearity among the independent variables should not be a concern as the maximum value of correlation coefficient is 0.3 which is between CEO tenure and CEO change, suggesting that multicollinearity among the variables should not bias the coefficient estimates in the regression model.

Table 4.1: Descriptive statistics

Variable	N	Mean	Std.Dev.	Min	Max
Panel A: Bank performance measures					
ROAA (%)	479	0.505	2.32	-12.56	18.16
PTOI (%)	465	0.64	2.6	-15	19
ROC (%)	474	0.16	1.07	-1.35	14.3
Panel B: Chair-CEO dissimilarities					
Chair-CEO gap 20	438	0.11	0.31	0	1
Chair-CEO age difference	443	7.58	9.4	-25	32
Chair–CEO age difference absolute	443	9.67	7.22	0	32
Squared chair–CEO age difference	443	145.6	183.87	0	1024
Chair-CEO different gender	444	0.03	0.17	0	1
Chair-CEO different industry experience	442	0.24	0.43	0	1
Panel C: CEO power and chair characteristics					
CEO tenure	477	6.35	5.25	1	27
Ex CEO	480	0.1	0.3	0	1
Chair tenure	474	5.98	5.81	1	41
Busy Chair	479	0.73	0.45	0	1
CEO Change	475	0.1	0.31	0	1
Chair Change	475	0.11	0.32	0	1
Panel D: Board characteristics					
Board size	480	13.15	5.61	3	34
Independence (%)	480	0.65	0.18	0.13	1
Busy board	480	0.88	0.31	0	1
Panel E: Bank characteristics and macroeconomic environment					
Total Assets (Log)	472	4.48	1.16	2.19	6.45
Total capital ratio	409	16.32	4.74	-5.1	37.1
Total risk	434	25.7	57.52	0.01	536.6
GDP real growth (%)	480	0.84	1.99	-8.86	5.7
Public debt (%)	480	71.09	33.42	19.2	177.07

4.4. Empirical results

We present the estimated results of the fixed effect model to explain the impact of chair-CEO dissimilarities on bank performance in for ROAA in Table 2 and for PTOI in Table 3. In all specifications, we include all the control variables as well as year-fixed effects.

First, we estimate the regressions with each of the chair and CEO age dissimilarity variables, our main dissimilarity variable, utilized separately without other chair-CEO dissimilarity variables. We then progressively introduce these and examine all chair-CEO dissimilarities influence on bank risk variables.

Results presented in Table 4.2 shows that age difference between chair and CEO positively impacts on banks' ROAA. In Columns (1) to (4) regressions present the estimated results of the relationship between chair-CEO age dissimilarity and ROAA, without other chair-CEO dissimilarities variables. In Columns (5) to (8), we test all chair-CEO dissimilarities and bank performance as a measure of ROAA. As reported in Table 4.2, there is a significant (at 10% level) relationship between chair-CEO generational difference (chair-CEO Gap 20) and bank performance. The age difference between chair and CEO, measured as squared age gap, also have a positive impact on bank performance, significant at 10% level. While, our findings show that other dissimilarity variables, measured as chair-CEO demography difference in gender and career, are not found to be significant. When the relation between chair-CEO Gap 20 and ROAA remains to be significant (at 10% level) with a positive coefficient sign when we introduce gender and industry experience differences variables in the proposed model. There is no significant impact of gender and industrial experience dissimilarities on banks' ROAA.

Table 4.2: Return on average asset (ROAA)

Chair-CEO age dissimilarity and bank performance measured as return on average asset (ROAA) of listed banks in 16 European countries in the sample period 2010 to 2014. This table contains fixed effect regression results of return on average asset (ROAA) on chair-CEO age dissimilarity, other chair-CEO dissimilarities, CEO and chair characteristics, board characteristics, bank characteristics and macroeconomic variables for banks listed in 16 European countries in the sample. Regression (1)-(8) set the return on average asset (ROAA) as dependent variables; The regressions (1)-(4) exclude the other chair- CEO dissimilarities regarding the differences in gender and industry experience between chair and CEO. All dependent and independent variables are defined in Appendix A. Robust t-statistics are based on standard errors clustered by bank-level. The constant includes in all regressions, but not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

Independent variables	ROAA							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Chair-CEO Gap 20	0.7155*				0.7456*			
	(1.71)				(1.78)			
Chair-CEO age gap		0.0114				0.0074		
		(0.64)				(0.41)		
Chair–CEO age difference absolute			0.0259				0.0222	
			(1.44)				(1.18)	
Squared Chair–CEO age difference				0.0011*				0.0011
				(1.72)				(1.58)
Chair-CEO different gender					1.0188	0.9901	1.0470	1.0807
					(1.29)	(1.24)	(1.31)	(1.36)
Chair-CEO different industry experience					0.8399	0.8156	0.6147	0.6567
					(1.22)	(1.16)	(0.85)	(0.93)
CEO tenure	-0.0444	-0.0532*	-0.0491	-0.0465	-0.0435	-0.0540*	-0.0500	-0.0467
	(-1.47)	(-1.74)	(-1.62)	(-1.53)	(-1.43)	(-1.76)	(-1.64)	(-1.53)
Ex CEO	0.2803	0.1311	0.1531	0.1779	0.2749	0.1134	0.1382	0.1642
	(0.53)	(0.25)	(0.30)	(0.34)	(0.52)	(0.22)	(0.26)	(0.32)
Chair tenure	-0.0020	-0.0053	-0.0051	-0.0039	0.0029	0.0003	0.0049	0.0058
	(-0.08)	(-0.22)	(-0.22)	(-0.17)	(0.09)	(0.01)	(0.16)	(0.18)
Busy Chair	0.2279	0.1676	0.1830	0.1871	0.3641	0.2856	0.3066	0.3193
	(0.58)	(0.42)	(0.46)	(0.47)	(0.90)	(0.70)	(0.75)	(0.78)
CEO Change	-0.5154**	-0.5022**	-0.4913**	-0.5028**	-0.5832**	-0.5701**	-0.5551**	-0.5666**
	(-2.21)	(-2.14)	(-2.10)	(-2.15)	(-2.48)	(-2.39)	(-2.33)	(-2.39)
Chair Change	0.0096	0.0318	0.0317	0.0284	0.0298	0.0413	0.0483	0.0477
	(0.04)	(0.14)	(0.14)	(0.13)	(0.13)	(0.18)	(0.21)	(0.21)
Board size (log)	-0.6670	-0.6799	-0.6881	-0.6529	-0.8719	-0.8468	-0.8651	-0.8422
	(-1.27)	(-1.28)	(-1.31)	(-1.25)	(-1.63)	(-1.56)	(-1.61)	(-1.58)
Independence	-0.2130	-0.6263	-0.7447	-0.7677	-0.1306	-0.5108	-0.6235	-0.6565
	(-0.21)	(-0.66)	(-0.78)	(-0.81)	(-0.13)	(-0.53)	(-0.65)	(-0.69)
Busy board	-0.1832	-0.0454	-0.0537	-0.0721	-0.1694	-0.0253	-0.0328	-0.0514
	(-0.55)	(-0.14)	(-0.16)	(-0.22)	(-0.50)	(-0.08)	(-0.10)	(-0.15)
Total assets (log)	2.5083**	2.2652**	2.2829**	2.3193**	2.5809**	2.3337**	2.3628**	2.3887**
	(2.27)	(2.03)	(2.06)	(2.09)	(2.29)	(2.04)	(2.08)	(2.11)
Total capital ratio	0.0686**	0.0531*	0.0528*	0.0535*	0.0688**	0.0536*	0.0541*	0.0546*
	(2.39)	(1.92)	(1.92)	(1.95)	(2.38)	(1.92)	(1.94)	(1.96)
Total risk	-0.0628	-0.0621	-0.0689	-0.0693	-0.0575	-0.0604	-0.0655	-0.0660
	(-0.60)	(-0.59)	(-0.66)	(-0.66)	(-0.55)	(-0.56)	(-0.62)	(-0.62)
GDP real growth	0.5014***	0.4587***	0.4617***	0.4598***	0.4949***	0.4528***	0.4542***	0.4522***
	(8.31)	(7.89)	(7.97)	(7.95)	(8.05)	(7.62)	(7.67)	(7.65)
Public debt	-0.0582***	-0.0579***	-0.0595***	-0.0608***	-0.0576***	-0.0570***	-0.0587***	-0.0601***
	(-4.40)	(-4.36)	(-4.48)	(-4.56)	(-4.34)	(-4.26)	(-4.38)	(-4.47)
Fixed effects	Year	Year	Year	Year	Year	Year	Year	Year
Number of observations	348	353	353	353	343	347	347	347
Within R-squared	0.33	0.3	0.31	0.31	0.34	0.31	0.32	0.32

In Table 4.3 we report the results PTOI. Similar to above, regressions in Columns 1 to 4 do not include other chair-CEO dissimilarity variables, and we introduce these in Columns 1 to 8. The age dissimilarity variable, chair-CEO age gap 20 impacts positively on PTOI, at 5% statistically significant level. The Chair-CEO squared also positively associated with banks' PTOI. Furthermore, the results in Table 3 also show that CEO change remains a statistically significant negative relationship with bank performance crossing all regressions. For another dissimilarity between chair and CEO, there are positive relationships between chair-CEO gender and industry experience and bank performance, while the impacts of chair-CEO gender and industry experience on bank performance are insignificant.

Table 4.3: Pre-tax operating income to the average book value of total assets (PTOI)

Chair-CEO age dissimilarity and bank performance measured as pre-tax operating income to the average book value of total assets (PTOI) of listed banks in 16 European countries in the sample period 2010 to 2014. This table contains fixed effect regression results of pre-tax operating income to the average book value of total assets (PTOI) on chair-CEO age dissimilarity, other chair-CEO dissimilarities, CEO and chair characteristics, board characteristics, bank characteristics and macroeconomic variables for banks listed in 16 European countries in the sample. Regression (1)-(8) set pre-tax operating income to the average book value of total assets (PTOI) as dependent variables; The regressions (1)-(4) exclude the other chair-CEO dissimilarities regarding the differences in gender and industry experience between chair and CEO. All dependent and independent variables are defined in Appendix A. Robust t-statistics are based on standard errors clustered by bank-level. The constant includes in all regressions, but not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

Independent variables	PTOI							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Chair-CEO Gap 20	0.8774*				0.8837*			
	(1.80)				(1.80)			
Chair-CEO age gap		0.0184				0.0137		
		(0.89)				(0.65)		
Chair–CEO age difference absolute			0.0367*				0.0292	
			(1.76)				(1.33)	
Squared Chair–CEO age difference				0.0015*				0.0013*
				(1.96)				(1.67)
Chair-CEO different gender					0.1029	0.0465	0.1328	0.1712
					(0.11)	(0.05)	(0.14)	(0.18)
Chair-CEO different industry experience					1.3313*	1.2732	1.0305	1.1029
					(1.65)	(1.55)	(1.22)	(1.34)
CEO tenure	-0.0549	-0.0632*	-0.0582*	-0.0555	-0.0531	-0.0631*	-0.0591*	-0.0557
	(-1.56)	(-1.78)	(-1.66)	(-1.57)	(-1.50)	(-1.76)	(-1.66)	(-1.56)
Ex CEO	0.3246	0.1454	0.1736	0.2028	0.3067	0.1202	0.1476	0.1766
	(0.53)	(0.24)	(0.29)	(0.34)	(0.50)	(0.20)	(0.24)	(0.29)
Chair tenure	-0.0120	-0.0170	-0.0163	-0.0143	-0.0354	-0.0394	-0.0325	-0.0317
	(-0.45)	(-0.62)	(-0.60)	(-0.53)	(-0.96)	(-1.06)	(-0.88)	(-0.86)
Busy Chair	0.2765	0.2201	0.2357	0.2364	0.3205	0.2421	0.2604	0.2727
	(0.60)	(0.47)	(0.51)	(0.51)	(0.68)	(0.51)	(0.55)	(0.57)
CEO Change	-0.6808**	-0.6609**	-0.6471**	-0.6642**	-0.7267***	-0.7055**	-0.6897**	-0.7058**
	(-2.51)	(-2.42)	(-2.38)	(-2.45)	(-2.64)	(-2.53)	(-2.48)	(-2.55)
Chair Change	-0.1028	-0.0709	-0.0757	-0.0823	-0.1030	-0.0829	-0.0817	-0.0843
	(-0.40)	(-0.27)	(-0.29)	(-0.32)	(-0.39)	(-0.31)	(-0.31)	(-0.32)
Board size (log)	-0.7716	-0.8047	-0.8049	-0.7519	-0.8462	-0.8353	-0.8404	-0.8075
	(-1.26)	(-1.30)	(-1.32)	(-1.24)	(-1.35)	(-1.32)	(-1.34)	(-1.30)
Independence	-0.4500	-0.8490	-1.0090	-1.0237	-0.4459	-0.8121	-0.9452	-0.9739
	(-0.39)	(-0.77)	(-0.92)	(-0.93)	(-0.38)	(-0.73)	(-0.84)	(-0.87)
Busy board	-0.0966	0.0473	0.0380	0.0159	-0.1054	0.0428	0.0377	0.0161
	(-0.25)	(0.12)	(0.10)	(0.04)	(-0.27)	(0.11)	(0.10)	(0.04)
Total assets (log)	1.9771	1.6765	1.7129	1.7649	1.9070	1.6159	1.6720	1.7042
	(1.53)	(1.29)	(1.33)	(1.37)	(1.44)	(1.21)	(1.26)	(1.29)
Total capital ratio	0.0729**	0.0558*	0.0555*	0.0564*	0.0676**	0.0511	0.0517	0.0523
	(2.18)	(1.74)	(1.74)	(1.77)	(2.00)	(1.57)	(1.59)	(1.61)
Total risk	-0.0468	-0.0410	-0.0519	-0.0525	-0.0386	-0.0368	-0.0459	-0.0465
	(-0.39)	(-0.33)	(-0.43)	(-0.43)	(-0.31)	(-0.30)	(-0.37)	(-0.38)
GDP real growth	0.5612***	0.5156***	0.5201***	0.5174***	0.5642***	0.5197***	0.5219***	0.5193***
	(7.99)	(7.63)	(7.74)	(7.71)	(7.84)	(7.50)	(7.55)	(7.53)
Public debt	-0.0709***	-0.0704***	-0.0725***	-0.0741***	-0.0694***	-0.0687***	-0.0707***	-0.0722***
	(-4.61)	(-4.56)	(-4.71)	(-4.79)	(-4.47)	(-4.40)	(-4.51)	(-4.60)
Fixed effects	Year	Year	Year	Year	Year	Year	Year	Year
Number of observations	348	353	353	353	343	347	347	347
Within R-squared	0.32	0.3	0.31	0.31	0.33	0.3	0.31	0.32

Overall, our results show that chair-CEO age dissimilarity positively related to bank performance. The age difference between chair and CEO could reduce the probability of chair and CEO to build social tie with each other. The less social ties between chair and CEO could increase cognitive conflicts between chair and CEO and enhance the chair independence on board. Thus, in the context of bank governance, chair prefer to conduct intensive monitoring on CEO managerial decisions and tends to ask more detail information from CEO to improve assessment on CEO performance. This enhanced chair independence and monitor on CEO can improve both board effectiveness and bank performance. These results support the evidence provided by Goergen et al., 2015, who suggest the greater chair-CEO age difference, such as generational difference, rather than their age level, is positively associated with higher firm performance. Our study confirms this impact of age dissimilarity in banks. For chair characteristic, we find out that chair busyness and previous position are positively related to bank performance. Those busy chairs or chairs have prior banking management experience who could share their excellent professional skills and banking industry experience with board bank (Elyasiani and Zhang, 2015). Thus, they could perform better monitoring and advisory functions in corporate governance. While, these positive impacts of the chair on bank performance are insignificant. Focusing on other control variables, both board size and board independence are negatively related to bank performance. These results are line with previous literature on board attributes and bank performance (Pathan and Faff, 2013), their research shows that board size and independence have negative impacts on bank performance in US bank holding companies. These results suggest that bank with high information asymmetry could limit monitoring by outside directors (Adams and Ferreira, 2007). While, our empirical findings show that these impacts of board size and board independence are insignificant in European banks. Compare to prior studying (Elyasiani and Zhang, 2015) in relation between busy directors and bank performance in US banking

industry, we did not find significant impact of board busyness on bank performance, Furthermore, our finding is line with previous studies (Pathan and Faff, 2013, Adams and Mehran, 2012), the bank size and capital ratio are positively related to bank performance.

4.5. Endogeneity and robustness test

4.5.1. Endogeneity issues

In this subsection, we address the potential endogeneity issues in our study. Goergen et al., (2015) argue that there be two types of endogeneity problems might involve chair-CEO age dissimilarity. The first type of endogeneity concerns is unobserved CEO and chair heterogeneity. That is, chair-CEO age dissimilarity might be significantly correlated to their characteristics, such as CEO as the founder of the firm, or chair was ex-executives of the firm. These features of the chair or CEO could lead to potential unobserved heterogeneity problems in our regressions results. Thus, we use chair-firm fixed effects to test potential unobserved heterogeneity and endogenous matching. We rerun the regressions (1) and (5) from Table 2 for ROAA and the regressions (1), (3), (5) and (8) from Table 3 fro PTOI by controlling time-invariant variable of Chair features . Regressions results are reported in Table 4.4.

Results of chair-bank regressions in Table 4.4 confirm our previous findings that chair-CEO age dissimilarity positively impacts on bank performance. In regressions presented in columns (1) to (3), we control the chair-bank and year fixed effect and exclude the other chair-CEO dissimilarity variables. We also run the regressions with all measures for the chair and CEO in chair-bank fixed effect adjusting regressions in columns (4) to

(6). The results in Table 4 show that the chair-CEO age Gap 20 remains to have a significantly positive association with banks' ROAA and PTOI across various regressions. Other measures of chair-CEO age dissimilarity, squared chair-CEO age difference, also holds a significant positive impact on PTOI in regressions presented in Columns (3) and (6). We, therefore, confirm that it is unlikely that the estimations have serious unobserved heterogeneity or endogenous matching problems.

Table 4.4: Testing potential unobserved heterogeneity and endogenous matching

Chair-CEO age dissimilarity and bank performance measured as the return on average asset (ROAA) and the pre-tax operating income to the average book value of total assets (PTOI) of listed banks in 16 European countries in the sample period 2010 to 2014. This table contains fixed effect regression results of return on asset (ROAA) and pre-tax operating income to the average book value of total assets (PTOI) on chair-CEO age dissimilarity, other chair-CEO dissimilarities, CEO and chair characteristics, board characteristics, bank characteristics and macroeconomic variables for banks listed in 16 European countries in the sample. Regression (1) and (4) set return on average asset (ROAA) as dependent variables; Regression (2) (3) (5) and (6) set pre-tax operating income to the average book value of total assets (PTOI) as dependent variables; The regressions (1)-(3) exclude the other chair- CEO dissimilarities in terms of the differences in gender and industry experience between chair and CEO. All dependent and independent variables are defined in Appendix A. Robust t-statistics are based on standard errors clustered by bank-level. The constant includes in all regressions, but not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

Independent variables	ROAA	PTOI		ROAA	PTOI	
	(1)	(2)	(3)	(4)	(5)	(6)
Chair-CEO Gap 20	0.7193*	0.8837*		0.7494*	0.8902*	
	(1.72)	(1.82)		(1.79)	(1.82)	
Squared Chair–CEO age difference			0.0016**			0.0014*
			(2.03)			(1.75)
Chair-CEO different gender				1.0283	0.1191	0.1893
				(1.30)	(0.13)	(0.20)
Chair-CEO different industry experience				0.8208	1.2985	1.0627
				(1.19)	(1.61)	(1.30)
CEO tenure	-0.0434	-0.0532	-0.0538	-0.0425	-0.0514	-0.0539
	(-1.44)	(-1.51)	(-1.53)	(-1.40)	(-1.45)	(-1.51)
Chair tenure	-0.0010	-0.0104	-0.0130	0.0045	-0.0327	-0.0292
	(-0.04)	(-0.39)	(-0.49)	(0.14)	(-0.89)	(-0.79)
Busy Chair	0.2298	0.2797	0.2414	0.3665	0.3246	0.2790
	(0.58)	(0.61)	(0.53)	(0.90)	(0.68)	(0.59)
CEO Change	-0.5065**	-0.6659**	-0.6511**	-0.5744**	-0.7116**	-0.6921**
	(-2.18)	(-2.46)	(-2.41)	(-2.44)	(-2.58)	(-2.50)
Chair Change	0.0289	-0.0708	-0.0535	0.0496	-0.0692	-0.0533
	(0.13)	(-0.27)	(-0.21)	(0.22)	(-0.27)	(-0.20)
Board size (log)	-0.5916	-0.6466	-0.6456	-0.7983	-0.7205	-0.6993
	(-1.15)	(-1.08)	(-1.08)	(-1.52)	(-1.17)	(-1.14)
Independence	-0.1455	-0.3381	-0.9406	-0.0617	-0.3281	-0.8873
	(-0.15)	(-0.29)	(-0.86)	(-0.06)	(-0.28)	(-0.80)
Busy board	-0.1816	-0.0939	0.0176	-0.1678	-0.1027	0.0179
	(-0.54)	(-0.24)	(0.05)	(-0.50)	(-0.26)	(0.05)
Total assets (log)	2.6237**	2.1684*	1.9342	2.7067**	2.1221	1.8962
	(2.39)	(1.70)	(1.52)	(2.43)	(1.62)	(1.45)
Total capital ratio	0.0685**	0.0726**	0.0562*	0.0687**	0.0674**	0.0521
	(2.39)	(2.17)	(1.76)	(2.38)	(1.99)	(1.61)
Total risk	-0.0463	-0.0195	-0.0287	-0.0404	-0.0095	-0.0209
	(-0.45)	(-0.16)	(-0.24)	(-0.39)	(-0.08)	(-0.17)
GDP real growth	0.4980***	0.5555***	0.5125***	0.4917***	0.5587***	0.5143***
	(8.28)	(7.92)	(7.66)	(8.02)	(7.78)	(7.48)
Public debt	-0.0580***	-0.0705***	-0.0739***	-0.0574***	-0.0690***	-0.0722***
	(-4.39)	(-4.58)	(-4.78)	(-4.33)	(-4.45)	(-4.59)
Fixed effects	Chair-bank, Year	Chair-bank, Year	Chair-bank, Year	Chair-bank, Year	Chair-bank, Year	Chair-bank, Year
Number of observations	348	348	353	343	343	347
Within R-squared	0.33	0.32	0.3	0.34	0.33	0.31

The second type of endogeneity concern with our study is the dynamic endogeneity issue.

To address these potential dynamic endogeneity issues, we apply the two-step system

GMM estimations to control the potential endogeneity problems in our model (Arellano & Bond, 1991). The endogeneity problem is referred to the effects of past dependent variables on current realizations of independent variables, which generates the inconsistent and biased estimated results. The dynamic endogeneity issues related to the research field of corporate governance is that past firm performance might impact on both the current board structure and firm performance (Wintoki, Linck, & Netter, 2012). The reason why we think dynamic endogeneity issues matter for this study is that past bad bank performance could lead to a changing in current board structure so as to effect on current chair-CEO dissimilarities as well. In particular, the boards' structure of underperforming banks might be changed by the shareholders who aim to protect their interest. These changes in board could replace younger CEO of former CEO, which increases the age difference between the chair and CEO as well as turn to intensify board monitoring on management group of banks. The error item obtains the information of the past explanatory variables, such as bank size or GDP growth rate, could correlate to both current banks' specific and current bank risk-taking variables (Wintoki, Linck, & Netter, 2012). We use the two-step system GMM approach adopted by Arellano and Bover (1995) and Blundell and Bond (1998) as our estimation technique to address dynamic endogenous issues. The two-step system GMM approach allows us to treat all the explanatory variables as endogenous and orthogonally by using of uses the past values of explanatory variables as instruments. GMM approach using the lagged values of the right-hand side variables also enable us to modelling the first-difference matching equations for all variables. Further, applying the first differencing with estimations can help in eliminating unobserved heterogeneity and omitted variable bias. Following Wintoki et al. (2012), the macroeconomic variables and the year dummies are set as exogenous variables. The reliability of the system GMM estimates is also checked using Hansen's

test for instrument validity and Arellano and Bond's (1991) test for serially uncorrelated error terms.

Table 4.5 shows the results of two-step system GMM regressions. We find that age gap variable, chair-CEO Gap20, remains positively significant at 10% level both with ROAA and PTOI. The chair-CEO age dissimilarity variables, squared chair-CEO age gap, still has a positive effect on bank performance at a significant level of 1%. We find out that the difference between chair and CEO in gender have a positive impact on bank performance, at 5% significant level. Hence, we can confirm that our results are unlikely to have serious dynamic endogeneity and omitted variable bias problems.

Table 4.5: Dynamic system Generalized Method of Moments (GMM) regressions

This table contains results of the dynamic, system Generalized Method of Moments (GMM) regressions of bank performance on chair-CEO age dissimilarity, other chair-CEO dissimilarities, CEO and chair characteristics, board characteristics, bank characteristics and macroeconomic variables for banks listed in 16 European countries in the sample. All dependent and independent variables are defined in Appendix A. The system GMM includes two sets of regressions. We use the year dummies as strictly exogenous variables. The GMM style variables are set chair-CEO age dissimilarity variables, CEO–chair different gender, Chair-CEO different industry experience, Board size, Board independent and Total assets as well as dependent variables. The macroeconomic variables of GDP real growth and Public debt are set as strictly exogenous variables. AR(1) and AR(2) are tests for first-order and second-order serial correlation, respectively, in the first differenced residuals under the null of no serial correlation. The Hansen test of over-identification is based on the null that all instruments are valid. The Diff-in-Hansen test of exogeneity is based on the null that the instruments used for the equations in levels are exogenous. The constant is included in all regressions, but not reported. ***, **, * denote statistical significance at the 1%, 5%, and 10% level, respectively.

Independent variables	ROAA	PTOI	PTOI
	(1)	(2)	(3)
Chair-CEO Gap 20	1.7347*	0.6632*	
	(1.80)	(1.73)	
Squared Chair–CEO age difference			0.0011***
			(3.86)
ROAA t-1	-0.3481***		
	(-2.98)		
PTOI t-1		-0.3707***	-0.2087***
		(-8.06)	(-7.36)
Chair-CEO different gender	8.0097**	1.1287**	1.7671***
	(2.02)	(2.02)	(8.58)
Chair-CEO different industry experience	-2.3034	-1.0023*	-1.3910***
	(-1.28)	(-1.89)	(-4.23)
CEO Tenure	0.2513*	0.2862***	0.2496***
	(1.84)	(5.07)	(13.40)
Ex-CEO	-2.9408	-3.2629***	-1.7123***
	(-1.35)	(-3.42)	(-6.40)
Chair tenure	0.2077*	0.0332	0.0198
	(1.79)	(1.03)	(0.93)
Busy Chair	0.1876	0.1810	0.5996***
	(0.11)	(0.41)	(3.12)
CEO Change	-0.4790	0.0854	-0.1717***
	(-0.48)	(0.27)	(-2.99)
Chair Change	1.7228**	0.9267**	-0.2863***
	(2.59)	(2.25)	(-4.22)
Board size (log)	-3.0966**	-0.6664**	-1.0498***
	(-2.30)	(-2.11)	(-8.41)
Independence	-6.2755***	-0.0465	0.7612***
	(-2.79)	(-0.08)	(2.73)
Busy board	-0.5910	-0.5086	-0.8730***
	(-0.74)	(-1.61)	(-4.73)
Total assets (log)	0.6512	0.0546	0.2980***
	(1.47)	(0.44)	(4.05)
Total capital ratio	-0.0825	0.1626***	0.0273
	(-0.85)	(6.96)	(1.34)
	0.2052	0.3101***	0.0175
	(1.57)	(6.37)	(0.28)
GDP real growth	0.1456*	0.3475***	0.3447***
	(1.86)	(9.57)	(16.10)
Public debt	0.0092	0.0121***	-0.0065**
	(0.65)	(3.26)	(-2.16)
Number of observations	274	271	275
Arellano-Bond test AR(1) (P-value)	0.9	0.56	0.91
Arellano-Bond test AR(1) (P-value)	0.15	0.13	0.15
Sargan test for overidentification restrictions (P-value)	0.02	0	0
Hansen test for overidentification restrictions (P-value)	0.82	0.75	0.53
Diff-in-Hansen test GMM (P-value)	0.91	0.9	0.81

4.5.2. Robustness tests

In this sub-section, we discuss the results of robustness tests. We use an alternative performance measure, as return on capital (ROC) to evaluating banks performance. The results of Table 4.6 shows the chair-CEO age dissimilarities variable, Chair–CEO age difference absolute, has a positive and statistically significant relationship with ROC. These results are only observed when we include other dissimilarities variables. The age dissimilarity keeps being a significantly positive when we control bank-chair fixed-effect, or we re-run two-step system GMM regression[8]. We report all these results in Table 4.7.

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[8] Note: The result of Hausman test suggests that fixed-effect estimator is more efficiency than random-effect estimator for regression of ROC on age dissimilarity and other control variables. Hence we do not report the result of random-effect regression on banks' ROC and chair-CEO age dissimilarity and other control variables.

Table 4.6: Return on capital (ROC)

Chair-CEO age dissimilarity and bank performance measured as the return on capital (ROC) of listed banks in 16 European countries in the sample period 2010 to 2014. This table contains fixed effect regression results of the return on capital (ROC) on chair-CEO age dissimilarity, other chair-CEO dissimilarities, CEO and chair characteristics, board characteristics, bank characteristics and macroeconomic variables for banks listed in 16 European countries in the sample. Regression (1)-(8) set the return on capital (ROC) as dependent variables; The regressions (1)-(4) exclude the other chair- CEO dissimilarities in terms of the difference in gender and industry experience between chair and CEO. All dependent and independent variables are defined in Appendix A. Robust t-statistics are based on standard errors clustered by bank-level. The constant includes in all regressions, but not reported. ***, **, *, denote statistical significance at the level of 1%,5%,10%, respectively.

Independent variables	ROC							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Chair CEO Gap 20	0.2238				0.2298			
	(1.30)				(1.36)			
Chair CEO age gap		0.0064				0.0100		
		(0.88)				(1.38)		
Chair–CEO age difference absolute			0.0086*				0.0177**	
			(1.17)				(2.36)	
Squared Chair–CEO age difference				0.0003				0.0005*
				(0.97)				(1.68)
Chair-CEO different gender					0.3410	0.2377	0.3381	0.3198
					(0.85)	(0.59)	(0.85)	(0.80)
Chair-CEO different industry experience					-0.9702***	-1.0145***	-1.1668***	-1.0489***
					(-3.44)	(-3.56)	(-3.98)	(-3.66)
CEO tenure	-0.0019	-0.0042	-0.0038	-0.0040	-0.0032	-0.0044	-0.0026	-0.0037
	(-0.15)	(-0.33)	(-0.30)	(-0.32)	(-0.25)	(-0.36)	(-0.21)	(-0.30)
Ex CEO	0.0361	-0.0159	-0.0111	-0.0087	0.0580	0.0097	0.0280	0.0254
	(0.16)	(-0.07)	(-0.05)	(-0.04)	(0.26)	(0.04)	(0.13)	(0.11)
Chair tenure	-0.0021	-0.0041	-0.0034	-0.0029	0.0237*	0.0195	0.0253*	0.0238*
	(-0.23)	(-0.43)	(-0.36)	(-0.31)	(1.68)	(1.37)	(1.80)	(1.68)
Busy Chair	0.0727	0.0488	0.0444	0.0437	0.0695	0.0412	0.0431	0.0416
	(0.43)	(0.29)	(0.26)	(0.26)	(0.41)	(0.24)	(0.26)	(0.25)
CEO Change	-0.0634	-0.0618	-0.0605	-0.0656	-0.0313	-0.0237	-0.0145	-0.0294
	(-0.64)	(-0.62)	(-0.61)	(-0.66)	(-0.32)	(-0.24)	(-0.15)	(-0.30)
Chair Change	-0.1324	-0.1245	-0.1306	-0.1333	-0.1167	-0.1062	-0.1071	-0.1157
	(-1.42)	(-1.33)	(-1.41)	(-1.44)	(-1.25)	(-1.13)	(-1.16)	(-1.25)
Board size (log)	0.4048*	0.3751*	0.3852*	0.4030*	0.4035*	0.3629	0.3608	0.3994*
	(1.84)	(1.68)	(1.75)	(1.84)	(1.83)	(1.63)	(1.65)	(1.82)
Independence	-0.2330	-0.3912	-0.4232	-0.4107	-0.2404	-0.4222	-0.5071	-0.4625
	(-0.56)	(-0.99)	(-1.07)	(-1.04)	(-0.59)	(-1.08)	(-1.30)	(-1.18)
Busy board	-0.1779	-0.1447	-0.1455	-0.1455	-0.1797	-0.1508	-0.1576	-0.1539
	(-1.28)	(-1.05)	(-1.05)	(-1.05)	(-1.31)	(-1.11)	(-1.17)	(-1.13)
Total assets (log)	-0.0040	-0.1018	-0.0835	-0.0703	0.0455	-0.0731	-0.0336	-0.0200
	(-0.01)	(-0.22)	(-0.18)	(-0.15)	(0.10)	(-0.16)	(-0.07)	(-0.04)
Total capital ratio	0.0428***	0.0387***	0.0386***	0.0389***	0.0477***	0.0435***	0.0437***	0.0440***
	(3.54)	(3.28)	(3.27)	(3.30)	(3.98)	(3.72)	(3.77)	(3.77)
Total risk	-0.0655	-0.0638	-0.0674	-0.0678	-0.0716*	-0.0685	-0.0743*	-0.0749*
	(-1.52)	(-1.47)	(-1.57)	(-1.57)	(-1.67)	(-1.59)	(-1.75)	(-1.76)
GDP real growth	-0.1031***	-0.1182***	-0.1172***	-0.1172***	-0.1061***	-0.1230***	-0.1217***	-0.1215***
	(-3.67)	(-4.46)	(-4.44)	(-4.44)	(-3.80)	(-4.68)	(-4.68)	(-4.65)
Public debt	0.0150***	0.0144**	0.0140**	0.0139**	0.0140**	0.0130**	0.0118**	0.0121**
	(2.67)	(2.58)	(2.49)	(2.46)	(2.52)	(2.36)	(2.14)	(2.17)
Fixed effects	Year	Year	Year	Year	Year	Year	Year	Year
Number of observations	327	332	332	332	322	326	326	326
Within R-squared	0.19	0.2	0.2	0.2	0.24	0.25	0.26	0.25

Table 4.7: Return on capital (ROC)

Chair-CEO age dissimilarity and bank performance measured as the return on capital (ROC) of listed banks in 16 European countries in the sample period 2010 to 2014. This table contains fixed effect regression results of the return on capital (ROC) on chair-CEO age dissimilarity, other chair-CEO dissimilarities, CEO and chair characteristics, board characteristics, bank characteristics and macroeconomic variables for banks listed in 16 European countries in the sample. Regression (1)-(8) set the return on capital (ROC) as dependent variables; The regressions (1) presents the result of bank-chair fixed effect of the return on capital (ROC). The regressions (2) results of the dynamic, system Generalized Method of Moments (GMM) regressions of the return on capital (ROC). All dependent and independent variables are defined in Appendix A. The constant includes in all regressions, but not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

Independent variables	ROC	
	(1)	(2)
Chair–CEO age difference absolute	0.0172**	0.0169***
	(2.29)	(10.59)
ROC t-1		-0.0606***
		(-6.02)
Chair-CEO different gender	0.3314	0.3753***
	(0.83)	(4.06)
Chair-CEO different industry experience	-1.1520***	0.1412*
	(-3.93)	(1.77)
CEO tenure	-0.0032	0.0202***
	(-0.26)	(3.32)
Ex CEO		0.2405***
		(2.98)
Chair tenure	0.0245*	0.0084**
	(1.74)	(2.00)
Busy Chair	0.0419	-0.0499
	(0.25)	(-1.25)
CEO Change	-0.0191	-0.1394***
	(-0.20)	(-8.03)
Chair Change	-0.1162	0.0077
	(-1.26)	(0.45)
Board size (log)	0.3346	0.0757**
	(1.54)	(2.26)
Independence	-0.5273	-0.1029
	(-1.35)	(-1.36)
Busy board	-0.1580	-0.1380***
	(-1.17)	(-2.97)
Total assets (log)	-0.0890	-0.0277
	(-0.20)	(-1.36)
Total capital ratio	0.0438***	0.0189***
	(3.77)	(4.85)
Total risk	-0.0814*	0.0489***
	(-1.96)	(3.90)
GDP real growth	-0.1203***	-0.0414***
	(-4.63)	(-3.64)
Public debt	0.0118**	0.0024***
	(2.13)	(3.48)
Fixed effects	Bank-chair, Year	
Number of observations	326	251
Within R-squared	0.26	
Arellano-Bond test AR(1) (P-value)		0.22
Arellano-Bond test AR(1) (P-value)		0.33
Sargan test for overidentification restrictions (P-value)		0
Hansen test for overidentification restrictions (P-value)		0.9
Diff-in-Hansen test GMM (P-value)		0.99

4.6. Conclusion

Bank governance raises increasing interests from policy-makers and researchers. As the complexity and opacity of banking business, the effectiveness of corporate governance mechanisms could be shaped in banks. In the context of bank governance, board directors display an important mechanism to monitor bank manager's behaviour so as to maximize shareholders value. According to recent social networks based research (Goergen et al., 2015, Hwang and Kim, 2009), demography dissimilarities or similarities (social ties) could have an impact on corporate governance and economic outcomes in non-financial firms. This chapter examines the various demography dissimilarities between chair and CEO on bank performance. Our empirical findings report that chair-CEO age dissimilarity is a positive impact on bank performance measure by different measures. This that grater chair-CEO age dissimilarity leads to more cognitive conflicts between chair and CEO and intensive monitor on CEO. The intensive monitoring also could ultimately contribute to improved bank performance. Our findings are robust to a variety of robustness tests including chair-bank fixed effects, dynamic GMM estimations, and the use of ROC as an alternative measure of bank performance. Further, we test the bank chair's characteristics and chair-CEO dissimilarities of gender and industry experience. Similar to existing studies, our findings show there are insignificant associations between bank performance and either chair's characteristic and differences in gender and industry experience between chair and CEO.

Our study makes contributions to emerging literature on the effects of homophily and social tie on corporate governance. The social capital theory documents the individuals tend to connect with other similar to them. The (dis)similarities shape the role of board directors in monitoring on managers as well as the firm's outcomes. We provide initial

evidence from the banking industry that suggests sufficient age dissimilarity between chair and CEO is beneficial for corporate governance and bank performance. Bank board faces difficult from the rising information asymmetry caused by the complexity and opacity of the banking business. Thus both the academics and regulators emphasize these differences of corporate governance in the bank from non-financial firms, suggesting that the effectiveness of board monitoring on managers is important for good corporate governance in the bank. The less social ties, such as demography dissimilarities between chair and CEO, could lead to chair conduct more intensive and prudent monitoring of management behaviours. Our empirical results support this notion. We suggest that the age gap between chair and CEO can contribute to good corporate governance and bank performance. Our findings provide the potential implication for corporate governance practice that bank governance should mind the optimal relation (interactions) between chair and CEO.

Appendix 4.A.

Table 4.8: Variable Definitions

Variable	Definition
Panel A: Bank performance measures	
Return on asset (ROAA)	The ratio of net income before interest and tax to the average book value of total assets.
PTOI	The ratio of pre-tax operating income to the average book value of total assets.
Return on capital (ROC)	The ratio of net income min dividences to total capital.
Panel B: Chair-CEO dissimilarities	
Chair-CEO age dissimilarities	
Chair-CEO age difference	Age of the chair minus the age of the CEO.
Chair–CEO age difference absolute	The absolute value of the age of the chair minus the age of the CEO.
Squared Chair–CEO age difference	The squared value of the age of the chair minus the age of the CEO.
Chair-CEO gap 20	Dummy variable that equals to 1 if the age difference between a chair and the CEO is at least 20 years, and 0 otherwise.
Other chair-CEO dissimilarities	
Chair-CEO different gender	Dummy variable that equals to 1 if the chair and the CEO have a different gender, and 0 otherwise.
Chair-CEO different industry experience	Dummy variable that equals to 1 if the chair and the CEO have worked in different industries previously, and 0 otherwise.
Panel C: CEO and chair characteristics	
CEO tenure	The number of years the CEO has been serving as the CEO in the bank.
Ex-CEO	Dummy variable that equals to 1 if the chair has worked as the CEO previously in the same bank.
Chair tenure	The number of years that the chair has been serving as the chair on the board.
Busy Chair	Dummy variable that equals to 1 if more than 50% percentage of board directors are busy directors, and 0 otherwise.
CEO Change	Dummy variable that equals to 1 if CEO has been changed in a given year, and 0 otherwise.
Chair Change	Dummy variable that equals to 1 if the chair has been changed in a given year, and 0 otherwise.
Panel C: Board characteristics	
Board size	The total number of the directors on the bank's board.
Independence (%)	The percentage of outside directors on the bank's board.
Busy board	Dummy variable that equals to 1 if more than 50 percentage of board director hold more than one director role in other companies and 0 otherwise
Panel D:Bank characteristics and macroeconomic environment	
Total assets	The book value of the total asset of the bank at the end of the fiscal year.
Total assets (log)	The natural logarithm of the book value of the total asset of the bank at the end of the fiscal year.
Total capital ratio (%)	The ratio of banks capital to its assets.
Total risk	This indicator is the standard deviation of the bank's daily stock price of the current (t) and the following year $(t + 1)$.
GDP real growth (%)	The ratio of growth of GDP.
Public debt (%)	The ratio of public debt to GDP.

Table 4.9: Correlation matrix between variables

	Chair-CEO gap 20	Chair-CEO age difference	Chair–CEO age difference absolute	Squared chair–CEO age difference	Chair-CEO different gender	Chair-CEO different industry experience	CEO tenure	Ex CEO	Chair tenure
Chair-CEO gap 20	1								
Chair-CEO age difference	0.6144	1							
Chair–CEO age difference absolute	0.6855	0.7981	1						
Squared chair–CEO age difference	0.8028	0.7689	0.9477	1					
Chair-CEO different gender	-0.064	-0.073	-0.118	-0.101	1				
Chair-CEO different industry experience	0.0475	0.1071	0.0498	0.0524	-0.063	1			
CEO tenure	-0.177	-0.251	-0.281	-0.244	-0.007	0.0501	1		
Ex CEO	-0.093	0.0705	0.0289	-0.006	-0.045	-0.147	-0.108	1	
Chair tenure	-0.064	0.0891	0.0339	0.0158	-0.068	0.289	0.2028	-0.141	1
Busy Chair	-0.08	-0.008	0.0522	0.0052	0.0587	-0.042	0.0116	-0.097	0.1017
CEO Change	0.0563	0.0183	0.0164	0.0553	0.0879	-0.007	-0.301	0.0137	-0.114
Chair Change	-0.111	-0.163	-0.106	-0.098	0.0787	-0.139	-0.011	0.0726	-0.236
Board size	0.04	0.0096	0.1323	0.126	0.0187	-0.071	-0.236	0.0024	-0.034
Independence (%)	0.029	0.1103	0.1014	0.0844	0.0142	-0.119	-0.068	0.2183	-0.192
Busy board	-0.153	-0.138	-0.106	-0.099	0.0643	0.0353	0.0974	-0.251	0.1468
Total Assets (Log)	0.0418	0.0999	0.1464	0.1325	-0.002	-0.279	-0.313	0.1281	-0.306
Total capital ratio	0.0013	-0.023	-0.057	-0.014	0.0186	-0.007	0.1596	-0.12	0.1521
GDP real growth (%)	-0.022	-0.012	0.0343	0.0423	0.0733	0.0027	0.0025	-0.219	0.084
Public debt (%)	0.1751	0.0634	0.1211	0.1198	-0.028	-0.128	-0.199	0.1962	-0.26

	Busy Chair	CEO Change	Chair Change	Board size	Independence (%)	Busy board	Total Assets (Log)	Total capital ratio	GDP real growth (%)	Public debt (%)
Busy Chair	1									
CEO Change	0.0154	1								
Chair Change	0.0134	0.0976	1							
Board size	0.1226	0.1192	0.0643	1						
Independence (%)	-0.089	0.0376	0.0233	-0.372	1					
Busy board	0.1537	-0.002	0.0119	0.0446	-0.099	1				
Total Assets (Log)	0.1106	0.2028	0.0906	0.0356	0.0026	-0.115	1			
Total capital ratio	0.0791	-0.088	-0.044	-0.3	0.0329	0.0732	-0.233	1		
GDP real growth (%)	0.1141	-0.004	-0.013	-0.025	-0.054	0.177	0.0662	0.2155	1	
Public debt (%)	-0.088	0.0783	0.0544	0.3551	-0.013	-0.303	0.3243	-0.321	-0.507	1

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CHAPTER 5

CEO power, board composition and bank liquidity and capital quality

Abstract

The recent global financial crises highlight the importance of bank liquidity management in the banking system. This paper extends the existing literature by investigating whether and how CEO power and board composition effect bank liquidity and capital quality. Using a sample of 96 listed European banks over the period of 2010 and 2014, our empirical results show that the powerful CEO tends to enhance bank liquidity quality. In contrast, a powerful bank board lead to lower bank capital. Overall our results show that boards are more likely to align their incentives with shareholders who may prefer risky project at the expense of debt holders or depositors. On the other hand, CEOs interests, due to their undiversifiable wealth including human capital invested in their jobs, seems to be aligned more with the depositors.

Keywords: CEO power, board composition, liquidity quality, capital quality, European banks

JEL classification: G3, G21, G28, G39

5.1. Introduction

The 2007-2009 global financial crises provided compelling evidence that liquidity risk leads to the failure of financial institutions. Basel Committee on Banking Supervision (BCBS) highlighted the weakness of banks' liquidity management when liquidity was still abundant (BCBS, 2008). In the post-crisis period regulators and policymakers emphasised liquidity quality as a critical factor for the stability of the banks and the financial system. Accordingly, new liquidity standards governing bank liquidity risk are introduced in the revised Basel banking regulatory framework, or Basel III. One new key liquidity requirement gauge is the *Net Stable Funding Ratio* (NSFR) designed to limit funding risk arising from maturity mismatches between bank assets and liabilities. A higher NSFR could imply a lower probability of bank failure and potentially lower the systemic stress in the financial system.

Inadequate internal governance practices of banks have also been highlighted as one of the reasons for bank mismanagement and failures in the crisis (Diamond and Rajan, 2009; Kirkpatrick, 2009; Beltratti and Stulz, 2012; Peni and Vähämaa, 2012). In this paper we investigate the possible influence of internal corporate governance mechanisms on bank liquidity quality. In particular, we examine whether and how CEO and board characteristics may be the determinants of the liquidity quality and funding stability. Board of the director is the key actor in banks overseeing risk management and enhance bank stability through effective monitoring and evaluation of such risks (Srivastav and Hagendorff, 2015).

The board of directors take two primary roles as advisers and monitors in internal corporate governance. However, the complexity and opaqueness of banks' asset and

business challenge the board's effectiveness in bank governance. The quality of advising and monitoring provided by the board of director can have a significant impact on the managers of banks when managing liquidity and capital. This is particularly important for bank shareholders, because bank transfers the riskless deposit to the risky asset through lending and off-balance sheet activities (Diamond, 1984). The shareholder might be benefited from risk-shifting behaviours and can enjoy stock gains from risk premium through banks' undertaking risky projects (Pathan, 2009). Similarly, CEOs have a key role in banks' operations, financial decision-making and risk management. The CEO power facilities her or him to structure and manage bank funding and capital.

Recent studies examine the impact of the board on bank various outcomes such as the bank risk-taking, efficiency and performance (Pathan and Faff, 2013; Aebi et al., 2012; Elyasiani and Zhang; 2015, Dong et al., 2015). However, there is limited knowledge on how the board characteristics and CEO power influence bank liquidity and funding stability. There is also literature on the importance of bank liquidity and capital quality and their impact in various bank economic outcomes, such as, bank risk-taking (Vazquez and Federico, 2015, Valencia, 2015), financial distress (Chiaramonte and Casu, 2015), bank lending behaviours (Košak et al., 2015), and profitability (Tran et al., 2016).

Our study makes several contributions to the existing literature. First, we contribute to the emerging literature on CEO power and provide the first evidence on the impact of CEO power on bank liquidity and funding quality. Second, our work is the first one to examine the link between the board size and independence and bank liquidity and funding quality. Third, we provide initial evidence that intensive board monitoring (small board and a high percentage of independent directors on board) might lead to banks holding less capital. Fourth, the majority of the literature on bank governance is U.S. focused and we

extend the literature by offering empirical evidence from Europe using a unique dataset. Finally, we contribute to the strand of the literature on the influence of board busyness on bank economic outcomes and corporate behaviours as bank busyness literature mainly looks at non-financial companies (Jiraporn et al., 2009, Cashman et al., 2012, Ahn et al., 2010, Ferris et al., 2003). To the best of our knowledge only (Elyasiani and Zhang, 2015) investigates the relation between the busy director and bank performance and risks. They find that busy directors have a positive impact on bank performance and reducing risks. Our study extends this literature by providing new evidence finding a positive link between board busyness and bank capital levels.

To preview our results, we find out that the powerful CEO is positively related to the bank liquidity quality, measured by NRSF and available amount of stable funding (ASF). This makes a potential implication for the bank boards and regulators that CEO power could have a positive effect on bank liquidity management. The powerful CEO tends to hold more stable funding resource to improve bank liquidity quality. Banks with large boards and more outside directors served on board hold less capital to cover their risk-weighted assets. Both board size and board independence are negatively associated with bank capital quality. Furthermore, the board with more busy directors has a positive impact on bank capital quality, suggesting that the busy board director offers qualify monitoring and advising to bank governance.

The remainder of the paper is organised as follows. The next section reviews the existing literature rapture and presents the development of hypotheses driven from the literature. We present the data and methodology in Section 3. Section 4 and Section 5 discusses the main results and provide alternative estimations for robustness tests and tackling possible endogeneity issues. Section 6 concludes.

5.2. Literature review and hypotheses development

5.2.1. CEO power, bank governance and funding stability

Theoretically, the separation of management from ownership in the corporation results in the agency conflicts between owners and managers (Berle, 1932). This agency conflicts between shareholders and managers in financial firms differ from the non-financial firms. The interest of shareholders is that they can be benefits from the risk-shifting by investing in various banking business projects. A shareholder can also enjoy the stock gains from the excessive risk-taking investments (M. Dewatripont and Tirole, 1996, Galai and Masulis, 1976). Levine (2004) provides the supportive evidence to these arguments showing that the shareholder controlled banks are associated with high risk-taking, whereas management controlled banks with dispersed ownership can have a risk. Overall, these studies argue that bank's shareholders might have different interests in comparison to the bank manager, and they might prefer incentivising managers to undertake excessive risk rather than holding adequate liquidity capital.

While bank shareholders could have preferences for choosing risky projects and assets, bank managers have reasons to prefer low-risk project and asset holding. Bank manager might have different risk preferences from the shareholders (May, 1995). The agency theory underlines that the managers are likely to be more risk-averse than the firms' shareholders motive them to be (Eisenhardt, 1989, Jensen and Meckling, 1976). Unlike the shareholder wealth, the bank manager' wealth is more concentrated within the firms they manage. The bank manager concentrated wealth, such as financial assets, human capital and tangible assets, is poorly diversified than the shareholders portfolio that can be diversified in the capital market (May, 1995).

Therefore, bank managers could be more risk averse in the selection of project and asset. It is also expected that bank managers internally tend to choose safe assets rather than risky assets, which the shareholder prefer them to hold. Furthermore, the career concern hypothesis suggests that firms with high leverage and risk-taking level might drive the managers' risk aversion level (Milidonis and Stathopoulos, 2014). Bank manager can only gain limited or fixed returns from undertaking the risk-excessive projects; however, they could lose more due to their career concerns if banks' project fails. In other words, their employment risk is undiversible. This difference in risk-taking preference could motive the powerful bank CEO unlike to invest in all positive net present value (NPV) projects in order to protect their personal wealth.

On the other hand, bank financial decision and policy could be interfered with by the powerful board for the interest of shareholders. The shareholders can influence the bank's managerial decision-making through intensive board monitoring of the bank's CEO. The powerful managers can influence the board monitoring ability and negatively impact on the board's monitoring performance (Morse et al., 2011). In relation to the CEO power, prior studies address two types of powerful CEO as *dual CEO* and *internally hired CEO*. CEO duality is the case where the CEO takes both the positions of CEO and the chair. This organizational setting can make the CEO conveniently control the information flow to outsiders. The CEO duality may lead to higher agency costs for the outside directors to obtain the information from the management as well as limits the board monitoring oversights of managers (Fama, 1983). Meanwhile, internally hired CEO can enhance power through the long-term involvement with the firm, hence, may have a better ability to control the boards' decision-making process (Adams et al., 2005b).

Empirically, the studies examining the relationship between the CEO power and various economic outcomes in non-financial firms exhibit mixed results. For example, (Nahar Abdullah, 2004) does not find evidence supporting that the CEO duality could be associated with the firm's profitability in the Malaysian listed companies. Examining an international sample, (Boyd, 1995) provide similar evidence indicating that impact of CEO duality might not significantly effect on the firm performance and the powerful CEO does not increase the agency costs between shareholder and management. In contrast, recent literature argues that CEOs who have more decision-making power can affect the various economic outcomes. Ramdani et al., (2010) examine the relationship between the CEO power and firm performance and find that powerful CEO leads to lower firm profitability. Bebchuk et al., (2006) report evidence indicating that CEO power is positively associated with the low firm value and poor financial performance. Moreover, the powerful CEO is likely to influence the independent directors' monitoring performance (Morse et al., 2011; Fahlenbrach, 2009).

There is also research on the CEO power and economic outcomes in banks. For example, Pathan (2009) use the dataset of U.S. bank holding companies (BHCs) over the 1997–2004 period to explore the impact of CEO power on the bank risk-taking. Controlling for different governance and bank characteristics, they find a negative relationship between CEO power and various banks' risk-taking indicators. Their findings confirm the argument that CEOs may prefer lower risk due to their poor diversifiable wealth and career concerns. (Chen and Lin, 2015) analyses the relationship among the corporate governance, bank credit, and liquidity risks and show that the powerful CEO could have a positive impact on the bank liquidity and credit risk management. They also suggest that the management-controlled banks take less credit risk.

The body of existing literature highlights the importance of bank capital and liquidity quality in bank performance and risk management. Related empirical studies show that the quality of bank capital could impact on banks' profitability, lending behaviour, financial stability and banking system risk (Košak et al., 2015, Ashraf et al., 2016, Tran et al., 2016). Kosak et al., (2015) investigates the role of capital in determining the bank lending behaviour during the global financial crisis. They find that the quality of bank capital matters for banks' lending channels and competitive strength of funding. By employing a sample of Islamic banks, Ashraf, Rizwan, and L'Huillier (2016) explore the impacts of requirements of NSFR on the financial stability. They find that modified NSFR has a positive influence on the financial stability of Islamic banks. Tran et al., (2016) provides evidence from US bank holding companies by examining the relationship between the NSFR adjustment and systemic risk. They find that the banks tend to adopt an immediate-trading equilibrium in response to the regulatory requirements for funding structure which leads to reducing systemic risk. Further, other studies (Abou-El-Sood, 2015, Chiaramonte and Casu, 2015) investigating the relation between bank failure and capital and liquidity ratios show that the higher NSFR can help the bank to improve its stability and therefore decline the likelihood of bank failure. However, little is known about how CEO power affects the quality of bank capital and funding, which are imperative for managing risk and efficiency in banks.

We develop our first hypothesis based on the literature's argument that bank CEOs tend to be risk-averse and prefer to take less risk. Therefore, they could have an incentive to improve the sustainable funding structure in the way of holding more high-quality liquid assets and increasing stable funding sources, such as deposit and equity. It is expected that bank CEOs improve bank financial stability and reduce the bank risk-taking through enhancing the quality of funding sources and capital. Therefore, our first hypothesis is:

Hypothesis 1: *CEO power is positively related to the bank's funding and capital quality.*

5.2.2. Board composition and corporate governance in banks

Given potential bank bailouts by government, shareholders have the incentive to profit from exceeding risk-taking (Merton, 1977) and they may achieve this through the board of directors who are appointed by the shareholders and represent their interest. On the other hand, bank debt holders, especially dispersed depositors, who have a smaller voice than shareholders in the boardroom, are stuck in curbing shareholders' risk-taking appetite and "risk shifting" behaviour (M. Dewatripont and Tirole, 1996). It is important to explore the relationship between board composition and risk management in banks due to information asymmetry problems arising from the initial ownership structure of banks.

The literature on group behaviour suggests that the decision-making process in a group is driven by reactions between the team members who are motivated to harmonize their interest (Allport, 1962). Group size might have an effect on its motivation for risk-taking since increasing the size might decline the organizational orientation of risky choices (Koagan and Wallach, 1966). Several studies have examined the relationship between group size and decision-making. Adams and Freerira (2010) provide the evidence suggesting that larger group size decreases its propensity to make an extreme betting decision as the group decisions are more moderate, and it is harder to reach a consensus in large groups.

A number of studies link board size with risk-taking behaviour. Examining Japanese non-financial firms, Nakano and Nguyen (2012) report that board size is negatively related to performance volatility and bankruptcy risk. Wang and Huang (2015), providing

empirical evidence for Chinese listed companies, find that firms with smaller boards tend to undertake riskier investment and are more prudent in considering the financing policy. Turning to the research on banks, Pathan (2009) reports that in the U.S. BHCs with a strong bank board – described as small in size, a larger representation of independent directors and shareholder representation in the board – is associated with more bank risk-taking. Minton (2014) find a similar result, based on a large sample of U.S. commercial banks, showing that large boards are associated with lower risk taking. This negative relation between board size and bank risk-taking suggests that larger boards may be not aligned with shareholders possible desire to take excessive risk in banks.

We developed our second hypothesis based on the above arguments. As Minton (2014) argues smaller boards may reduce group coordination costs which could improve the board effectiveness. Hence the coordination problems are likely to occur in larger boards and firms with a larger board tend to adopt a low level of risk-taking (Cheng, 2008). Meanwhile, the small board could increase the strength of board monitoring on managers. Strong boards also make it difficult for CEO to dominate and control the decision-making process in the bank (Pathan, 2009). On the other hand, larger boards could have less decision-making power over the project selection process in banks. Large board suffers from the high cost of communication and coordination which may lead to ineffective monitoring of bank managers. In banks where boards are large, CEO may have the power to conveniently select those less risky assets and projects so as to protect his or her concentrated personal wealth in the bank. Based on these arguments, our second hypothesis is:

Hypothesis 2: *Bank board size is positively associated with the quality of bank liquidity and capital.*

5.2.3. Board independence

The primary role of the board director is to monitor the top management of the company to mitigate the conflicts between shareholders and managers. Theory suggests that it is hard for outsiders to monitor and control companies due to insiders having informational advantages. Independent directors are better in the setting of a governance mechanism for monitoring managers to maximize shareholder value (Fama and Jensen, 1983). However, research on the effectiveness of an outsider board in improving board's monitoring and advising capacity is inconclusive. On the one hand, literature finds that independent boards might contribute to reducing the corporate idiosyncratic risk (Ashbaugh-Skaife et al., 2006) and have joint causal relation with company transparency (Armstrong, 2014) or being beneficial to firm value (Nguyen and Nielsen, 2010). On the other hand, studies find that independent directors have a small or non-correlated influence on to company performance (Bhagat and Black, 2002; Fields and Keys, 2003).

As the theory suggests, independent directors have disadvantages for being capable monitors under the highly asymmetric informational environment (Fama and Jensen, 1983) and such information environment could also have a significant impact on the effectiveness of boards function (Raheja, 2005; Adams and Ferreira, 2007). Supporting the theory, Duchin et al. (2010) provide empirical evidence that information costs can determine the board effectiveness. In the context of banking, Basel Committee (2010) highlights the importance of board independence in term of bank board monitoring activities and its capability of exerting sound and objective judgment. While only a few empirical studies explore the board independence and bank outcomes, looking at an international sample Erkens et al. (2010) provide evidence that supporting board independence might have a positive effect on the bank risks. They report that board

independence is correlated with larger shareholder losses during the recent global financial crisis. This may be because a high percentage of independent directors on board can have a stronger decision-making power to push the bank's CEO to invest in more risky asset and projects. This could destroy the bank liquidity and capital quality. It is expected that a board with more independent directors is negatively related to the quality of bank liquidity and capital. Based on these arguments we develop our third hypothesis as below:

Hypothesis 3: *Board independence is negatively related to the bank liquidity and capital quality.*

5.2.4. Board busyness

Board takes two main roles in corporate governance as monitors and advisers. Previous studies document that busy directors have less time to devote for corporate governance in firms thereby they are harmful to firm value and performance (Ferris et al., 2003, Fich and Shivdasani, 2006, Falato et al., 2014). However, the quality hypothesis suggests that busy outside director might provide more valuable external connections, industry knowledge and experience to improve the board advising performance (Fama, 1980b, Fama and Jensen, 1983a). Several empirical studies provide empirical evidence that busy outside directors have a potentially positive impact on firm economic outcomes (Perry and Peyer, 2005; Field et al., 2013; Sarkar and Sarkar, 2009). As the business of banks is more complex, they might need more advise from bank boards in comparison to non-financial firms (Klein, 1998). Elyasiani et al., (2015) argue that the busy directors might contribute to banking business through their comprehensive industry knowledge and broader networking with customers.

We develop our fourth hypothesis on the link between board independence and bank liquidity and capital quality based on the above arguments. However, as shown above, the literature is inconclusive on the relationship between board busyness and bank performance and risk-taking behaviour. US studies looking at BHCs provide some evidence that busy outside director can reduce bank risks and add value. Thus we develop our hypothesis based on the quality argument suggesting that busy outside directors can help the board by providing high-quality advice and external networking capital for operations, risk management, and business development. Therefore, board busyness might be a benefit for helping the bank to manage its capital and liquidity, and it is expected that board with more busy directors could be positively linked to bank liquidity and capital quality. Our fourth hypothesis is given below:

Hypothesis 4: *Board busyness is positively associated with the bank liquidity and capital quality.*

5.3. Data, methodology and descriptive statistics

5.3.1. Sample

Our sample includes listed banks (commercial banks, bank holding companies and savings banks) from 16 European countries for the period of 2010 to 2014. Collecting data for all banks is not possible due to non-uniform disclosure requirements of banks' board information in Europe. This provides a limitation and a challenge for data collection for European banking research in the corporate governance area. We collate the information on CEO and board of directors from different sources. Most of the CEO and board characteristics are carefully hand collected from various resources that provide board information including annual reports, Bloomberg and banks' websites. Bank financial data is collected from the Bank scope and Datastream. Our final dataset includes

96 listed European banks and 480 bank-year observations. Our data covers most of the largest listed banks in European banks.

5.3.2. Measuring bank liquidity and capital quality

Following the literature (Berger et al., 2014, Minton et al., 2014, Košak et al., 2015, Chiaramonte and Casu, 2015), we use six indicators to proxy the quality of bank funding and capital in European banks. Our main indicator is the structural liquidity ratio of *Net Stable Funding Ratio* (NSFR) that measures the bank liquidity quality. Basel III describes this ratio as follows

$$Net\ Stable\ Funding\ Ratio = \frac{Available\ Stable\ Funding}{Required\ Stable\ Funding}$$

We follow Chiaramonte & Casu (2015) to calculate NSFR for each bank in our sample. We compute NSFR based on the two versions as NSFR 2014 and NSFR 2010 reflecting the liquidity standard regulation of Basel III and Basel II respectively. A more detailed description of how NSFR is reported in Appendix B. We also calculate *Available Stable Funding* (ASF) for 2014 and 2010 as a second indicator for the quality of liquidity and funding. Following the previous literature (Betz et al., 2014, Vazquez and Federico, 2015), we employ two proxies to represent the bank capital quality: *ETA*, defined as the ratio of total equity to total assets, and *Tier1 capital ratio*, defined as the ratio of Tier1 capital to risk-weighted assets.

5.3.3. Measures of CEO power and board characteristics

We use four indicators to measure the CEO power as: *CEO duality*, *CEO tenure, CEO retirement* and *CEO change*. These proxies are widely used in the literature (Adams et al., 2005b; Goyal and Park, 2002; Pathan, 2009; Brookman and Thistle, 2009; Cicero et al., 2013). *CEO duality* is a dummy variable which equals one if CEO takes the role of

chair of the board. The *CEO tenure* is the number of years the CEO has been serving as the CEO of the bank. *CEO retirement* is a dummy variable that marks weather CEO age is over 60. *CEO change* is dummy variable which equal to 1 if the CEO has been changed during the period of observation in a given year. Three proxies of bank board characteristics are *board size*, *board independence* and *busy board*. *Board size* is defined as the number of directors on the board. *Independent directors* are the ratio of total outside directors served on the bank board to board size. *The busy board* is a dummy variable that identifies whether more than 50 percentage of board directors hold more than one director role in other companies and 0 otherwise (Fich and Shivdasani, 2006; Field et al., 2013; Elyasiani and Zhang, 2015).

5.3.4. Other control variables

Prior research (King, 2013; Chiaramonte and Casu, 2015; Dong et al., 2015; Betz et al., 2014) suggest that several bank characteristics could impact on the bank liquidity and capital. Accordingly we control for *bank size*, *impaired loans to gross loans, net interest margin* and *total risk*. *Bank size* is measured as the natural logarithm of the total asset of the bank. *Impaired loans to gross loans* are measured as the ratio of impaired loan to total gross loan. *Net interest margin* is measured as the difference between interest income and interest expenses, where earnings assets include assets, such as loans, used to generate interest income. *Total risk* is the volatility of banks` stock price, which is computed as the standard deviation of the bank daily stock price covering the current year and next year. We also use *GDP growth*, expressed as a percentage of GDP with each observed countries, and *year* dummy variables to control for the macroeconomic environment. Variable definitions are presented in Appendix 5.A.

5.3.5. Empirical model

Here, we aim to establish a link between CEO power, board characteristics and bank liquidity and capital. Following earlier literature presented above we model bank i ($i = 1$, 2, ..., 96) at time t ($t = 2010, 2011, ..., 2014$) as a function of the factors explained above and estimated the following empirical model:

$$Bank\ liquidity\ or\ capital\ quality_{i,t} = \beta_0 + \beta_1 \times CEO\ Power$$

$$+ \sum_{h=1}^{H} \beta_h \times Board\ characteristics_{h,i,t} + \sum_{k=1}^{K-1} \beta_k \times Bank\ characteristics_{k,i,t}$$

$$+ \sum_{l=1}^{L-1} \beta_l \times Country\ characteristics_{l,i} + \sum_{y=1}^{Y-1} \beta_y \times Year_{i,y} + \mu_i + e_{i,t}$$

where;

Bank liquidity or capital quality we use *NSFR 2014, NSFR 2010, ASF 2014 and ASF 2010, ETA and Tier1 capital ratio* interchangeably. μ denotes the fixed effect of bank i and e denote the remaining disturbance term. We are using the fixed effects regressions as the main estimator. All regressions are based on the strongly balanced panel.

5.3.6. Descriptive statistics

Descriptive statistics for dependent and independent variables are presented in Table 5.1. In Panel A we report descriptive statistics for bank liquidity and capital quality. Mean *NSFR 2014* is 0.996% while mean *NSFR 2010* is 0.974%. Interestingly, mean of both *NSFR* ratios reported in our sample are less than 1, which indicates that, on average, European banks in our sample do not meet the liquidity requirements set by Basel II and Basel. These results consist with the findings of the literature (Chiaramonte and Casu, 2015, DeYoung and Jang, 2016). *ETA*, measure as a ratio of equity to total assets, is on average 8.74%. The mean value of the *Tier1 capital ratio* is 14.35.

Panel B shows descriptive statistics for CEO power variables. In 9% of all observations in our sample the CEO also serves as the chair of the board. The average CEO tenure is 6.3 years. Percentage of CEO whose age is older than 60 is 22.1%. In 10.5% of our observations CEO is replaced with a new CEO.

Panel C reports descriptive statistics of board characteristics. Mean board size is thirteen. On average independent directors constitute 65% of the board, which is in line with earlier studies (Beltratti and Stulz, 2012; Pathan and Faff, 2013; Wang and Hsu, 2013). Boards where at least 50% of directors hold more than one directorship with another firm constitute 88% of all observations. In Panel D, we report bank characteristics and macroeconomic indicators. Mean of the total asset is 336.8 billion US dollar. Average impaired loans to gross loans and net interest margin are 8.1% and 1.8%, respectively.

Table 5.1: Descriptive statistics

Variables	N	Mean	StDV	Min	Max
Panel A: Bank liquidity and capital measures					
Net stable funding ratio (NSFR) 2014	464	0.996	0.536	0.12	3.302
Net stable funding ratio (NSFR) 2010	464	0.974	0.53	0.114	3.296
Available Stable Funding (ASF) 2014	468	9.862	2.543	4.863	14.27
Available Stable Funding (ASF) 2010	468	9.804	2.548	4.777	14.18
Equity to total assets (%)	472	8.742	6.405	0.42	40.25
Tier1 capital ratio (%)	390	14.355	5.95	-6.1	48.2
Panel B: CEO power variables					
CEO Power Score	480	0.875	0.954	0	3
CEO duality	480	0.064	0.246	0	1
CEO tenure	477	6.356	5.254	1	27
CEO retirement	480	0.221	0.415	0	1
CEO change	475	0.105	0.307	0	1
Panel D: Board characteristics					
Board size	480	13.15	5.608	3	34
Independence (%)	480	0.649	0.183	0.133	1
Busy board	480	0.885	0.319	0	1
Panel E: Bank characteristics and macroeconomic variables					
Total assets (log)	472	4.478	1.162	2.186	6.447
Impaired loans to gross loans (%)	359	8.115	8.994	0.06	48.06
Net interest margin	468	1.849	3.77	0.8	13.46
Total risk	434	25.7	57.52	0.014	536.6
GDP real growth (%)	480	0.841	1.994	-8.86	5.7

5.4. Empirical results and discussion

We present our results for the bank liquidity variables NSFR 2014 and NSFR 2010 in Table 5.2. In all specifications, we include all the control variables, bank-fixed and year-fixed effects. We find that the coefficient of *CEO duality* is statistically significant at 5% level and is positively related to both NSFR 2014 (Column I) and NSFR (Column 2). These findings show that banks that have powerful CEOs, who hold both the position of the CEO and the chair, have higher levels of high-quality bank liquidity and capital. Hence, results confirm our Hypothesis 1 in which we based our arguments on the

literature finding empirical evidence that CEOs tend to be risk-averse and prefer to take less risk (Pathan, 2009; Chen & Lin, 2015). These results indicate that CEOs prefer to hold high-quality asset to improve bank liquidity which makes the bank safer. CEOs may prefer the bank they are working in safer possibly because their wealth is poorly diversified in comparison to shareholders and also they may have career concerns.

Our other CEO power variables – CEO tenure, CEO retirement and CEO change – are not significant in our models for NSFR in Table 5.2. We also find the coefficients of *board size*, *board independence* and *busy board* are negatively related to bank liquidity; however, these results are not statistically significant. These results do not provide support for our Hypothesis 2, 3 and 4.

Table 5.2: Liquidity measured as net stable funding ratio (NSFR) defined in Basel III

This table presents fixed effect regression results for CEO power, board characteristics and net stable funding ratio (defined in Appendix 2) of 16 listed banks in Europe for the period of 2010 and 2014. NSFR 2014 is the ratio of available stable funding defined by the new final Basel III version of October 2014. NSFR 2010 is the ratio of available stable funding defined by the new final Basel III version of October 2010. All dependent and independent variables are defined in Appendix A. Robust t-statistics are based on standard errors clustered by bank-level. Constants are not reported. ***, **, *，denote statistical significance at the level of 1%, 5%, 10%, respectively.

	NSFR 2014	NSFR 2010
CEO duality	0.4833**	0.4892**
	(2.58)	(2.46)
CEO tenure	-0.0019	-0.0032
	(-0.29)	(-0.44)
CEO retirement	0.0706	0.0721
	(1.32)	(1.27)
CEO Change	-0.0549	-0.0732
	(-1.24)	(-1.55)
Board size	0.148	0.124
	(1.55)	(1.22)
Independence	-0.1079	-0.1658
	(-0.58)	(-0.83)
Busy board	-0.0443	-0.0502
	(-0.70)	(-0.75)
Total assets	-0.0853	-0.025
	(-0.39)	(-0.11)
Impaired loans to gross loans	-0.018***	-0.018***
	(-5.23)	(-5.05)
Net interest margin	0.165***	0.149***
	(5.94)	(5.03)
Total risk	0.003	0.0033
	(0.15)	(0.15)
GDP growth	0.0419***	0.049***
	(-3.64)	(-4.07)
Fixed effects	Year	Year
Number of observations	325	325
Within R-squared	0.31	0.29

In Table 5.3 we report the results of the regressions for ASF 2014 and ASF 2010. In both specifications, we find the coefficient of *CEO duality* is positively related to the bank liquidity and capital quality at 10% significance level. This result shows that CEO power is positively related to the level of available stable funding held by the bank. We do not find other CEO power indicators to be statistically significant in models presented in Table 3. We find that the coefficient of board independence is negatively related to bank

liquidity while the board busyness is positively associated with bank liquidity. However, both results are statistically insignificant.

We present results for the bank capital variables, *ETA and Tier1 capital ratio*, in Table 5.4. We do not find any of the CEO power variables (duality, tenure, retirement and change) to have a statistically significant relationship with the levels of bank capital. Turning to board characteristics, we find that for the dependent variable *Tier1 capital ratio* both board size and board independence have negative coefficients which are statistically significant at 5% level. Our findings on *board size* do not support Hypothesis 2. It seems that in banks large board suffers from the high cost of communication and coordination which may lead to ineffective monitoring of bank managers. In banks where boards are large, CEOs, especially powerful CEOs, select less risky assets and projects to protect their concentrated personal wealth.

Table 5.3: Liquidity measured as the amount of available stable funding (ASF) defined in Basel III

This table presents fixed effect regression results for CEO power, board characteristics and the amount of available stable funding ratio (defined in Appendix 2) of 16 listed banks in Europe for the period of 2010 and 2014. AFR 2014 is the amount of available funding defined by the new final Basel III version of October 2014. AFR 2010 is the amount of available stable funding defined by the new final Basel III version of October 2010. All dependent and independent variables are defined in Appendix A. Robust t-statistics are based on standard errors clustered by bank-level. Constants are not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	ASF 2014	ASF 2010
CEO duality	0.1513*	0.1630*
	(1.79)	(1.93)
CEO tenure	-0.0013	-0.0018
	(-0.44)	(-0.60)
CEO retirement	0.0059	0.0096
	(0.25)	(0.40)
CEO Change	-0.0113	-0.0107
	(-0.57)	(-0.54)
Board size	0.0123	0.0062
	(0.29)	(0.14)
Independence	-0.0127	-0.0134
	(-0.15)	(-0.16)
Busy board	0.0026	0.0053
	(0.09)	(0.19)
Total assets	2.1531***	2.1721***
	(21.78)	(21.98)
Impaired loans to gross loans	-0.0031*	-0.0030*
	(-1.94)	(-1.89)
Net interest margin	0.0061	0.0061
	(0.49)	(0.49)
Total risk	-0.0008	-0.0022
	(-0.09)	(-0.25)
GDP growth	0.0071	0.0060
	(1.38)	(1.17)
Fixed effects	Year	Year
Number of observations	325	325
Within R-squared	0.64	0.60

Results in Table 5.4 on *board independence* confirm our Hypothesis 3. Erkens et al. (2010) argue that a high level of board independence led to larger losses during the recent global financial crisis. This is because a high percentage of independent directors on the board can have a stronger decision-making power to push the bank's CEO to invest in more risky asset and projects. Our results support this argument. A high percentage of independent directors lead to lowers the quality of bank liquidity and capital.

In Model 1 of Table 5.4, we also report a positive and statistically significant (at 10% level) coefficient for the *busy board* variable. The finding supports the reputation hypothesis that busy directors have a positive impact on bank capital quality. This finding confirms our Hypothesis 4. Our results show that board members with other outside roles are beneficial in managing the complex business of banking and provide more external resources and social capital for the firm. Similar to the literature findings, we find that buy directors have a potentially positive impact on bank liquidity and capital quality (Field, Lowry, & Mkrtchyan, 2013; Perry & Peyer, 2005; Sarkar & Sarkar, 2009).

Table 5.4: Capital quality

This table presents fixed effect regression results for CEO power, board characteristics and capital ratios measured by equity to total assets and the tier1 capital ratio of 16 listed banks in Europe for the period of 2010 and 2014. All dependent and independent variables are defined in Appendix A. Robust t-statistics are based on standard errors clustered by bank-level. Constants are not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	Equity to total	Tier1 capital
CEO duality	-0.9068	-0.4226
	(-0.70)	(-0.21)
CEO tenure	0.0037	0.0495
	(0.09)	(0.65)
CEO retirement	0.0139	-0.0469
	(0.04)	(-0.08)
CEO Change	-0.0662	0.4116
	(-0.22)	(0.82)
Board size	0.2439	-2.2353**
	(0.35)	(-2.02)
Independence	-0.5059	-4.3950**
	(-0.37)	(-2.07)
Busy board	0.8531*	-0.8746
	(1.84)	(-1.19)
Total assets	-4.6241***	-1.4919
	(-2.97)	(-0.61)
Impaired loans to gross loans	-0.1316***	-0.0319
	(-5.14)	(-0.71)
Net interest margin	0.9808***	0.2852
	(5.03)	(0.70)
Total risk	0.1375	0.2296
	(1.01)	(0.94)
GDP growth	0.1652**	0.0398
	(2.08)	(0.31)
Fixed effects	Year	Year
Number of observations	322	293
Within R-squared	0.22	0.24

5.5. Robustness test and endogeneity concerns

5.5.1. Random effect regressions for identification issues

Using *CEO duality* as a measure of CEO power has its limitations. This is because CEO duality might only change when the bank's board change the CEO. This could potentially create a parameter identification problem in our fix-effect regressions results that we presented the results for in Section 4 above. To address this potential identification issues and check robustness of our results, we use an approach similar to earlier researchers (Andres, 2008; Goergen et al. 2015) and re-run the regressions using random effects estimators, instead of fixed effects. Results are presented in Table 5.5, Table 5.6 and Table 5.7. Significance and direction of coefficients are similar to the ones reported in Section 4 with fixed effects regressions. We find that coefficients of *CEO duality* variables are still significantly and positively associated with bank liquidity quality. *Board independence* and *board size* have strong negative effects on bank capital while the *busy board* is positively related to bank capital at the significance level 10%.

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Table 5.5: Liquidity quality measured by net stable funding ratio (NSFR) defined in Basel III – Random effects regressions

This table presents random effect regression results for CEO power, board characteristics and net stable funding ratio (defined in Appendix 2) of 16 listed banks in Europe for the period of 2010 and 2014. NSFR 2014 is the ratio of available stable funding defined by the new final Basel III version of October 2014. NSFR 2010 is the ratio of available stable funding defined by the new final Basel III version of October 2010. All dependent and independent variables are defined in Appendix A. Robust t-statistics are based on standard errors clustered by bank-level. Constants are not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	NSFR 2014	NSFR 2010
CEO duality	0.3650**	0.3560**
	(2.43)	(2.35)
CEO tenure	-0.0048	-0.0068
	(-0.82)	(-1.12)
CEO retirement	0.0755	0.0834
	(1.53)	(1.62)
CEO Change	-0.0545	-0.0704
	(-1.26)	(-1.54)
Board size	0.1556*	0.1265
	(1.83)	(1.44)
Independence	-0.0010	-0.0526
	(-0.01)	(-0.32)
Busy board	-0.0499	-0.0654
	(-0.84)	(-1.05)
Total assets	-0.1837***	-0.1750***
	(-3.65)	(-3.61)
Impaired loans to gross loans	-0.0140***	-0.0135***
	(-4.65)	(-4.40)
Net interest margin	0.1627***	0.1629***
	(7.37)	(7.23)
Total risk	-0.0007	0.0009
	(-0.04)	(0.05)
GDP growth	0.0288***	0.0340***
	(2.81)	(3.20)
Controlled for	Year	Year
Number of observations	325	325
Within R-squared	0.31	0.29

Table 5.6: Liquidity quality measured by the amount of available stable funding (ASF) defined in Basel III – Random effect regressions

This table presents random effect regression results for CEO power, board characteristics and the amount of available stable funding ratio (defined in Appendix 2) of 16 listed banks in Europe for the period of 2010 and 2014. AFR 2014 is the amount of available funding defined by the new final Basel III version of October 2014. AFR 2010 is the amount of available stable funding defined by the new final Basel III version of October 2010. All dependent and independent variables are defined in Appendix A. Robust t-statistics are based on standard errors clustered by bank-level. Constants are not reported. ***, **, *，denote statistical significance at the level of 1%, 5%, 10%, respectively.

	ASF 2014	ASF 2010
CEO duality	0.1274*	0.1368*
	(1.69)	(1.82)
CEO tenure	-0.0024	-0.0029
	(-0.87)	(-1.03)
CEO retirement	0.0142	0.0177
	(0.62)	(0.77)
CEO Change	-0.0113	-0.0106
	(-0.58)	(-0.54)
Board size	0.0256	0.0201
	(0.63)	(0.50)
Independence	0.0283	0.0273
	(0.37)	(0.35)
Busy board	-0.0024	0.0001
	(-0.09)	(0.00)
Total assets	2.1552***	2.1624***
	(70.54)	(71.41)
Impaired loans to gross loans	-0.0026*	-0.0025*
	(-1.76)	(-1.71)
Net interest margin	0.0138	0.0143
	(1.28)	(1.32)
Total risk	0.0019	0.0008
	(0.24)	(0.10)
GDP growth	0.0059	0.0049
	(1.21)	(1.00)
Controlled for	Year	Year
Number of observations	325	325
Within R-squared	0.73	0.73

Table 5.7: Capital quality – Random effects regressions

This table presents fixed effect regression results for CEO power, board characteristics and capital ratios measured by equity to total assets and the tier1 capital ratio of 16 listed banks in Europe for the period of 2010 and 2014. All dependent and independent variables are defined in Appendix A. Robust t-statistics are based on standard errors clustered by bank-level. Constants are not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	Equity to total assets	Tier1 capital ratio
CEO duality	-0.1096	-0.8755
	(-0.10)	(-0.55)
CEO tenure	-0.0164	0.0239
	(-0.43)	(0.36)
CEO retirement	-0.0503	-0.1579
	(-0.14)	(-0.29)
CEO Change	-0.0714	0.2437
	(-0.23)	(0.50)
Board size	0.3666	-2.0067**
	(0.57)	(-2.06)
Independence	-0.0691	-3.3029*
	(-0.06)	(-1.85)
Busy board	0.8118*	-0.8275
	(1.79)	(-1.21)
Total assets	-2.0910***	-1.2708**
	(-5.60)	(-2.27)
Impaired loans to gross loans	-0.0952***	-0.0425
	(-4.16)	(-1.17)
Net interest margin	0.7030***	-0.2258
	(4.38)	(-0.80)
Total risk	0.1257	0.3265*
	(1.11)	(1.72)
GDP growth	0.0770	0.0851
	(1.04)	(0.74)
Controlled for	Year	Year
Number of observations	322	293
Within R-squared	0.22	0.24

5.5.2. Fixed effect regressions controlling for unobserved heterogeneity and endogenous matching

Existing literature suggests that CEO power might be shaped by the various specificities of the board (Ramdani and Witteloostuijn, 2010, Weisbach, 1988, Brunello et al., 2003, Goyal and Park, 2002). Likewise, the impact of CEO power on firm performance could also be limited by board structure (Ramdani and Witteloostuijn, 2010). Furthermore, powerful boards tend to influence the selecting process of the new CEO, and, therefore,

change the characteristics of the CEO (Zajac and Westphal, 1996). Thus, our main measures of the CEO power, such as duality, turnover, retirement and tenure, might be significantly correlated with measures of board characteristics. This may lead to the spurious regression results.

Moreover, board composition and decision-making power could be affected by the powerful CEO, and the interaction between the board and the CEO may influence the board monitoring performance on the CEO (Morse et al., 2011, Fahlenbrach, 2009, Adams and Ferreira, 2007). To address these potential unobserved heterogeneity and endogenous matching issues, we re-run the fix-effect regression by controlling for the board and CEO characteristics as a measure of CEO tenure and board independence. The results are reported in Table 5.8, Table 5.9 and Table 5.10. Similar to the above results, we still report a positive relationship between *CEO duality* and bank liquidity after controlling for board independence. We also report a positive relation between the *busy board* and bank capital. *Board size* and *board independence* remain to have a negative impact on bank capital quality.

Table 5.8: Liquidity quality measured by net stable funding ratio (NSFR) defined in Basel III - controlling for unobserved heterogeneity and endogenous matching

This table presents fixed effect regression results for CEO power, board characteristics and net stable funding ratio (defined in Appendix 2) of 16 listed banks in Europe for the period of 2010 and 2014. NSFR 2014 is the ratio of available stable funding defined by the new final Basel III version of October 2014. NSFR 2010 is the ratio of available stable funding defined by the new final Basel III version of October 2010. All dependent and independent variables are defined in Appendix A. Robust t-statistics are based on standard errors clustered by bank-level. Constants are not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	NSFR 2014	NSFR 2010
CEO duality	0.4833**	0.4892**
	(2.58)	(2.46)
CEO tenure	-0.0019	-0.0032
	(-0.29)	(-0.44)
CEO retirement	0.0706	0.0721
	(1.32)	(1.27)
CEO Change	-0.0549	-0.0732
	(-1.24)	(-1.55)
Board size	0.1480	0.1240
	(1.55)	(1.22)
Independence	-0.0443	-0.0502
	(-0.70)	(-0.75)
Busy board	-0.0853	-0.0250
	(-0.39)	(-0.11)
Total assets	-0.0184***	-0.0188***
	(-5.23)	(-5.05)
Impaired loans to gross loans	0.1659***	0.1492***
	(5.94)	(5.03)
Net interest margin	0.0030	0.0033
	(0.15)	(0.15)
Total risk	0.0419***	0.0496***
	(3.64)	(4.07)
GDP growth	0.4833**	0.4892**
	(2.58)	(2.46)
Fixed effects	Bank-board, Year	Bank-board, Year
Number of observations	325	325
Within R-squared	0.30	0.29

Table 5.9: Liquidity quality measured by the amount of available stable funding (ASF) defined in Basel III - controlling for unobserved heterogeneity and endogenous matching

This table presents fixed effect regression results for CEO power, board characteristics and the amount of available stable funding ratio (defined in Appendix 2) of 16 listed banks in Europe for the period of 2010 and 2014. AFR 2014 is the amount of available funding defined by the new final Basel III version of October 2014. AFR 2010 is the amount of available stable funding defined by the new final Basel III version of October 2010. All dependent and independent variables are defined in Appendix A. Robust t-statistics are based on standard errors clustered by bank-level. Constants are not reported. ***,

	ASF 2014	ASF 2010
CEO duality	0.1513***	0.1630***
	(6.39)	(7.27)
CEO tenure	-0.0013	-0.0018
	(-0.63)	(-0.84)
CEO retirement	0.0059	0.0096
	(0.27)	(0.43)
CEO Change	-0.0113	-0.0107
	(-0.76)	(-0.72)
Board size	0.0123	0.0062
	(0.28)	(0.14)
Independence	0.0026	0.0053
	(0.11)	(0.20)
Busy board	2.1531***	2.1721***
	(16.95)	(17.00)
Total assets	-0.0031	-0.0030
	(-1.57)	(-1.64)
Impaired loans to gross loans	0.0061	0.0061
	(0.69)	(0.70)
Net interest margin	-0.0008	-0.0022
	(-0.08)	(-0.23)
Total risk	0.0071	0.0060
	(1.44)	(1.29)
GDP growth	0.1513***	0.1630***
	(6.39)	(7.27)
Fixed effects	Year	Year
Number of observations	325	325
Within R-squared	0.74	0.74

Table 5.10: Capital quality - controlling for unobserved heterogeneity and endogenous matching

This table presents fixed effect regression results for CEO power, board characteristics and capital ratios measured by equity to total assets and the tier1 capital ratio of 16 listed banks in Europe for the period of 2010 and 2014. All dependent and independent variables are defined in Appendix A. Robust t-statistics are based on standard errors clustered by bank-level. Constants are not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	Equity to total assets	Tier1 capital ratio
CEO duality	-0.9068	-0.4226
	(-0.70)	(-0.21)
CEO tenure	0.0139	-0.0469
	(0.04)	(-0.08)
CEO retirement	-0.0662	0.4116
	(-0.22)	(0.82)
CEO Change	0.2439	-2.2353**
	(0.35)	(-2.02)
Board size	-0.5059	-4.3950**
	(-0.37)	(-2.07)
Independence	0.8531*	-0.8746
	(1.84)	(-1.19)
Busy board	-4.6241***	-1.4919
	(-2.97)	(-0.61)
Total assets	-0.1316***	-0.0319
	(-5.14)	(-0.71)
Impaired loans to gross loans	0.9808***	0.2852
	(5.03)	(0.70)
Net interest margin	0.1375	0.2296
	(1.01)	(0.94)
Total risk	0.1652**	0.0398
	(2.08)	(0.31)
GDP growth	-0.9068	-0.4226
	(-0.70)	(-0.21)
Fixed effects	Bank-CEO, Year	Bank-CEO, Year
Number of observations	322	293
Within R-squared	0.22	0.24

5.5.3. GMM regressions for dynamic endogeneity issues

To address the potential dynamic endogeneity issues typically seen in corporate governance studies we apply two-step system GMM estimations to control the potential endogeneity problems in our model (Arellano and Bond, 1991). In the context of corporate governance, dynamic endogeneity issues exist due to the past firm economic

outcome may affect both current corporate governance variables and firm performance (Wintoki et al., 2012). In the context of our work, past liquidity management of the bank could cause shareholder changing the board structure to enhance the board monitoring performing. The board may also replace the chair or the CEO.

Results of GMM regressions are represented in Table 5.11, Table 5.12 and Table 5.13. We find that our main CEO power and busy board variables keep their positive sign on the impact of bank liquidity and capital quality. Board size and board independence are still negatively related to bank capital measured with the Tier1 capital ratio. Hence, we can confirm that our results are not prone to serious dynamic endogeneity and omitted variable bias problems.

Table 5.11: Liquidity quality measured by net stable funding ratio (NSFR) defined in Basel III – dynamic GMM regressions

This table presents GMM regression results for CEO power, board characteristics and net stable funding ratio (defined in Appendix 2) of 16 listed banks in Europe for the period of 2010 and 2014. NSFR 2014 is the ratio of available stable funding defined by the new final Basel III version of October 2014. NSFR 2010 is the ratio of available stable funding defined by the new final Basel III version of October 2010. All dependent and independent variables are defined in Appendix A. Constants are not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	NSFR 2014	NSFR 2010
NSFR 2014 lag	0.6998***	
	(4.99)	
NSFR 2010 lag		0.7534***
		(12.37)
CEO duality	0.5042***	0.2905***
	(4.25)	(4.33)
CEO tenure	0.0033	-0.0119**
	(0.24)	(-2.38)
CEO retirement	0.0446	0.0939
	(0.35)	(1.46)
CEO Change	-0.0006	-0.0729
	(-0.02)	(-1.20)
Board size	0.4087**	-0.0461
	(2.35)	(-0.86)
Independence	-0.2663	-0.0544
	(-0.76)	(-0.73)
Busy board	0.7617	0.0577
	(1.58)	(0.60)
Total assets	0.0115	0.0461
	(0.10)	(1.11)
Impaired loans to gross loans	0.0039	-0.0057**
	(0.57)	(-2.30)
Net interest margin	0.1813***	0.0929***
	(3.33)	(3.86)
Total risk	0.0134	0.0179*
	(0.69)	(1.95)
GDP growth	-0.0072	0.0110*
	(-0.63)	(1.69)
Number of observations	267	267
Arellano-Bond test AR(1) (p-value)	0.024	0.015
Arellano-Bond test AR(2) (p-value)	0.67	0.37
Hansen test for over-identification (p-value)	0.84	0.67
Diff-in-Hansen test GMM (p-value)	0.67	0.78

Table 5.12: Liquidity quality measured by the amount of available stable funding (ASF) defined in Basel III – dynamic GMM regressions

This table presents GMM regression results for CEO power, board characteristics and the amount of available stable funding ratio (defined in Appendix 2) of 16 listed banks in Europe for the period of 2010 and 2014. AFR 2014 is the amount of available funding defined by the new final Basel III version of October 2014. AFR 2010 is the amount of available stable funding defined by the new final Basel III version of October 2010. All dependent and independent variables are defined in Appendix A. Constants are not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	AFR 2014	AFR 2010
NSFR 2014 lag	0.0932	
	(1.34)	
NSFR 2010 lag		0.0899
		(1.30)
CEO duality	0.1627*	0.1807**
	(1.86)	(2.04)
CEO tenure	-0.0212***	-0.0199***
	(-2.92)	(-2.68)
CEO retirement	0.0589	0.0610
	(1.33)	(1.40)
CEO Change	-0.0945	-0.0782
	(-1.15)	(-0.93)
Board size	-0.0929	-0.0841
	(-0.71)	(-0.62)
Independence	0.2565	0.1994
	(0.82)	(0.63)
Busy board	0.0195	0.0261
	(0.08)	(0.10)
Total assets	2.0226***	2.0400***
	(11.50)	(11.49)
Impaired loans to gross loans	0.0052	0.0048
	(0.91)	(0.83)
Net interest margin	0.0597	0.0675*
	(1.48)	(1.76)
Total risk	0.0340*	0.0281
	(1.88)	(1.60)
GDP growth	-0.0047	-0.0051
	(-0.63)	(-0.70)
Number of observations	267	267
Arellano-Bond test AR(1) (p-value)	0.04	0.03
Arellano-Bond test AR(2) (p-value)	0.23	0.27
Hansen test for over-identification (p-value)	0.58	0.87
Diff-in-Hansen test GMM (p-value)	0.9	0.55

Table 5.13: Capital quality – dynamic GMM regressions

This table presents GMM regression results for CEO power, board characteristics and capital ratios measured by equity to total assets and the tier1 capital ratio of 16 listed banks in Europe for the period of 2010 and 2014. All dependent and independent variables are defined in Appendix A. Robust t-statistics are based on standard errors clustered by bank-level. Constants are not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	Equity to total assets	Tier1 capital ratio
NSFR 2014 lag	0.6788***	
	(15.83)	
NSFR 2010 lag		0.7654***
		(16.34)
CEO duality	-0.1965	0.1041
	(-0.32)	(0.10)
CEO tenure	0.8994*	1.6982***
	(1.91)	(3.27)
CEO retirement	-0.1617***	0.1361***
	(-3.85)	(3.37)
CEO Change	-0.2302	1.0213**
	(-0.76)	(2.37)
Board size	-0.8287**	-3.0981***
	(-2.06)	(-5.39)
Independence	0.9742	-4.9803***
	(1.03)	(-6.04)
Busy board	0.2324**	-0.3062
	(2.16)	(-1.08)
Total assets	0.0854	-0.1630
	(0.42)	(-0.41)
Impaired loans to gross loans	0.0037	0.0621***
	(0.23)	(2.96)
Net interest margin	0.3247***	-0.7652***
	(2.91)	(-2.76)
Total risk	0.3458***	0.0427
	(6.04)	(0.56)
GDP growth	-0.0282	-0.1501*
	(-0.67)	(-1.98)
Number of observations	258	233
Arellano-Bond test AR(1) (p-value)	0.009	0.025
Arellano-Bond test AR(2) (p-value)	0.562	0.704
Hansen test for over-identification (p-value)	0.405	0.856
Diff-in-Hansen test GMM (p-value)	0.7	0.845

5.5.4. Alternative measure of CEO power

We construct an index as an alternative measurement to indicate the impact of CEO power in the bank. We follow the previous research (Liu and Jiraporn, 2010) to calculate the CEO Power Score based on various CEO power measures including CEO duality, CEO tenure, CEO retirement and dual/single board structure. The *CEO Power Score* is creased by one if one of the criteria is met: the CEO serves as chair of the board; the CEO tenure is over ten years; the CEO age is over 60; the board structure is the one tire board. Further, the setting of the one tire board structure increases the probability for CEO to be appointed as chair on board that could increase CEO power over the board. We re-run the fixed-effect regressions to analysis the impact of CEO power on the quality of bank capital and liquidity in our sample. The results are reported in **Table 5.14**, **Table 5.15**, and **Table 5.16.**

As shown in **Table 5.14**, **Table 5.15**, and **Table 5.16**, the overall coefficients of *CEO Power Score* on the quality of bank capital and liquidity are positive and insignificant. We find out the impacts of the CEO power measured by CEO Power Score are not significant. The results could be driven by the limitations and weakness of our data and estimation approach strategy. Empirically, Liu and Jiraporn (2010) suggest that CEO Power score based measure of CEO power should capture more features of CEO including CEO compensation, CEO ownership, founder CEO and so on. As the limited data availability in the European banking industry, we are unable to collect insufficient information of CEO attributes (CEO ownership, CEO compensation, etc.) to construct a more comprehensive index to indicate the potential impact of CEO power. To the best of our knowledge, there is few studies use the index based measure or principal component analysis to analyse the impact of CEO power on firm economic outcomes, suggesting there could be theoretically or empirically limitations on corporate governance

researchers to apply index-based approaches to identify the effect of CEO entrenchment

or CEO power on corporate governance and related firm economic outcomes (Bebchuk,

Cohen, and Ferrell, 2008).

Table 5.14: Liquidity measured as the amount of available stable funding (ASF) defined in Basel III

This table presents random effect regression results for CEO power, board characteristics and net stable funding ratio (defined in Appendix 2) of 16 listed banks in Europe for the period of 2010 and 2014. NSFR 2014 is the ratio of available stable funding defined by the new final Basel III version of October 2014. NSFR 2010 is the ratio of available stable funding defined by the new final Basel III version of October 2010. All dependent and independent variables are defined in Appendix A. Robust t-statistics are based on standard errors clustered by bank-level. Constants are not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	NSFR 2014	NSFR 2010
CEO Power Score	0.0212	0.0175
	(0.50)	(0.41)
CEO Change	-0.0686	-0.0850
	(-1.36)	(-1.54)
Board size	0.1516	0.1254
	(1.29)	(0.98)
Independence	-0.1043	-0.1618
	(-0.53)	(-0.78)
Busy board	-0.0660	-0.0726
	(-1.54)	(-1.61)
Total assets	-0.1094	-0.0572
	(-0.28)	(-0.14)
Impaired loans to gross loans	-0.0188***	-0.0193***
	(-4.02)	(-4.16)
Net interest margin	0.1646***	0.1480***
	(3.12)	(2.77)
Total risk	0.0048	0.0051
	(0.19)	(0.18)
GDP growth	0.0424**	0.0503***
	(2.54)	(2.77)
Controlled for	Year	Year
Number of observations	327	327
Within R-squared	0.256	0.241

Table 5.15: Liquidity measured as net stable funding ratio (NSFR) defined in Basel III

This table presents random effect regression results for CEO power, board characteristics and the amount of available stable funding ratio (defined in Appendix 2) of 16 listed banks in Europe for the period of 2010 and 2014. AFR 2014 is the amount of available funding defined by the new final Basel III version of October 2014. AFR 2010 is the amount of available stable funding defined by the new final Basel III version of October 2010. All dependent and independent variables are defined in Appendix A. Robust t-statistics are based on standard errors clustered by bank-level. Constants are not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	ASF 2014	ASF 2010
CEO Power Score	0.0024	0.0036
	(0.13)	(0.19)
CEO Change	-0.0135	-0.0124
	(-0.82)	(-0.75)
Board size	0.0161	0.0094
	(0.37)	(0.21)
Independence	-0.0143	-0.0158
	(-0.15)	(-0.16)
Busy board	-0.0030	-0.0009
	(-0.12)	(-0.03)
Total assets	2.1449***	2.1612***
	(17.17)	(17.29)
Impaired loans to gross loans	-0.0033*	-0.0032*
	(-1.69)	(-1.78)
Net interest margin	0.0060	0.0060
	(0.71)	(0.71)
Total risk	-0.0004	-0.0018
	(-0.04)	(-0.19)
GDP growth	0.0076	0.0066
	(1.52)	(1.38)
Controlled for	Year	Year
Number of observations	327	327
Within R-squared	0.725	0.725

Table 5.16: Capital quality

This table presents fixed effect regression results for CEO power, board characteristics and capital ratios measured by equity to total assets and the tier1 capital ratio of 16 listed banks in Europe for the period of 2010 and 2014. All dependent and independent variables are defined in Appendix A. Robust t-statistics are based on standard errors clustered by bank-level. Constants are not reported. ***, **, *, denote statistical significance at the level of 1%, 5%, 10%, respectively.

	Equity to total assets	Tier1 capital ratio
CEO Power Score	0.0355	0.0225
	(0.14)	(-0.07)
CEO Change	-0.0384	0.3278
	(-0.15)	(0.79)
Board size	0.2305	-2.2746*
	(0.32)	(-1.90)
Independence	-0.5211	-3.7108
	(-0.40)	(-1.46)
Busy board	0.8860**	-0.8629
	(2.04)	(-1.20)
Total assets	-4.571***	-1.486
	(-2.84)	(-0.64)
Impaired loans to gross loans	-0.129***	-0.030
	(-3.74)	(-0.42)
Net interest margin	0.9772***	0.2946
	(5.61)	(1.03)
Total risk	0.1358	0.2423
	(0.87)	(0.79)
GDP growth	0.1620	0.0192
	(1.40)	(0.13)
Controlled for	Year	Year
Number of observations	324	295
Within R-squared	0.212	0.184

5.6. Conclusion

In this paper we examine the possible influence of internal corporate governance mechanisms on bank liquidity and capital quality. In particular, we look at whether and how CEO and board characteristics may be the determinants of the bank liquidity and capital quality. Prior literature suggests that a strong bank board increases bank risk-taking as bank shareholders have preferences for 'excessive risk'. On the other hand, powerful CEOs could prefer to choose less risky and liquid project so as to protect their undiversified personal wealth and their invested human capital. We aim to untangle which of these factors, boards or the CEO are more influential in determining bank liquidity and capital quality.

Using a sample of 96 listed European banks over the period of 2010 and 2014, our empirical results show that the powerful CEO tends to enhance bank liquidity quality measured with NSFR and ASF. Strong bank boards, defined as small in size and comprising more independent directors, lead to lower bank capital quality. As we hypothesised, we find that banks with strong boards, controlled by shareholders, have lower and bank capital quality as they are probably more risky projects for the benefit of the shareholders. Furthermore, we find evidence, albeit weak, that the busy board directors make a positive contribution to the quality of bank capital. Our findings are robust to various bank liquidity measures and capital ratios as well as different estimation methods.

Overall, we contribute to existing literature by showing the impacts of CEO power and board characteristics on bank liquidity and capital quality. Our study is the first to provide evidence on the impact of CEO power the quality of bank capital and liquidity. Our results on strong boards imply that shareholder aligned board policies could choose more risky

and illiquid projects. On the other hand, powerful CEOs interests, due to their undiversifiable wealth including human capital invested in their jobs, seems to be aligned more with debt holders, in this case, depositors, and enhance bank liquidity and funding quality.

Appendix 5A:

Table 5.17: Variable Definitions

Panel A: Bank liquidity and capital measures

Net stable funding ratio (NSFR) 2014	The ratio of available stable funding defined by the new final Basel III version of October 2014.
Net stable funding ratio (NSFR) 2010	The ratio of available stable funding defined by the new final Basel III version of October 2010.
Available Stable Funding (ASF) 2014	The amount of available stable funding as defined by the original Basel III document of December 2014.
Available Stable Funding (ASF) 2010	The amount of available stable funding as defined by the original Basel III document of October 2010.
Equity to total assets (%)	The ratio of equity to total assets
Tier1 capital ratio (%)	The ratio of Tier1 capital to risk-weighted assets

Panel B: CEO power variables

CEO Power Score	The score is created by one if one of the criteria is met: the CEO serves as chair of the board; the CEO tenure is over ten years; the CEO age is over 60; the board structure is the one tire board.
CEO duality	A dummy variable which equals one if CEO takes the role of chairs the board.
CEO tenure	The number of years the CEO has been serving as the CEO in the bank.
CEO retirement	Dummy variable that equals to 1 if CEO is older than 60, and 0 otherwise.
CEO change	Dummy variable that equals to 1 if CEO has been changed in a given year and 0 otherwise.

Panel C: Board characteristics

Board size	The total number of the directors on the bank's board.
Independence (%)	The percentage of outside directors on the bank's board.
Busy board	Dummy variable that equals to 1 if more than 50 percentage of board director hold more than one director role in other companies, and 0 otherwise

Panel D: Bank characteristics and macroeconomic environment

Total assets	The book value of the total asset of the bank at the end of the fiscal year.
Impaired loans to gross loans (%)	The ratio of impaired loan to total gross loans.
Net interest margin	The difference between interest income and interest expenses while earnings assets include assets used to generate interest income.
Total risk	The volatility of banks` stock price, which is computed as the standard deviation of the bank daily stock price covering the current year and next year.
GDP real growth (%)	The ratio of growth of GDP.

Appendix 5B: Definitions of Net Stable Funding Ratio and Available Stable Funding

$$Net\ Stable\ Funding\ Ratio\ (NSFR) = \frac{Available\ Stable\ Funding\ (ASF)}{Required\ Stable\ Funding\ (RSF)}$$

ASF 2014	*Liability and equity items weights for ASF 2014 category*
0%	Deposits from banks
50%	Other deposits and short-term borrowings

90%	Customer deposits current
95%	Customer deposits savings, Customer deposits term
100%	Total equity, Total long-term funding

RSF 2014   ***Liability and equity items weights for RSF 2014 category***

0%	Cash and due from banks
5%	Government securities
5%	Off-balance sheet items
50%	Other securities (=Total Securities-government securities-at equity investments in associates) and loans and advance to banks
65%	Residential mortgage loans
85%	Net loans-residential mortgage loans
100%	Reserve for impaired loans/NPLs, Non-earning assets (=total assets – total earning assets – cash and due from banks), Fixed assets Other earning assets, Insurance assets Investments in property, At-equity investments in associates

ASF 2010   ***Liability and equity items weights for ASF 2010 category***

0%	Deposits from banks
50%	Other deposits and short-term borrowings
80%	Customer deposits current
90%	Customer deposits savings, Customer deposits term
100%	Total equity, Total long-term funding

RSF 2010   ***Liability and equity items weights for RSF 2010 category***

0%	Cash and due from banks, Loans and advance to banks
5%	Government securities
5%	Off-balance sheet items
50%	Other securities (=Total Securities-government securities-at equity investments in associates)
65%	Residential mortgage loans
85%	Net loans-residential mortgage loans
100%	Reserve for impaired loans/NPLs, Non-earning assets (=total assets – total earning assets – cash and due from banks), Fixed assets Other earning assets, Insurance assets Investments in property, At-equity investments in associates

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CHAPTER 6

Conclusion

6.1. Conclusion Remarks and Implications

One of the lessons drawn from the recent global financial crisis is that poor corporate governance of banks played a key role in the crash of financial institutions during the crisis leadinan g to economic recession. Policymakers and regulators increased their efforts in investigating, understanding and enhancing good corporate governance practice in banks. The Basel Committee on Banking Supervision (2014) suggests that board of directors are crucial for improving bank governance efficiency and presenting related stakeholders' interests at the top of the management (BCBS, 2014). On the other hand, corporate governance principles based on conventional institutional settings of the non-financial firm might not work efficiently in banking firms as bank governance differs from non-financial firms in several ways. Additionally, the main body of existing empirical studies focusing on bank governance is limited and ambiguous.

Emerging literature, presented in Chapter 2, on social networks in corporate governance offers insights into how social independence of the board is essential for board directors to efficiently conduct monitoring and advisory on management. Therefore, there is a need to explore the impact of social ties on bank governance. Furthermore, the majority of research on bank governance is based on the US banking industry and only a few of the studies examine the role of the board of directors in European banks. To fill the above research gaps, we use the European dataset, including 96 largest listed banks for a period of 2010 and 2014, to explore impacts of chair-CEO dissimilarities, CEO power and board attributes on various economic outcomes of the bank.

In Chapter 3 we provide an empirical assessment examining the impacts of various chair-CEO demography dissimilarities on bank risk-taking. Providing initial evidence, we show that there is a negative relationship between various bank risks and chair-CEO age dissimilarity. Our findings are in line with previous social network based research on non-financial firms which argues that fewer social ties between board members can improve the board monitoring performance (Goergen et al., 2015). In particular, we find that a generational age gap, defined as a difference of more than 10 years, between chair and CEO remarkably contributes to the intensity of board monitoring and leads better risk management outcomes in banks. This is because a substantial generational difference could increase cognitive conflicts that lead chair to conduct more prudential monitor on CEO risk-taking behaviours. Intensive monitoring as a result of this chair-CEO age gap can contribute to declining bank risks on board-level. Chapter 3 contributes to the emerging literature on the impact of social ties between board members on corporate governance and firm economic outcomes. We confirm that social ties display an important role also in bank corporate governance where board effectiveness is often challenged by the complexity and opacity of the banking business. Our empirical results document that substantial age difference between chair and CEO may matter for bank governance and board effectiveness. Managing bank risk-taking through corporate governance mechanisms is primarily important for the banks' debtholders (mainly depositors).

We, thereby, suggest that relevant stakeholders of the bank, especially depositors and debtholder, should be aware of the importance of optimal chair-CEO relation in corporate governance and its effect on sound risk management for the bank. Furthermore, mass failure of financial institutions in the period of 2007 to 2009 global financial crisis highlights the expensive cost of the bank's bailout for governments and taxpayers due to

poor risk management. We believe our research also makes a contribution for policy-makers and regulators for providing effective corporate governance guidelines to banks. Current related regulations on corporate governance practice on board composition might need to consider the possible social ties between chair and CEO and their impact on board effectiveness and risk management in the bank. We also test the impacts of other demography dissimilates (gender and industry experience) between chair and CEO. Our empirical findings suggest that these chair-CEO demography differences could not have a significant impact on bank governance and risk management. This is consist of previous research (Goergen et al., 2015) studying in the relation between demography dissimilates and corporate governance in non-financial firms. The age difference could be the most important measure of social connections on board, and it could significantly impact on interactions between board members and corporate governance performance. The inside management and outside stakeholders should mind the impact of social independence of board on managing bank risks.

In chapter 4, we explored the impacts of various chair-CEO demography dissimilarities and other board attributes on bank financial performance in European industry. As an essential corporate governance mechanism, board directors perform as monitor and advisor in order to ensure managers act the best interest of banks' owners (Adams and Ferreira, 2007). Given inherent informational asymmetry and complexity under banking business, non-financial based corporate governance practices on board-level might be shaped in the corporate governance of banks (Becht, 2011). Recent social network based research suggests that board social independence could effect corporate governance and firm economic outcomes in non-financial firms (Hwang and Kim, 2009; Ishii and Xuan, 2014). The less social ties between board members could improve board independence so as to create value for firms. We use various demography differences to address the

social connections between chair and CEO in banks. Our empirical findings show that age difference between chair and CEO should be an important factor for board effectiveness in bank governance. We find that chair-CEO age gap is positively associated to bank performance, suggesting that age dissimilarity between chair and CEO decline the probability for chair and CEO to build social links between each other which that could destroy shareholder value and sound corporate governance. These findings contribute to the good corporate governance practices that optimal chair-CEO relation is a matter for the board to efficiently implement bank governance. Further, our findings provide implications for shareholders and investors to evaluate board effectiveness over the insight of the impact of social capital on board. Our empirical assessment also provides the framework for outside stakeholders to evaluate the board impendence and its impact on bank performance in an unconventional way.

In chapter 5, we empirically examine how board attributes and CEO entrenchment influence bank manage its capital and liquidity. The literature on corporate governance in non-financial firms argues that agency cost caused by conflicts between shareholders and managers is a matter for corporate governance and economic outcomes. However, research is limited on how shareholder-manager conflict in corporate governance and its impacts on bank liquidity and capital. Our research fills this gap by investigating the relationship between powerful CEO and shareholder controlled board and bank liquidity management performance. In chapter 5 we find that powerful CEOs have a positive impact on bank liquidity quality, while shareholder controlled boards tend to destroy the bank capital adequacy. Our findings share the institutional insights for banking regulators and policy-makers to effectively implement relevant regulations and supervision on bank liquidity and capital. We make contributions to regulators and supervisions to efforts in efficient regulating the bank capital and liquidity management. Our empirical results

provide the framework for outside regulators and stakeholders to understand the reactions between various bank-level governance mechanisms and regulations and this mechanism's effect of the implications to bank regulation and supervision. The marginal effect of regulation could be shaped by bank-level institutional mechanisms. That is, one size might not fit all. Given the potential effects of risk aversion difference between the bank managers and shareholders on bank liquidity and capital management process, our empirical research provides an alternative institutional outlines for optimal shareholder-manager governance system that can be adopted by bank owners and relevant stakeholders to enhance the bank safety and stability.

6.2. Limitations of the thesis

Corporate governance is considered as a "black box" problem for academics and outside investors. This is because of board directors' activities are hard to be directly observed or measured by outsiders. Main measures for board corporate governance activities are based on indirect indicators, such as board size, busyness, board composition, to describe board effectiveness. The majority of existing research on corporate governance also employs indirect measures (for example performance or firm value) to assess corporate governance outcomes. Even we employ social ties between chair and CEO to address group dynamics and board social independence that conventional independence measure fails to capture, our empirical results could be limited by unobserved corporate governance variables. Thus, our measure of board characteristics could be limited by the data availability that could result in a bias of our empirical estimation regressions. The limitation of our econometric techniques dealing with the endogeneity problem could also be a potential reason why the level of significance of our empirical result is not be supported by the theoretical expectations. Pathan and Faff (2013) suggest that

endogeneity problems could be potential reasons why the existing empirical bank governance studies provide mixed and inconsistent results. The traditional and classical research design could not effectively outline the relationships between board characteristics, such as board size, board independence and busyness, and firm economic outcomes (Pathen and Faff 2013; Srivastav and Hagendorff, 2016). Falato et al. (2014) suggest that exogenous chocks based research designs, such as external regulations changes, financial crisis, and deaths of directors, are free of endogeneity problems, and such exogenous shocks can be treated as a natural experiment to revisit the role of board directors in corporate governance. While we are unable to employ these exogenous shocks to test the impacts of board directors on bank economic outcomes due to limited data availability and sample only over a short-term period.

Given the information asymmetry between internal managers and external shareholders, we follow prior relevant research (Pathen, 2009; Berger et al., 2012) to employ measures of CEO features, such as CEO tenure, CEO duality and CEO retirement, as the indirect indicators to address the degree of CEO information advantages. While the degree of the information advantages of CEO depends on her personal experience and knowledge that might not be observed in a direct way. This nature of CEO information advantages and data availability could limit our effectiveness of CEO characteristics measures. Furthermore, our sample is manually collected from publicly released reports including annual reports, corporate governance reports and media coverages. However, disclosures of board directors and management information in European banks are limited, and the relevant disclosure standards for corporate governance are also lacked. Thus, our hand-collected sample cannot cover a longer-term observed period and more heterogeneous observations for our empirical analysis. Lack of observations causes another limitation in

our study that we cannot employ alternative identification estimations, such as the difference in difference estimation approach, to check our empirical results.

6.3. Suggestions for further research

The social networks related research suggest that a broad range of social tie variables might matter for corporate governance and firm economic outcomes (Hwang and Kim, 2009). Further research on bank governance should test different measures of social ties, such as academic discipline, military service history and political connections, and their impacts on corporate governance in banks. Prior literature (Stulz, 2015; Mehran, Morrison, and Shapiro, 2011) suggest that the effectiveness of risk governance is based on compliance and formal systems of compliance. Researchers should think about the role of the organizational framework in risk governance and bank risk-taking. For instance, we know little about the impact of risk management committees on the effectiveness of bank risk governance (Ellul, and Yerramilli, 2013). The other unanswered question in corporate governance and bank economic outcomes is how bank corporation culture affect the corporate governance and related economic performance. The relation between risk management and corporate culture could be jointly endogenous, and the effectiveness of risk governance could be shaped by various corporation cultures. Further research of corporate governance should pay attention to the interaction between corporate governance mechanism and corporation culture and its impact on corporate governance in banks.

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