CRANFIELD UNIVERSITY

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Risk Governance: Examining its Impact Upon Bank Performance and Risk

Cranfield School of Management
Doctor of Business Administration
Academic Year: 2016–2017

Supervisor: Dr Yacine Belghitar
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ABSTRACT

This study examines the emergence of risk governance arrangements in US bank holding companies (BHCs) and tests for their impact upon performance and risk profiles. Following the financial crisis, regulators introduced several new risk governance processes, including the adoption of Risk Appetite arrangements and the establishment of Risk Committees, both board level features. In this study, a research gap is unearthed with respect to risk governance practices and their impact upon BHC performance and risk measures. The motivation of this research is to validate the adoption of these board-level practices in an evidence-based framework.

The empirical research method relies on the collection of a unique data set. The sample covers a significant dollar-weighted portion of the US banking system. Multivariate analysis facilitates the testing of risk governance mechanisms to outcome variables, while controlling for firm-specific and standard corporate governance variables.

The practical implication of this study with respect to Risk Appetite is clear. BHCs that practice Risk Appetite arrangements exhibit improved performance and lower realised loan losses. In contrast, while some limited evidence is presented that the marketplace may reward BHCs for certain composition aspects of the Risk Committee, the overall results suggest that the requirement for a Risk Committee has little impact to BHC's operating performance and risk measures.

In terms of academic contribution, this study examines two major risk governance mechanisms within a common framework, presenting evidence of a significant and positive impact of the board level articulation of Risk Appetite arrangements to a suite of BHC performance measures and a negative association to loan losses. As the first known empirical research study of Risk Appetite, it confirms that this board level mechanism should be included as an explanatory variable in bank or risk governance related empirical research studies.

These findings provide industry practitioners (including BHC chief executive officers and board members) convincing arguments for the immediate adoption of Risk Appetite arrangements. US Regulators, who introduced Risk Appetite requirements in 2014 for larger BHCs, are presented with validation by this study for wider adoption of this risk governance mechanism, even if such practices are voluntarily adopted by BHCs.

As signs begin to emerge in the United States of the possible relaxation of the regulatory requirements of certain aspects of the Dodd-Frank Act, this study contributes to this debate in a timely fashion by testing the veracity of two key supervisory-driven risk governance practices aimed at the boardroom in an evidence-based evaluation.

Keywords: *Risk Governance, Corporate Governance, BHCs, Risk Appetite, and Risk Committee*

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I am solely responsible for any errors in this paper.

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LIST OF ABBREVIATIONS

Basel Committee	Basel Committee on Banking Supervision – Glob
BBA	British Bankers' Association
BHC	Bank Holding Company (corporate entities with interests in one or more banks. Many US banks are ultimately owned by BHCs)
BOE	Bank of England
BoardEx	BoardEx is a business intelligence database that includes profiles of over 750,000 professionals and 18,000 firms (BoardEx, 2016).
BPs	Basis points of one thousandth of one per cent
CAMELS	Capital adequacy, assets, management capability, earnings, liquidity and sensitivity rating used by the OCC to assess bank strength
C&I loans	Commercial and industrial loans to companies
C-Suite	Top jobs in a corporation
CEO	Chief executive officer
CFO	Chief financial officer
CRO	Chief risk officer
CRD IV	Capital Requirements Directive IV (European additions to the Basel III)
DBA	Doctor of Business Administration
DiD	Differences-in-Differences estimation
Dodd-Frank	Dodd-Frank Wall Street Reform and Consumer Protection Act (2010), see https://www.sec.gov/about/laws/wallstreetreform-cpa.pdf.
EBA	European Banking Association
ECB	European Central Bank
ERM	Enterprise risk management
FCA	UK Financial Conduct Authority
FE	Fixed Effects
FSB	Financial Stability Board
G30	Group of 30 on International Economic and Monetary Affairs,
HPRs	BHC holding period returns, or annual return of holding the shares
IIF	International Institute of Finance
IMF	International Monetary Fund
MAS	Monetary Authority of Singapore
NEDs	Non-executive directors
NIM	Net income margin
NPLs	Non-performing loans
OECD	Organization for Economic Cooperation and Development
OCC	Office of the Comptroller of the Currency
PCA	Principal component analysis
PLC	Public limited company
POLS	Pooled ordinary least squares
RAS	Risk appetite statement
RAF	Risk appetite framework
RC	Risk Committee
RE	Random Effects
ROA	Return on assets, or net income after tax divided by assets
ROE	Return on equity, or net income after tax divided by equity
RWA	Risk-weighted assets
SOM	Cranfield School of Management
SOX	Sarbanes-Oxley Act
TARP	Troubled Asset Relief Program
US	United States of America

1 FOUNDATION

1.1 Introduction

Ineffective monitoring and risk oversight contributed to the financial crisis, which plagued the global economy from 2007 to 2009. Excessive risk-taking has been specifically identified as a leading cause of the financial crisis (Bolton, 2009; Gao, Liao and Wang, 2013), resulting in both significant financial and societal costs. Since the financial crisis, global debt levels have increased by $57 trillion to $199 trillion, including government borrowings to fund bailouts (McKinsey, 2015a). Luttrell, Atkinson and Rosenblum (2013) estimate a base case output loss of $50,000 to $120,000 for every US household. Beyond these financial costs, the social costs of financial crises can be significant, including a reduction in life expectancy, a decline in the availability of education, and increased global poverty (van Dijk, 2013). The financial crisis was the most severe economic event in the US since the Great Depression (Bolton, 2009).

Corporate governance failures in financial institutions has also been linked to the severity of the financial crisis (Walker, 2009; Kirkpatrick, 2009; United Nations, 2010; The Financial Crisis Inquiry Report, 2011). These failures occurred simultaneously with changes to the business model of banking, which placed greater reliance on risk-taking (Blundell-Wingnall, Atkinson and Lee, 2008). Bank corporate governance was often ineffective, as directors failed to act as an effective challenge to management (RiskMinds, 2009).

Since the financial crisis, US bank boards have begun to face an increase of their risk oversight responsibilities and duties (Macey and O'Hara, 2016). A battery of regulations has been introduced to mitigate systemic risk, such as increasing bank capital levels and extending liquidity profiles (Claessens and Kodres, 2014; Ellis, Haldane and Moshirian, 2014; Admati, 2016). Beyond these structural reforms, heightened risk governance practices have been specified in the Dodd-Frank Act (2010)[1] and later enshrined in the Federal Register (2014a).

Two risk governance mechanisms are examined in this study, Risk Appetite arrangements and the role of the Risk Committee.[2] Risk Appetite statements are defined as the written articulation of the aggregate level and types of risks that a BHC is willing to accept or avoid in order to pursue its objectives (Basel, 2015a, p. 2). While empirical research studies have examined Risk Committees before the crisis period, few studies have probed the period of regulatory intervention that followed the crisis, and no study appears to have empirically examined the role of Risk Appetite arrangements. Given the impact of systemic risk and the important role of banks as credit intermediaries, this study addresses a significant research gap relating to these risk governance practices.

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[1] The Dodd-Frank Act (2010) makes a total of six references to Risk Committees, including the requirement for a Risk Committee, the requirement for a number of independent members including at least one risk management expert. Dodd-Frank (2010) makes no explicit reference to Risk Appetite, which was reflected in the Federal Register (2014a).

[2] Risk Appetite arrangements are the board level processes relating to the approval of the risk appetite statement, including qualitative and qualitative measures expressed relative to earnings, capital, risk, and liquidity (FSB, 2013a, p. 2). The Risk Committee is the board level sub-committee delegated with risk oversight and monitoring.

The results of this study can be summarised as follows: Board-level approved Risk Appetite arrangements exhibit a cogent relation to a suite of BHC performance measures (and at least one key risk measure) across a variety of empirical settings, as well as time and size-varied sub-samples. Upon examination of the phenomenon of Risk Appetite arrangements through the lens of agency theory, this evidence suggests that the practice is a key aspect of internal board monitoring. Risk Committees, on the other hand, fail to exhibit compelling evidence of being significantly related to BHC accounting measures, although certain aspects of this board sub committee may be recognized and rewarded by the equity markets.

The study makes several contributions to the understanding of bank corporate governance. First, from an industry perspective, it presents evidence regarding the relationship and impact of Risk Appetite arrangements with bank accounting outcome measures, which will be of interest to bank directors and senior management. For regulators, this research provides a compelling argument to include Risk Appetite arrangements in their oversight and consider the publication of selected Risk Appetite data in regulatory call reports. Supervisors may also wish to consider the use of Risk Appetite content when evaluating economic capital requirements and system-wide stress tests, given that this practice has been subject to criticism as currently designed (Dowd, 2016).[3]

From an academic perspective, this study probes the literature on bank corporate governance and monitoring, and identifies a gap relating to empirical research of Risk Appetite and bank outcome measures. It also provides early evidence of a significant association between the adoption of Risk Appetite arrangements and an array of bank accounting variables. These explanatory variables have hitherto received limited empirical attention.[4] Risk Appetite arrangements in particular should be considered as a potential explanatory variable in selected future empirical research of the banking sector.

This thesis is structured as follows. Following this introduction, the remainder of Chapter 1 reports on the regulatory intervention, presenting the research question and explaining the background of the project and the research methods employed. Chapter 2 presents a literature review and develops hypotheses for testing for the two risk governance mechanisms. Chapter 3 explains the sample construction and data collection processes, and Chapters 4 and 5 examine relationships between risk governance mechanisms and a suite of headline outcome measures. Chapter 6 presents a further analysis of board-level Risk Committees and Risk Appetite arrangements for robustness, including the role of CEO Power in performance and risk-taking, and probing for underlying channels of impact. Chapter 7 presents conclusions and limitations of the research and presents recommendations for further study.

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[3] One overarching criticism of the bank stress-testing regime is its reliance on a single adverse and unacceptably low stress scenario. Supervisory examination of Risk Appetite arrangements may assist in the identification of even more relevant and realistic risk types and boundaries for the bank stress testing in the future.

[4] There appears to have been little or no previous empirical research on Risk Appetite arrangements and performance or risk-taking measures in commercial banks. However, conceptual research in this domain is emerging, as discussed by Sabato (2009), Wymeersch (2012), Yoost (2014), Stulz (2015), Gontarek (2016) and others.

1.2 Regulatory Intervention

Bank boards failed to exercise adequate risk oversight in the run-up to the financial crisis. Weaknesses identified by global policy makers include the failure of board directors to adhere to acceptable risk appetite profiles (SSG, 2009, 2010). The de Larosière Report (2009) adds that ineffective corporate governance arrangements and independent risk monitoring contributed to the crisis, suggesting that poor risk assessment and a failure to aggregate exposures made it difficult to comprehend risk profiles. Ellis, Haldane and Moshirian (2014) posit that, while supervisory reforms have been under way, less attention has been paid to the role of corporate governance. They argue that the financial crisis unveiled bank governance failures at multiple levels, including poor internal monitoring and ineffective market discipline.

Heightened bank regulation followed the financial crisis, and Dodd-Frank (2010) was the primary early response in the US (Gao, Liao and Wang, 2013). A key underlying objective of this reform is to improve the safety and soundness of the banking system, given the systemic risks associated with large and complex banks (Skeel, 2011; Federal Register, 2014a). Immediately following the financial crisis, the G30 (2012) proposed the adoption of Risk Appetite arrangements and board-level Risk Committees, amongst other measures. In the following year, the Financial Stability Board (FSB, 2013b) recommended the adoption of risk governance arrangements, while bank supervisors in other nations announced new board-level requirements for Risk Appetite (OSFI, 2013; MAS, 2013). However, 2014 was a watershed year for regulation, with the issuance of new risk governance guidelines by the Basel Committee (Basel, 2014), the OECD (2014), and other regulatory authorities. Figure 1 below illustrates the recent acceleration in risk governance.

This study adopts the FSB's definition of risk governance: "a framework through which the board and management establish the firm's strategy, articulate and monitor adherence to Risk Appetite and risk limits, and identify, measure and manage risks" (FSB, 2013b, p. iii).[5]

Also in 2014, significant aspects of Dodd-Frank as well as other new standards were enshrined into law, including the adoption of Risk Appetite arrangements (Federal Register, 2014a) and board-level Risk Committees (Federal Register, 2014b). Other less prominent measures were also introduced along with these arrangements, such as director talent management programs, minimum requirements for independent directors, and director training (Federal Register 2014a). Adoption of the risk governance measures is occurring over time for covered banks (Grant Thornton, 2014), however banks not covered by the new regulations (i.e. those with assets below $50 billion) have also been encouraged to adopt the guidelines on a best practice basis, and some have done so (Deloitte, 2014b).

[5] Few alternative definitions are available for risk governance. The FSB's definition is used here, given its role as an international body that monitors the global financial system, comprising the G20 as well as the European Commission, the Bank for International Settlements, the ECB, the IMF and the OECD. It is also cited in Gontarek (2016). Battaglia and Gallo (2015) and the Center for Financial Inclusion (2013) provide similar definitions.

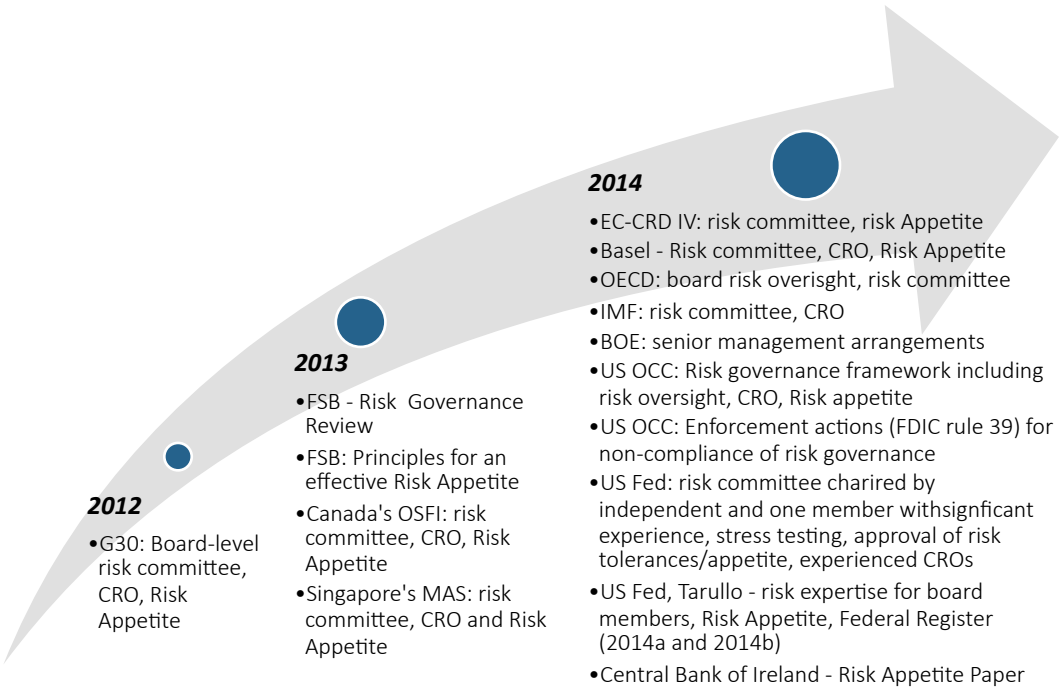

Figure 1. Accelerating public policy attention to risk governance

Source: Author's own analysis

In the period leading up to the financial crisis, some market observers were already questioning US banks' corporate governance activities. For example, concerns were raised about the composition of bank boards, including board size, insufficient levels of banking experience on boards, the high number of customer-related directors on bank boards which might reduce their independence, and the influence of merger and acquisition activity in naming new directors (Moody's, 2005). These reports also note that the quality of risk management was inadequate in certain cases.

Of course, bank board members traditionally provided oversight before the financial crisis. Charkham (2003) explains the duties of non-executive bank directors as supporting management in advancing the institution's aims, agreeing long-term strategy, and dealing with mergers and acquisitions. With respect to risk management, he describes the board's tasks to include considering strategic risks, ensuring risk accountability by others, and validate credit monitoring. Since this period, bank supervisors have extended heightened risk governance activities. To illustrate this emerging trend, Table 1 presents a citation count for two-risk governance concepts highlighted in this study, as found in the Basel (2015a) corporate governance-related guidelines.

Table 1. Growing focus on risk governance: Historical Basel citation count

Year	Risk Appetite arrangements	Board Risk Committee
2006	0	0
2010	15	4
2015	46	16

Source: Gontarek, 2016

Policy makers began to intervene by emphasizing direct board responsibility for heightened risk oversight (OECD, 2009a; United Nations, 2010; EBA, 2011). Walker (2009) called for better risk governance, including articulation of Risk Appetite and establishment of board-level Risk Committees (G30, 2012).

Following the crisis, regulators responded promptly by making bank risk governance arrangements more obtrusive in order to address the shortcomings noted above. This development is not surprising, as supervisors tend to focus more closely on corporate governance standards after financial crisis periods (Himaj, 2014).

The risk governance framework, proposed by policy-makers, includes the articulation of board-approved risk appetite statements and board Risk Committees (FSB, 2013a; Basel, 2015a; G30, 2015; BOE 2015a). The regulatory authorities followed policy makers in establishing a battery of risk governance standards aimed at boards (Basel, 2015a; OCC, 2014; BOE, 2015a). Experts observe that attention has shifted from capital and liquidity metrics to governance arrangements (Ernst & Young, 2015a), and that Risk Appetite is at the forefront of practitioner risk governance developments (Ernst & Young, 2014a, 2015a).

The Federal Reserve finalised its legal interpretation relating to the implementation of enhanced prudential standards mandated by Section 165 of Dodd-Frank, codifying these new laws in the Federal Register in late 2014 (2014a, 2014b).

These standards impose new direct duties upon BHC boards of directors. The new standards for improved risk governance consider organisational arrangements for oversight of risk-taking were specifically considered. In order to address risk management weaknesses observed during the crisis, US BHCs with assets of more than $50 billion must now establish Risk Appetite arrangements at the board level (Federal Register, 2014a). The law also requires BHCs of this size (as well as publicly-traded BHCs with assets of more than $10 billion), to establish and maintain standalone BHC Risk Committees to oversee risk management (Federal Register, 2014b).

Fischer (2015) observes that BHCs have faced a regulatory shift from moral suasion to enforcement actions, greater public disclosure, and closer supervisory focus on the boardroom. These heightened standards come at a time when banks are facing other challenges to their business models, including greater regulatory burdens and compliance costs, and a flattening yield curve, which negatively impact on their net income margin (NIM), a key underlying indicator of profitability (Trepp, 2011).

In the remainder of this chapter, the research question and positioning of the study and the stance of the researcher are explained, and the contributions of this study are articulated.

1.3 Statement of Purpose

Since the financial crisis, calls have continued for further analysis of risk management and governance practices (Conyon, Judge and Useem, 2011). The importance of examining bank risk management structures has been underscored by pressure placed upon governance actors by regulators (Lim et al., 2016). However, empirical studies do not always support the regulatory measures actually undertaken (Enriques and Zetzche, 2014). There is growing evidence that some of the regulatory overhauls may have been misguided (Morrison, 2012; Levine, 2012). An underlying motivation for this study is the realisation that conducting corporate governance research in a context of policy change too often results in little opportunity to ground the policy debate with evidence (Mehran, Morrison and Shapiro, 2011). McNulty, Zattoni and Douglas (2013) suggest that the challenge of corporate governance researchers is to illuminate the efficacy of the impact of policy change.

The purpose of this research is to empirically investigate the gap identified in this study relating to risk governance to BHC outcome measures, specifically Risk Appetite arrangements and the role of the Risk Committee in the post crisis period. Better knowledge of corporate governance practice is crucial in order to validate the recent intervention by regulators; however, scholarly research can be diverse and scattered (de Haan and Vlahu, 2015). Bohren and Odegaard (2005) observe that corporate governance is an immature field with data and methodological challenges. The available literature on bank risk governance tends to focus specifically on the financial crisis period (Beltratti and Stulz, 2012; Aebi, Sabato and Schmid, 2012; Ellul and Yerramilli, 2013), so this empirical examination of the subsequent period marked by great regulatory change seeks to make a significant contribution to the current literature field.

Financial market practices remain under-investigated (van der Stede, 2011). Claessens and Yurtoglu (2012) call for further research relating to financial institutional governance, as the crisis revealed oversight failures by major financial institutions. Laeven and Levine (2009) suggest that researchers have not yet fully appreciated how corporate governance mechanisms interact with national regulations in shaping institutions' risk-taking activities.

Periods of intervention provide a rich laboratory for researchers to test the efficacy of new regulations (Black and Kim, 2012; Dewatripont and Rochet, 2010). New regulations can remain in place for a long time (Iselin, 2016), underscoring the need to validate their efficacy. This study seeks to determine whether these risk governance requirements, and their internal friction costs, are justified by their benefits within an evidence-based approach.

These measures are just one part of a broader increase in regulation facing banks today. The full span of regulatory-driven changes includes not only risk governance directed at the board, but also bank culture and conduct (McNulty and Akhighbe, 2015), stress testing (Federal Register, 2014b), capital-based rules (Admati, 2014), liquidity provisions (Imbierowicz and Rauch, 2014), ring-fencing and living wills (Freixas, 2010), and resolution (Ellis, Haldane and Moshirian, 2014).

Probing for measurable signs of impact upon BHC performance and risk profiles is justified, given the systemic risk considerations present in banking. New regulations can change the nature of the relationship between board structures and performance (Booth, Cornett and Tehranian, 2002; Adams and Mehran, 2012). Writing before the crisis, Barth, Caprio and Levine (2006) posit that new regulations should encourage greater disclosure and provide incentives for effective monitoring and market discipline. They argue that the greatest danger in bank supervision is continuing to follow a model despite evidence that it may be unworkable.

Moreover, enhanced internal monitoring activities are costly and may be ineffective (IMF, 2014). The regulatory environment of banks has become both more difficult and costlier, draining BHC profitability (Trepp, 2011). US BHCs with assets greater than $50 billion, which are subject to the full set of Dodd-Frank-related regulatory requirements, are subject to direct costs of at least $2 billion per year, resulting in lending reductions of between $14 billion and $20 billion (Federal Financial Analytics, 2015). Heightened risk governance arrangements for certain banks (for example, smaller BHCs) may be unsuitable unless otherwise justified with evidence, since the costs may outweigh the benefits (Zagorchev and Gao, 2015). Thus investigating the costs and benefits for these smaller BHC is both timely and justified.

1.4 Research Question

As noted above, the goal of this research is to test the efficacy of the recently introduced risk governance practices for US BHCs, since they represent substantial changes to historical board-level oversight practices. The over-arching research question is:

> *What is the impact of Risk Appetite arrangements and the Risk Committee upon US BHC performance and risk?*

This research extends the current field of empirical study with respect to the impact of regulatory-driven Risk Committee characteristics on BHCs. Importantly, it appears also to be one of the first empirical studies to acknowledge the role of Risk Appetite and test its impact upon both performance and risk-taking.

1.5 Stance of the Researcher

In answering the research question, the philosophical stance of the researcher must be first considered in order to facilitate the choice of the most appropriate research method. Does the ontological position adopt labels and artificial names or hard, tangible and realistic facts? Does curiosity about boardroom processes stem from an anti-positivist, subjective and relativistic perspective, learning what is going on from the inside, or is it based on observing what are believed to be tangible facts scientifically to answer the research question?

This section describes the ontological and epistemological stance undertaken in the context of this research and the theoretical lens employed. Burrell and Morgan (1979) provide a useful guide to philosophical positioning, explaining that one must first ask whether the phenomenon being studied is external to the researcher or a by-product of the researcher's cognition. For example, positivism seeks generalisable theory, gleaned from a clear separation of the researcher and the observation (Zattoni, Douglas and Judge, 2013).

Epistemological assumptions must also be considered, which concern how the world is understood and how knowledge is communicated, and whether human nature is deterministic (i.e. conditioned by experience) or based on free will. Such assumptions have methodological consequences for the research stance. Burrell and Morgan's (1979) approach (see Figure 2 for elements of this framework) has been used in previous corporate governance research. Alghamdi (2012) employs it in an empirical study of audit and governance, and Crow and Lockhart (2012) also cite this framework in their corporate governance research.

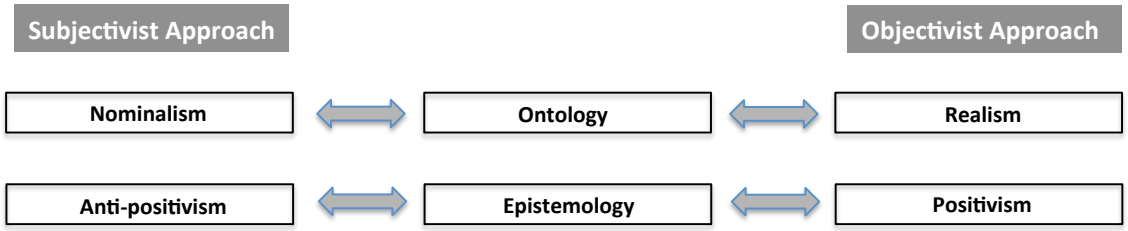

Figure 2: Assumptions regarding the nature of the social sciences (excerpts)

Source: Burrell and Morgan (1979)

Given the motivation of the so-called black box of corporate governance research (McNulty, Florackis and Ormrod, 2013), one valid approach is to use qualitative methods to seek knowledge subjectively. Approaches underpinned by subjectivist ontology are driven by a desire to ask why things happen, and are often inductive, theory building exercises rather than theory testing exercises. A key theme is thus the social dynamics of business, leading to theory building. One advantage of this approach is an ability to understand complex social processes and appreciate the contextual dynamics of governance. Drawbacks of this approach are its potentially time-consuming nature and the possibility that clear data patterns may be difficult to identify, hindering generalisability and replication of the research process.

On the other hand, Ryan, Scapens and Theobold (2002) explain that a dominant methodology has emerged in the field of financial research, which is empiricist in nature, employing models as abstract, theoretical versions of reality. Key themes include deducing testable hypotheses, developing measures and samples, conducting operational processes, and examining outcomes and modifying theory as necessary (Robson, 2002).

Given the availability of data on the boardroom features and outcome variables identified and collected later in this study, the research question of this study fits well with a positivist approach. A positivist approach enables large amounts of data to be harnessed, and is focused and reproducible. However, its drawbacks include lack of flexibility, and failure to generate a sense of social processes. Positivism is applied in a top-down, deductive setting, testing theories and linking premises to the conclusions of the research process.

Key papers in the relevant research domain are recognised as empirical, including Minton, Taillard and Williamson (2014), Aebi, Sabato and Schmid (2012), and Ellul and Yerramilli (2013), and all employ an objective, positivist approach to risk governance research. On balance, given the research question and data availability, the chosen methodology is an ontological stance based on realism and a positivist epistemological approach.

1.6 Significance of this Study

There are three distinct parts to this thesis: a literature review, an empirical analysis, and lastly a description of its impact and contribution to practice. The impact of the study has been honed in discussions with both academics and practitioner experts from leading boards, bank senior management and supervisory authorities. Its contribution is described in the next sub-sections from both practical and academic perspectives.

1.6.1 Contribution to practice

The severity of the financial crisis discussed earlier underscores the need to gain a better understanding of risk oversight processes. Specifically, for board members, Risk Committee members and senior management, this research not only validates the emerging use of Risk Appetite arrangements but also validates its economic impact when banks are otherwise plagued with profitability concerns and greater levels of regulatory related expenses (Trepp, 2011; Federal Financial Analytics, 2015). Risk Appetite arrangements exhibit a significant and economically impactful relation to the suite of BHC outcome measures, as presented later in Chapters 4 through 6.

The findings of this study are also pertinent to bank regulators. Bank supervisory officials might consider publishing further selected information in their regulatory call reports (BHC Y9 reports) on the use of Risk Appetite arrangements by BHCs, in order to further illuminate this practice for bank investors, counterparties and bank customers. This level of transparency would be consistent with global efforts to increase banks' financial transparency, as noted in Basel Pillar 3 (Basel, 2015c), and would thus facilitate a greater degree of informed decision making and even encourage greater market discipline.

It is difficult to validate whether Risk Appetite data is available to supervisory field staff. However, over time, Risk Appetite arrangements may increasingly assist bank regulators in shaping economic capital requirements and stress testing, given their potential to establish boundaries for banks' risk-taking.

This research also reveals that regulatory-driven characteristics for board-level Risk Committees are not highly related to measurable performance or risk profile improvements. This may be either because not all risk governance mechanisms have had an equal impact, or because more time is required for these governance practices to yield discernable results. These developments will be followed by the researcher over time, and will continue to be communicated through social media and through practitioner and academic dissemination.

1.6.2 Contribution to academia

This study makes several contributions to academia. Consistent with seminal literature, it explicitly recognizes the primacy of risk governance in financial institutions vis-à-vis standard corporate governance mechanisms (Aebi, Sabato and Schmid, 2012, p. 3215). It makes a unique contribution to the emerging literature domain of risk governance and contributes to the scrutiny of the risk management oversight function of boards (Ellul and Yeramilli, 2013; Stulz, 2015).

Firstly, the references cited within this study support a unique literature review of risk governance, which is presented later in Chapter 2. In doing so, it identifies a material literature gap, which underscores the need for an empirical study of board-level Risk Appetite arrangements. This risk governance mechanism, as part of the suite of regulatory risk oversight requirements, has received scant attention in conceptual research and little if any previous empirical examination vis-à-vis performance and risk thus far.

This study introduces this mechanism and addresses a fundamental research gap, providing new and impactful knowledge to this literature domain. Future risk governance research may consider the use of Risk Appetite arrangements as an explanatory variable in empirical studies. This research also searches for but fails to find compelling evidence for the Risk Committee and BHC outcome measures in the post crisis period. It significantly extends existing studies of bank corporate governance that adopt a single, one-dimensional outcome measure (Klomp and de Haan, 2012; Aebi, Sabato and Schmid, 2012) to a broad suite of outcomes variables.

1.7 Summary

This chapter has highlighted the relevance of intervention by bank supervisors in corporate governance practice, notably given the series of risk oversight shortfalls observed following the credit crisis. While public policy and initial regulatory changes began to take root just after the financial crisis, formal intervention by global authorities only gathered force by 2014. A simple citation count reveals a dramatic increase in phrases relating to board-articulated Risk Appetite arrangements and Risk Committees, as noted in the Basel corporate governance guidelines for banks (Gontarek, 2016). Scholarly studies enable the effectiveness of new regulations to be tested empirically, and contribute to current debates in the practical and academic literature.

This study seeks to provide a better understanding of the risk governance practices and their impact upon US BHC performance and risk profiles of the risk governance practices that have been codified into law. It makes a contribution to both practice and academic research as a previously under researched corporate governance practice.

Evidence of a significant impact of Risk Appetite arrangements adopted by bank boards is presented to the industry for the first time herein, providing validation of this industry practice and an indication of economic impact to the bottom line of BHCs.

This research makes a modest but unambiguous claim to contributing to knowledge relating to the impact of Risk Appetite arrangements upon BHC outcome measures. The research community may consider employing Risk Appetite arrangements as an explanatory variable in future research, given their relationship with the performance and risk measures observed in the literature. Lastly, this study provides an early analysis of risk governance practices targeted at the post-financial crisis period that may be reviewed for relaxation given recent political changes underway in the US.

The theoretical framework and development of the hypotheses now follow.

2 THEORETICAL FRAMEWORK AND HYPOTHESES

2.1 Introduction

Corporate governance of banking firms differs from that of non-financial firms. Becht, Bolton and Röell (2011) explain that banks are multi-constituency organisations with a broad spectrum of actors, including investors, management and the board, but also depositors and bondholders (who provide the majority of bank capital).

Banking supervisors and society at large, which ultimately underwrites systemic risk, also are unique actors in this setting (Adams and Mehran, 2003). These authors argue that bank CEOs may have different incentives from those in non-financial institutions. Internal monitoring in banks is further challenged by higher business complexity and the ability to ramp up risk-taking quickly given access to capital markets.

Banks are subject to a broad variety of risks, including credit, market, operational, liquidity, capital and reputational risks (Fiordelisi and Molyneux, 2010). However, the choice of risk related dependent variables in this study underscore the role of credit risk. Credit risk is present at the heart of most banking organisations. When not effectively adjudicated, credit risk may have devastating effects on the statue of BHCs. Historically, poor lending policies, over-lending, weak credit standards, credit concentration and excessive credit exceptions, have been identified with US bank failures (OCC, 1988).

The remainder of this chapter presents the theoretical framework of this study, beginning with a literature review and development of hypotheses. This provides a lens through which to consider risk governance, positioning it within internal monitoring and thus comfortably relating to agency theory. An empirical research gap is identified in the literature relating to bank Risk Appetite arrangements and its impact upon bank performance and risk measures.

Three standard corporate governance mechanisms are examined later in this chapter,[6] namely internal monitoring, board structure and incentives. After probing this literature domain, this review later narrows its purview to develop its hypotheses on board-level risk appetite statements and Risk Committees as key internal monitoring activities and risk governance practices.

2.2 Literature Review

This review of the literature considers standard theories of corporate governance. While grounded in agency theory, it is acknowledged that other approaches may be relevant in this context.

[6] Shleifer and Vishny (1997) offer a perspective on corporate governance mechanisms, defining them as “economic and legal institutions that can be altered through political process”. Himaj (2014) argues that corporate governance mechanisms can be treated as practical traits, viewed from multiple theoretical positions, which may be interrelated or at times counteract each other.

2.2.1 Corporate governance definition and theories

Before reviewing the risk governance literature and developing hypotheses for testing, this sub-section probes existing corporate governance theories. Many definitions of corporate governance can be found within the literature; however, the following definition relates particularly well to the financial institution sector, given its acknowledgement of the role of multiple constituencies:

> "Corporate governance is the complex set of constraints that determine the quasi-rents (profits) generated by the firm in the course of relationships with stakeholders and shape the post bargaining over them (Claessens and Yurtoglu, 2012, p.4)."

Corporate governance in the banking sector relates to how banks are governed, including corporate objective setting and risk profiles, aligning corporate activities and behaviours with the expectation that management will operate in a safe and sound manner, running day-to-day operations within an established risk profile, and protecting the interests of depositors and stakeholders (Greuning and Bratanovic, 2003, p.8). Certain relevant corporate governance theories include agency, institutional, stakeholder, stewardship, resource-based, and managerial hegemony theories.

2.2.2 Agency theory

Corporate governance considers the nature of relationships and motivations between key actors in a corporation. Agency problems arise from the separation of management and the owners (Berle and Means, 1932).

Agency theory is the most prevalent theory addressed in the literature (Van der Elst, 2015). It states that principals may delegate decisions to agents who act on their behalf, mainly for practical purposes; however, moral hazard and other factors may result in conflicts of interest. Agency theory embraces the concept that agents primarily consider their own interests. Thus, rents (or residual losses) are incurred with active monitoring; and actions (or inactions) by management can reduce the wealth of owners (Jensen and Meckling, 1976). Incentives can be employed to balance agency–principal interests, but these may be ineffective or counter-productive. Incentive structures initially evolved from owners' concerns that agents might not take a sufficient degree of business risk (Tao and Hutchinson, 2013; IMF, 2014), which is ironic in light of the arguments that bankers' incentive schemes may have contributed to the financial crisis (Acharya, Litov and Sepe, 2013).

Agency theory has been used to better appreciate corporate governance in a banking context (Demsetz, Saidenberg and Strahan, 1997). Agency conflicts are particularly acute in banking activities (Berger and di Patti, 2003; IMF, 2014), and may be intensified by information asymmetries. Agency problems in banks are also exacerbated by certain structural features, including the existence of deposit insurance, which further underscore the risks of moral hazard in this sector (Merton, 1977; Laeven, 2002; and de Haan and Vlahu, 2015).

Deposit insurance was introduced to mitigate the risk of bank runs, but may also induce risk-taking behaviours that are not in the best interests of depositors, bondholders or the financial system overall. However, excessive risk-taking behaviours can be moderated by other corporate governance mechanisms, including well-structured incentives (Dionne, 2013) or effective internal monitoring. Agency costs represent a loss of value arising from managers maximising their own utility rather than the value of the firm (Berger and di Patti, 2003). These authors offer an example of how high leverage levels may increase firm valuation by encouraging managers with shares to act in the best interests of shareholders, but high leverage may also bring more risk to bank bondholders and depositors.[7]

Government guarantees, deposit insurance, leverage and complexity may encourage risk-taking behaviours, and since the costs associated with bank failure are externalised, the impact of agency issues upon society are pronounced if risk-taking is excessive (de Haan and Vlahu, 2015). Agency issues can also materialise conversely if risk-taking is low. Fortin, Goldberg and Roth (2010) find that banks under greater managerial control (as opposed to board-influenced) tend to take less risk. These findings are consistent with Pathan (2009), who finds that powerful CEOs exhibit risk-moderating behaviour in their entrenched roles. This suggests a balanced set of incentives and controls is required for increased firm valuation (Diamond and Rajan, 2009).

The board can play a critical role in resolving agency conflicts (Jensen, 1993). Bank boards provide internal monitoring (the focus of this paper), but large shareholders, the marketplace, and regulators provide external monitoring (Hopt, 2013a). Greater disclosure by banks (for example, following the Basel Pillar 3 guidelines) may play a role in improving market discipline. As noted above, agency conflicts may be amplified by opaque risk profiles (Greenspan, 1996; Levine, 2004; Grove and Cook, 2013; Zagorchev and Gao, 2015), leading to ineffective internal monitoring.

However, competent and effective risk oversight by the board of directors is critical to a bank's performance and balancing agency conflicts (O'Sullivan and Kinsella, 2011; Stulz, 2015). Boards require effective tools and processes to carry out their responsibility of internal monitoring, underscoring the potential of the two chosen risk governance mechanisms featured in this study.

As noted by Maati and Maati-Sauvez (2012a), there are at least two divergent dynamics at work in bank corporate governance, complying with macro-prudential risk objectives (to mitigate systemic risks) and satisfying shareholder-centric objectives (to maximise shareholder returns). Agency based tensions may erupt as bank management and boards seek to balance these divergent objectives in the context of risk management and board-level practices.

[7] See Admati (2016) for arguments that policy should consider broad-based social, rather than private, costs and benefits of greater bank leverage, and that loss absorption can only come from a dramatic increase in equity levels.

2.2.3 Institutional theory

The institutional theory of governance (DiMaggio and Powell, 1983; Scott, 1987) argues that environmental forces, including public opinion, law, common practice and regulation, may influence organisational decision-making. Institutional theory is useful when the adoption of new governance processes is motivated by a desire to appear to be following industry best practice ritualistically, rather than to exercise vigilant risk oversight and monitoring (Beasley et al., 2009).

Therefore, while agency theory may provide an appreciation of risk governance activities designed to monitor management's role in day-to-day risk oversight, institutional theory facilitates understanding of why bank boards may introduce ceremonial activities to satisfy regulatory requirements or industry best practice standards. This issue is considered further in Chapter 6, which examines both mandatory and voluntary adoption of risk governance arrangements by BHCs, possibly portraying motivations for adoption.

2.2.4 Other theories

Two tasks dominate the practical business of board directors, namely monitoring and advising (Hillman and Dalziel, 2003). Board monitoring, which sits comfortably with agency theory, ensures oversight of the firm and is a key aspect of this paper dealing with Risk Appetite setting by the board and Risk Committee expertise. On the other hand, advising rests with resource dependency theory, emphasising the role of directors in contributing to strategy (Pfeffer and Salancik, 1978; Hillman, Withers and Collins, 2009). Here, management is viewed as a partner rather than a monitor (Beasley et al. 2009).

Managerial hegemony theory observes that CEOs recruit docile associates as board members, who depend on management for their information (Cohen, Krishamoorthy and Wright, 2007). Some boards appear to superficially monitor with little independent decision making (Beasley et al., 2009). In hindsight, the reported risk governance shortfalls at Lehman Brothers and Royal Bank of Scotland might have been averted if passive and disengaged boards had faced up to powerful bank CEOs. Considering the potential impact of powerful CEOs is specifically catered for in this study in Chapter 6.

Stakeholder theory (Freeman, 1979, 1984; Freeman and Reed, 1983) is based on the underlying premise that business is accountable to a wide array of stakeholders. In banking, stakeholders include depositors, borrowers, regulators and society at large (Mehran, Morrison and Shapiro, 2011; Mullineux, 2011; Leung, Song and Chen, 2016).

Stewardship theory provides yet another lens through which to consider corporate governance. Exercising thoughtful authority motivates agents in this construct, suggesting the occurrence of no conflicts of interest with principals (Donaldson and Davis, 1991). Thus, managers act as stewards in the best interest of the owners, having no self-opportunistic motives, and naturally identify with organisational values.

Risk governance, the topic of interest in this study, sits well with the internal monitoring activities of boards (Stulz, 2015; Basel, 2015a; Iqbal, Strobl and Vähämaa, 2015; Gontarek, 2016). Effective risk governance mechanisms are closely related to the monitoring function, and can be readily viewed from an agency theory perspective. The current research thus focuses primarily on employing an agency theory lens to examine monitoring and risk oversight.

2.2.5 Corporate governance mechanisms

In this sub-section, three overarching mechanisms are considered: internal monitoring, board structure and incentives. However, other governance mechanisms are well noted within the literature, such as ownership (type and structure) and external monitoring (market discipline). These mechanisms and monitoring are later positioned in a field map, which identifies a gap for examination by this empirical study. The explanatory variables described in Chapter 3 dovetails with internal monitoring, board structure and incentives.

Various features make banks difficult to monitor effectively as noted earlier (Macey and O'Hara, 2003, 2016). Leverage levels and opacity exacerbate conflict (Mülbert, 2010; Laeven, 2013). The regulatory, leverage, complexity and multiple constituency features of commercial banks underscore these challenges (Fama, 1980; Adams and Mehran, 2003, Levine, 2004; Becht, Bolton and Roëll, 2011; Sarra, 2012; Hopt, 2013a).

Moreover, there is some evidence indicating a bank's history may affect its performance or risk-taking, and suggesting that bank-specific shocks previously experienced (and survived) may affect its risk-taking and capital levels (Bouwman and Malmendier, 2015; Fahlenbrach, Prilmeier and Stulz, 2012). This later evidence may play a role in the design of risk governance studies and its research design, as described later.

Board-level decision-making has a major influence on bank performance (Spong and Sullivan, 2007). The unique nature of banking firms necessitates robust governance mechanisms to deal with potential conflicts between various governance actors. However, these mechanisms may be ineffective or fail to perform (Becht, Bolton and Röell, 2011). These challenges also complicate the role of the bank board, dictating a heightened duty of care in making reasonable and informed decisions (Macey and O'Hara, 2016).

2.2.6 Internal monitoring

Banks are subject to external and internal monitoring. One example of external monitoring (and related agency costs) includes risk-based pricing of bank capital, which is a market-based solution to agency problems as investors adjust their risk premiums depending on the outcome of their monitoring observations (Forssbæck, 2009; Nguyen, 2013). However, internal monitoring, a standard corporate governance mechanism, is directly relevant to risk governance, given the board's responsibility for risk oversight. Jensen and Meckling (1976) and Shleifer and Vishny (1997) suggest that monitoring costs are incurred as a means of mitigating agency rents as discussed previously.

A primary board-level responsibility is to provide an effective internal monitoring function (Fleischer, Hazard and Klipper, 1988). Risk oversight arrangements seek to mitigate structural features that hinder external stakeholders' ability to monitor banks effectively, given the complexity and opaqueness of their activities (de Andres and Vallelado, 2008).

Nguyen, Hagendorff and Eshraghi (2015a) posit that banks' boards of directors play a major role in overseeing risk controls to mitigate misconduct in financial institutions. Specifically, they report reduced bank misconduct levels when monitoring quality is high. Cornett, McNutt and Tehranian (2009) note, prior to the crisis, that bank boards appear to have reduced their internal monitoring activities at precisely the wrong time in the financial and business cycle: Board meetings were less frequent, CEO duality continued, nominating committees remained CEO-friendly and golden parachutes increased in number.

Corporate governance researchers measure the resources dedicated to internal board monitoring, including board meetings (Vafeas, 1999). Monitoring has been measured by the frequency of board of directors' meetings (Hahn and Lasfer, 2016), the level of attendance at these meetings, the proportion of outsiders and the demographical or other features (Aebi, Sabato and Schmid, 2012; Battaglia and Gallo, 2015; de Andres and Vallelado, 2008; Grove and Cook, 2013; Ellul and Yerramilli, 2013, Minton, Taillard and Williamson, 2014).

Risk governance is consistent with the aims of enterprise risk management (Aebi, Sabato and Schmid, 2012; de Wild, 2013).[8] Nocco and Stulz (2006) define enterprise risk management (ERM) as a practice in which risk is viewed holistically within a strategic framework. ERM promises the benefit of decentralising risk management, facilitating a firm-wide view of total risk, and thus allowing management to protect the firm's ability to execute its business plans (COSO, 2004). ERM requires boards to understand the firm's philosophy of risk-taking, monitor management's oversight of risk and consider Risk Appetite in the portfolio of risk profiles.

The literature also examines potential links between ERM adoption and performance. Eckles, Hoyt and Miller (2014) find that risk-adjusted performance improves following ERM adoption. These results are consistent with the results observed within other ERM related studies with firm value in both the corporate and insurance sectors by Gordon, Loeb and Tseng (2009), McShane, Nair and Rustambekov (2011) and Hoyt and Liebenberg (2011). For example, the latter authors' analysis of US insurance companies reveals that ERM adoption is associated with a material rise in Tobin's Q.

Researchers select proxies for oversight mechanisms in order to facilitate measurement needs. For example, Pagach and Warr's (2011) examination of ERM practices faced the challenge of a lack of data on formal ERM adoption, since direct observation of a firm's decision to adopt ERM is virtually impossible. Thus, they used the firm's announcement of a plan to hire a CRO as a proxy for ERM adoption.

[8] ERM is positioned within monitoring and agency based frameworks in certain ERM studies, such as McShane, Nair and Rustambekov (2011) and Hoyt and Liebenberg (2011) respectively.

CEO duality, where the CEO is also the chairman, may play an internal monitoring role, especially in the context of banking. Viewed through the lens of agency theory, duality may promote CEO entrenchment rents (Finkelstein and D'Aveni, 1994). In a banking context, Byrd et al. (2012) note that financial institutions with CEO duality have weathered financial crisis conditions with better results than other firms.

In summary, the best evidence is that monitoring appears to demonstrate a strong relation with bank performance and risk-taking (Becher, Campbell and Frye, 2003, de Andres and Vallelado, 2008; Aebi, Sabato and Schmid, 2012, Ellul and Yerramilli, 2013). Regulatory-led risk oversight standards can play a role at the industry level (de Andres and Vallelado, 2008), while Risk Appetite arrangements and board-level Risk Committees, the focus of this paper, are deployed by bank boards in carrying out their internal monitoring roles.

2.2.7 Board structure

Bank board structure has a complex relationship with performance and risk-taking. This mechanism can be further decomposed into board size, shareholder-friendly features, non-insider or external directors, financial expertise levels, heterogeneity factors relating to directors' age and job tenure, and directors' busyness (de Haan and Vlahu, 2015).

Starting with board size, conceptual literature argues that larger boards face the challenges of effective communication, co-ordination and control, thus strengthening the hand of management (Jensen, 1993). Some studies have observed a complex U-shaped relationship between board size and performance, suggesting the superior efficacy of very small and very large boards (Coles, Daniel and Naveen, 2008; de Andres and Vallelado, 2008). However, larger boards have been associated with both improved performance (Adams and Mehran, 2005) and greater bank risk-taking (IMF, 2014; Battaglia, Curcio and Gallo, 2014).

Consistent with other earlier research (Beltratti and Stulz, 2012; Peni and Vähämaa, 2012), Iqbal, Strobl and Vähämaa's (2015) examination of a sample of financial institutions reveals that firms with shareholder-focused boards are associated with greater levels of systemic risk or lower returns. As stated within seminal research about BHC directors, "… independent financial experts, with a fiduciary duty to shareholders, understand the nature of the equity claims and will generally favour more risk-taking" (Minton, Taillard and Williamson, 2014, p. 377).

Another aspect of board structure is the proportion of external directors on the board and their potential to participate in or mitigate agency conflicts. Fama and Jensen (1983) argue that external directors have reputational motivations, and thus exercise diligent monitoring. Some studies find that non-insider board member representation is largely unrelated to risk-taking (IMF, 2014), while others find that it can be detrimental to bank performance (Adams and Mehran, 2008). Erkens, Hung and Matos (2012), Switzer and Wang (2013) and Beltratti and Stulz (2012) find that banks with greater board independence experienced worse returns, or greater risk profiles, during the crisis.

The expertise of bank board directors may be an obvious pre-condition for improved BHC performance and lower risk-taking. In fact, evidence has been presented indicating that the level of independent directors' expertise is positively related to risk measures, possibly because they fully appreciate the potential residual value accruing to shareholders from risk-taking (Minton, Taillard and Williamson, 2014). On the one hand, outside directors have fewer conflicts of interest, which is a positive factor in carrying out their monitoring roles (de Andres and Vallelado, 2008). On the other hand, non-inside directors may have reduced access to firm-specific information (Carrillo, 2012; Wang, Lu and Lin, 2012), so the process of establishing risk types and boundaries that accompanies Risk Appetite mitigates these governance shortcomings.

Adams' (2012) research on bank board independence, board size and number of non-executive directorships reveals a positive relationship with receipt of bailout funds. However, in the UK insurance industry, Adams and Jiang (2015) find that outside directors' expertise levels are positively related to performance measures, including ROA, ROE and solvency measures.

Demographical features of executives and board members are also measured in governance studies. Citing upper echelons theory, Hambrick and Mason (1984) argue that executive characteristics make a difference to strategic decision making, and thus may be associated with firm performance levels. Regarding age, Mikels and Reed (2009) study the role played by age in monetary decision-making and establish a greater risk-taking capacity in younger adults, whereas mature adults have more experience in complex decision-making (Worthy et al., 2011). Nguyen, Hagendorff and Eshraghi (2015b) consider executive age in their study of US banks, and find that market returns are higher for older bank executives, amongst other characteristics. They conclude that younger executives may have greater incentives to engage in riskier and value-destroying activities and may incur a greater level of agency-related rents.

The role of busy BHC board members remains ambiguous. Initial evidence suggests that busy directors (holding three or more directorships) produce lower market-to-book ratios and weaker profitability measures (Fich and Shivdasani, 2006). Other research validates the association between busyness and greater levels of total and idiosyncratic BHC risk (Cooper and Uzun, 2012). However, more recent literature presents evidence of improved performance measures (ROE, Tobin's Q and EBIT) and lower risk measures (idiosyncratic, credit and default risks) associated with busy BHC directors (Elyasiani and Zhang, 2015).

2.2.8 Incentives

Incentives are a third standard mechanism of corporate governance. Consistent with agency theory, the aim of a well-designed executive pay package is to attract and align executives. Jensen and Meckling (1976) state that principals limit negative outcomes by establishing appropriate alignment between owners and management. This mechanism motivates agents to act in the best interests of the principals (Ross, 1973).

Problems may arise from poorly designed incentives in the banking context (Alexander, 2006). One view is that management has non-diversifiable wealth associated with ownership stakes, which may lead to self-serving and risk-mitigating behaviours (Switzer and Wang, 2013). An alternative view is that management ownership should be considered with care, as managers are incentivised to maximise the value of their call options with ever-increasing levels of short-term risk-taking (Jensen and Meckling, 1976; Acrey, McCumber and Nguyen, 2011).

The link between incentives and performance is not always clear. Some studies establish a positive link between incentives and performance in a banking context (Adams, 2012; Bhagat and Bolton, 2014; Bai and Elyasiani, 2013; DeYoung, Peng and Yan, 2013). Houston and James (1995) find no evidence that equity structures encourage excessive risk-taking. Spong and Sullivan (2007) find that ownership stakes for hired managers relate to improved performance and alignment of interests with shareholders, thus potentially reducing the agent–principal conflict identified under agency theory.

Other research suggests that incentive pay may be associated with short-term positive performance but poorer loan quality over longer tenures (Grove et al., 2011). Fahlenbrach and Stulz (2011) argue that poor performance occurred during the crisis when bank CEO compensation was linked to shareholder value. Becht, Bolton and Roëll (2011) argue that excessive alignment contributed to under-performance during the crisis years. There is also a strong association between short-term executive compensation and bank hedging activities, as noted by Becht, Bolton and Roëll (2011). On balance, the literature argues that the incentive and performance relation can be complex and ambiguous, but may ultimately have played some role in excessive risk-taking during the crisis (IMF, 2014).

2.3 Hypothesis Development

Poorly executed risk management practices and governance-based shortfalls have historically contributed to bank failures more than deteriorating economic conditions (OCC, 1988). Recent scholarly analysis concludes that the current model of bank risk management remains deeply flawed, as existing regulation and stylised risk management practices fail to restrain excessive risk-taking (Lim et al., 2016).

Regulatory-driven change has also been considered before in the literature. In 1999, the Gramm-Leach-Bliley Act provided for the deregulation of the US financial services industry, with a relaxation of regulatory monitoring (Greenspan, 1996). Studies have found that the impact of this act has been to promote diversification of exposure and revenue opportunities, while containing excessive risk-taking (Mamun, Hassan and Maroney, 2005; Carrillo, 2012).

Akhighbe and Martin (2007) examine the impact of SOX legislation on the US financial services industry and find a short-term initial increase in risk measures as non-public information is transmitted to the markets, followed by positive wealth effects in the longer term as firms become more transparent (Akhighbe and Martin, 2007; Carrillo, 2012).

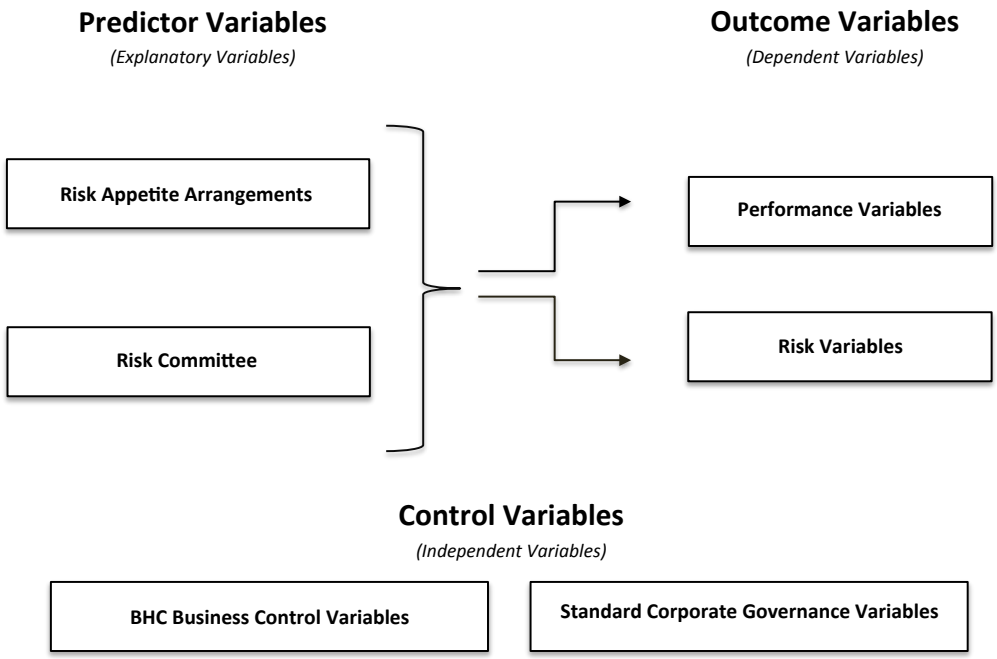

Figure 3: Conceptual map of the research design

Source: Author's own construct

The next sub-sections develop hypotheses on two key aspects of risk governance and the BHC boardroom: Risk Appetite arrangements and board-level Risk Committees. A conceptual plan of the research design is presented in Figure 3 above, mapping the key predictor, outcome, and standard corporate governance and risk governance variables. This plan applies the same conceptual framework to different hypotheses and the same suite of explanatory and outcome variables throughout this study.

2.3.1 Hypothesis development: Risk Appetite

Identifying, measuring and monitoring complex risk profiles are challenging for bank directors even in the most gentle market environment and best-intended circumstances. Specialist advisory firms that focus on financial institutional governance identify the need for more robust risk governance, and specifically greater rigour in setting and deliberating risk appetite levels (Nestor, 2009a, 2010). Both boards of directors and management need to understand the risks run by firms and the steps taken to manage risk profiles (Simkins and Ramirez, 2008).

However, many financial institutions lack internal risk controls or accurate risk reporting (Lang and Jagtiani, 2010). Also, banks have failed to establish control mechanisms to ensure effective monitoring of Risk Appetite (United Nations, 2010; Singh, 2013). As noted earlier, a risk appetite statement is a written articulation of the aggregate level and types of risk that a firm will accept or avoid in order to achieve its business objectives (Basel, 2015a, p.2).

According to the Senior Supervisors Group (SSG, 2008), banks that felt most confident in their risk identification practices during the crisis avoided material unexpected losses, and managers of those firms held a continuous dialogue between business areas and risk management areas on whether the firm was balancing its Risk Appetite and controls structure appropriately. However, Risk Appetite arrangements at that time were relatively new: many banks indicated that they had been in effect for one year or less (SSG, 2010).

Although US bank boards have not always viewed the oversight of risk management and setting of Risk Appetite as a core responsibility (Nestor, 2009a; Prager, 2013), this is now beginning to change. The OCC now requires Risk Appetite arrangements to be specifically articulated and monitored by the boards of covered US BHCs as of the end of 2014. Moreover, the board of directors of a covered BHC[9] must actively oversee its risk-taking activities and hold management accountable for adhering to the risk appetite framework. It must challenge, or when necessary, oppose management decisions that might cause excessive Risk Appetite in accordance with regulatory requirements.

Banks are placing increasing emphasis on risk governance processes as a means of preventing the build-up of excessive risk profiles (Jackson, 2014), and Risk Appetite arrangements are at the centre of this shift in bank behaviour (Ernst & Young, 2015c). Risk Appetite is taking a more prominent place in the suite of risk governance mechanisms of financial institutions (Gontarek, 2016).

Global policy makers are increasingly focusing on the potential benefits of board-level articulated Risk Appetite arrangements. Bank supervisors have been unequivocal in their demand for better accountability of the board for setting the firm's Risk Appetite. Financial institutional distress may be characterised by an accumulation of risk profiles that have not been fully recognised (FSB, 2013b, 2013b; Ernst & Young, 2015c). The board must consider all relevant risks and consider a balanced approach to the bank's return targets and risk profile (CEBS, 2010).

Bank supervisors have made direct calls for collective oversight of the board and the need for board-level articulation of Risk Appetite (Basel, 2015a). Observers (Walker, 2009; SSG, 2010; United Nations, 2010; EBA, 2011; IIF, 2011a; G30, 2012; FSB, 2013a) have underscored the important role of Risk Appetite in improving risk-taking in Canada (OSFI, 2013), Singapore (MAS, 2013), the USA (OCC, 2014; Federal Register, 2014a and 2014b), Ireland (Central Bank of Ireland, 2014) and the UK (BOE, 2015a).

Conceptual research relating to Risk Appetite in the context of banking has only recently begun to emerge. Fortunately, practitioner literature publication bolsters the limited scholarly work published in this domain. Practitioner experts now issue practical advice to assist with board implementation of risk appetite frameworks in global banking and financial institutions.

[9] A covered BHC is a firm covered by the new regulations, which requires Risk Appetite arrangements at the board level and typically has assets of $50 billion or more, as specified in the Federal Register (2014a, 2014b).

Practitioner literature reports that establishing and monitoring Risk Appetite requires governance actors to think about risk and its boundaries in a systematic fashion, ensuring a coherent and holistic framework (Nestor, 2010). Risk Appetite arrangements provide transparency for a firm's risk position and facilitate boundary setting from the top of the firm down to the business unit (Smith, 2014).

Banks take risks of several forms, including credit, market and operational risk amongst others. For a sample statement of the principal risks facing major banks, see Appendix 4. Risk governance principles encourage a culture of risk management rather than pure risk aversion, and inhibit risk decisions that may not be aligned with firm-wide objectives (Willis, 2015). Risk Appetite arrangements help firms articulate and distinguish risk categories that are acceptable or aligned with strategy from those that are not acceptable to the board of directors (Protiviti, 2012).

Beyond board interactions, a key aim of risk appetite statements is to formalise and communicate a greater level of transparency to employees and stakeholders (PWC, 2014b). The role of the board of directors in articulating an overarching Risk Appetite and cascading it down the firm is an important aspect of risk governance. Failure to do so may result in shortcomings in risk oversight. For a sample risk appetite statement, see Appendix 5.

Bank boards suffered from a lack of consensus on Risk Appetite arrangements as quantifiable boundaries during the financial crisis (Nestor, 2010). The failure of HBOS Plc is a case in point. According to the Bank of England, the HBOS board failed to implement an effective risk appetite framework (BOE, 2015c). Each HBOS division was responsible for setting its own Risk Appetite, but no group-wide Risk Appetite was established until 2007, with the board having little or no formal guidance on divisional Risk Appetite arrangements and a limited role in risk oversight. Furthermore, the board gave insufficient priority to risk management, failed to develop and embed Risk Appetite arrangements with quantitative risk targets across different types of risk, and failed to articulate responsibility for setting and monitoring Risk Appetite in its Board Control Manual (BOE, 2015c).

Aggregating Risk Appetite data at the most senior levels facilitates reporting and monitoring needs of the board. HBOS failed to monitor risk-taking actively through a single group-wide committee (it met once in January 2005), and apparently failed to aggregate, consolidate, and monitor firm-wide Risk Appetite. Remarkably, the BOE (2015c) report identifies that HBOS's corporate loan division was carrying around £9 billion of credit exposure essentially outside its Risk Appetite, as certain credits were moved to a hold-for-future-sale category.

All of this evidence points to a weak risk governance environment at HBOS. With the benefit of hindsight, the implementation of the HBOS group-wide risk appetite statement during the 2010–2014 business planning process was "too little and, it proved, much too late" (McConnell, 2016, p.152).

Practitioner publications confirm that a significant shift in Risk Appetite practices at banks is now under way. Bank Director (2015) reports that 58 per cent of participants in its survey of banks have a risk appetite statement, and an additional 27 per cent plan to implement one within 12 months. Deloitte's (2013c) survey of global financial institutions reveals that 79 per cent of participants define Risk Appetite both quantitatively and qualitatively. According to this survey, acceptable loss levels (76 per cent), risk limits (71 per cent), economic capital (69 per cent) and regulatory capital (69 per cent) are common triggers for monitoring Risk Appetite.

Risk Appetite arrangements are now emerging as a key risk governance practice in banking. Advisory firms have published practical how-to frameworks for risk appetite (McKinsey, 2014). PWC (2014) reports that Risk Appetite statements formalise, communicate and create risk profile transparency for employees and external stakeholders. In its study of 161 independent US directors, chairmen, CROs, CEOs and other senior management executives of US banking firms, Bank Director (2016) provides a glimpse into the current use of Risk Appetite. According to this report, 94 per cent of firms with assets greater than $10 billion confirm that establishing Risk Appetite is a key responsibility of the Risk Committee or equivalent.

Another survey indicates that firms are increasingly establishing an early-warning system to track, monitor and report different risk types, including so-called traffic light systems which facilitate improved Risk Appetite reporting (Central Bank of Ireland, 2014).

More comprehensive risk appetite frameworks are increasingly being implemented by BHCs. PNC, a $350 billion BHC, regards its risk appetite statement as a core element of its enterprise risk management framework, along with risk organisation and governance, risk monitoring and risk culture. This BHC's risk appetite framework includes a risk appetite statement, risk metrics and limits (including key risk indicators, or KRIs), processes for identifying and quantifying risks, and processes for aggregating and monitoring risk reporting by the lines of business.

The process of articulating Risk Appetite may take time to conclude. PNC redesigned its enterprise risk appetite statement in 2013, which involved its Risk Committee of the board, the CEO, the CRO and others and took six months to complete. PNC (Koncz, 2015) also indicates that the statement's adoption was evolutionary; it included peer comparisons and back and forth discussions before final board approval over time, and determining the number of components that should be included in the framework was challenging.

A firm's Risk Appetite is enshrined in its risk appetite statement, which is reviewed, approved and monitored by the board (Jackson, 2014). For a sample risk appetite statement, see Appendix 5. An example of a firm-wide dashboard is provided at Appendix 6. In the case of PNC, the cascading of metrics includes the distribution of metrics from the board-approved risk appetite statement to the lines of business, corporate functions and risk oversight areas, with breaches reported upwards as required (Koncz, 2015).

Risk appetite processes interact with other corporate governance and strategic initiatives. For example, the board-level Risk Committee should review the firm's executive compensation structure to ensure that it is appropriate to the bank's Risk Appetite and creates proper incentives (Lipton et al., 2012). Moody's (2015) argues for an alignment of Risk Appetite with strategic decision making for financial firms, as a means of pursuing profitable businesses while remaining compliant with regulatory requirements, suggesting that this may be a performance enabler. The board must consider a firm's Risk Appetite as well as risk capacity, and actively examine stress-testing outcomes to determine whether the buffer between the two metrics is sufficient (Ernst & Young, 2015c).

McConnell (2013b) argues that firms should develop Risk Appetite approaches that create boundaries for strategic decision-making. Risk Appetite must be strongly linked to strategy and longer-term planning (Shang and Chen, 2012; Girling, 2013).

Conceptual academic literature on Risk Appetite is now emerging. This study is one of the first to examine empirically the impact of Risk Appetite upon performance and risk measures. Governance shortcomings in banks result in part from not being fully informed about firm-level risk-taking (INSEAD, 2012). Post-crisis, banks must embrace their role, define Risk Appetite at senior levels and communicate it across the firm (Mehran, Morrison and Shapiro, 2011). Aven (2013) focuses conceptually on definitions, helpfully untangling related concepts such as risk acceptability and risk aversion.

Mülbert (2010) conceptually examines legal means of curtailing banks' Risk Appetite through corporate law mechanisms aimed at the board to protect depositor interests. Wymeersch (2012) argues that the entire board plays a role in overseeing and monitoring Risk Appetite, while Mollah and Liljeblom (2016) suggest that banks' Risk Appetite should be reflected in their asset quality, and ultimately in their performance.

Banks are re-designing their risk management practices to enable them to identify risk events and mitigate unforeseen impacts on their performance (Caldarelli et al., 2015). A bank's Risk Appetite is an assessment by top management (with input from the CRO) of the expected effect of the bank's risk-taking and the value of undertaking riskier investments and activities (Stulz, 2015). Mülbert (2010) and Wymeersch (2012) independently argue that boards (or their Risk Committees) should be composed of board-level directors with appropriate expertise, capable of judging Risk Appetite. Bugalla et al. (2012) emphasise the collective role of the board in setting Risk Appetite and its potentially symbiotic relationship.

Wymeersch (2012) posits that establishing Risk Appetite is a complex process requiring development by senior risk management staff prior to board review and approval. Yoost (2014) provides a useful practical guide on risk appetite statements for bank directors, including best practice and director responsibilities to ensure that an appropriate risk appetite framework is implemented. If the language of Risk Appetite is used by management but not fully disclosed to the board of directors, the potential benefits of this board-level process go unrealised (McConnell, 2012a).

Board-level Risk Appetite arrangements that cascade down the organisation facilitate the process of boundary setting and allocation of the bank's scarce resources, and may be closely linked with building a robust risk culture (Alix, 2014). Ellul and Yerramilli (2013) suggest that the structure of the risk management function is likely to be important in determining how risk-based information is disseminated within the firm.

A lack of risk oversight discipline may impair the performance of financial institutions. For example, a lack of clarity on Risk Appetite contributed to the challenges faced by Northern Rock, Wachovia and Lehman Brothers during the crisis (Goedhart and Meltzer, 2013).

In one notable vignette, the Financial Crisis Inquiry Report (2011) chronicles one occasion at Merrill Lynch in 2007 when business-line executives reported to the board for the first time about a material $32 billion build-up of sub-prime exposure. This was an obvious case of the board failing to establish and monitor Risk Appetite boundaries over its trading division. As Stulz (2008) points out, it is possible for traders to take risks that escape detection, depending on the firm's risk culture and incentives. Similarly, Dionne (2013) argues that clear articulation and monitoring of Risk Appetite is a key lesson from the financial crisis and its aftermath.

Risk Appetite statements are flexible tools. Bank boards may choose specific Risk Appetite triggers that are updated at each Risk Committee meeting. A typical Risk Appetite statement may include qualitative and quantitative measurements of credit, market and operational risk (Gontarek, 2016).

Examples of measures used in risk appetite statements include Tier 1 ratios, expected or actual loan losses (or provisions), credit rating volatility, reputational incidents and CAMELS ratings (Hyde, Leibert and Wackerbeck, 2009; McKinsey, 2014). Some of these measures are considered in Section 3.4 as outcome variables for risk in this study. Davies (2014) posits that soft Risk Appetite triggers relating to operational risk, such as reputational or fraud events may be challenging for banks to measure and monitor.

A firm's Risk Appetite is represented by explicit decisions of the board on risk and return trade-offs. This includes a process to determine the nature and quantity of risk it is willing to assume, and to make risk allocation decisions (Lawrence, 2011). Stulz (2015) posits that a well-governed firm identifies, measures and aggregates risks and ensures that the remaining risk is consistent with its Risk Appetite; however, importantly, having no risk is neither a realistic nor a desirable outcome for banks. The most significant challenge for board directors is to improve their oversight of Risk Appetite and risk tolerance boundaries (Conference Board, 2014).

Smith (2014) identifies challenges still observed in Risk Appetite related processes, such as insufficient board involvement and monitoring compliance, insufficiently broad ranges of values, an inability to aggregate data thoroughly, a lack of expertise among board members, and insufficient CRO independence. Validating Risk Appetite is vital to the corporate governance framework of financial institutions (Davies, 2013).

Articulating the firm's Risk Appetite is an essential part of implementing the bank's risk management framework, and cascading it allows consistent risk-based decisions to be made (Lam, 2014). There are already signs that cultural change is taking place. Tidjane Thiam, CEO of Credit Suisse Group, describes his firm's appetite for earnings and capital volatility:

> "Post-crisis, regulations have changed, the interest rate environment has changed, and the macroeconomic environment has changed. Tolerance for a certain level of volatility of earnings in regulated companies has gone down. People have no appetite". (Bloomberg, 2016, p.64).

Experts argue that use of Risk Appetite processes, when accompanied by a strong risk culture and related infrastructure, will not only instill good governance practice, but also potentially improve firm performance (Alix, 2014).

Effective Risk Appetite arrangements call for the contribution of multiple internal and external parties before adoption. Risk Appetite is developed in collaboration with senior management, who translate board's expectations into specific targets and constraints for risk takers in the business lines and legal entities (Jackson, 2014). Internal and external auditors perform an initial and on-going review of Risk Appetite implementation and monitoring for the board of directors.

The link between Risk Appetite and performance is subtle but critical to appreciate. Banks take credit, market and operational risks every day, but the expected gains should ideally outweigh the related economic or reputational costs (Stulz, 2015). These gains result in contributing to a bank's performance. Consistent with agency theory, this author argues that bank shareholders expect the adoption of a well-structured corporate governance framework and risk oversight system to maximise shareholder wealth. However, managers regularly face value-maximising trade-offs between risk and reward, operating within a defined set of regulatory constraints on one-hand and incentive schemes on the other hand, thus benefiting from the clarity provided by the articulation of Risk Appetite arrangements.

Banks vary in their business model and mix, but all are risk-taking. A well-governed bank takes risks that generate *ex ante* benefits, generating shareholder wealth and increasing firm value (Stulz, 2015). A good risk is one that generates a positive net present value on a standalone basis. Thus, according to Stulz (2015), firms should eliminate, or at least mitigate, so-called bad risks that fail that standard, to the extent that it is cost effective to do so, but may not necessarily reduce the bank's total risk per se. Thus, good risk governance does not necessarily eliminate risk, which is the daily business of banking. Rather, effective risk governance practices should lead the board to establish effective and protective appetite boundaries and tolerance levels for risk, which is understood across the firm. The right amount of risk-taking for bank stakeholders, such as depositors, regulators and society, is likely to differ from that of bank shareholders (Stulz, 2015), again underscoring the need for a disciplined and balanced approach to allocating Risk Appetite so that board's may take into account these governance actors as well.

Stulz (2015) extends this line of reasoning to predict that, through effective risk governance, banks may become not only more valuable, but also more adept at taking greater risks, and thus may exhibit greater risk profiles overall as a result. He notes that effective corporate governance may thus lead not to safer banks, but to more valuable and potentially more risky banks.

This position is consistent with earlier empirical evidence on corporate governance mechanisms and performance and risk-taking (Pathan, 2009; Beltratti and Stulz, 2012; Minton, Taillard and Williamson, 2014). Risk Appetite, as a key part of risk governance practice of the board, can facilitate the process of delimiting good from bad risk-taking given the bank's set of lending choices and thus serves as a in important internal monitoring tool. An alternative explanation is that Risk Appetite arrangements are a box ticking ceremonial tool, more consistent with institutional theory.

In this study, the null hypothesis in this context is that BHCs' adoption of Risk Appetite has a measurable impact on performance and risk. The alternative hypothesis is that Risk Appetite arrangements are window-dressing and largely ceremonial, thus having no discernable impact on BHC performance or risk.

Table 2. Risk Appetite arrangements: Significant literature

No.	Name	Type of Literature[10]	Notes
1.	Sabato (2009)	Conceptual	Identifies the importance of establishing and setting Risk Appetite, and the failure to do so before the crisis, and validates that multiple metrics may be employed.
2.	Bugalla et al. (2012)	Conceptual	Scopes the role of Risk Appetite as a new model for risk governance.
3.	McConnell (2012a)	Conceptual	Identifies Risk Appetite as a key means of breaking excessive risk-taking, as well as failures by firms that do not include board members in this process.
4.	Wymeersch (2012)	Conceptual	Identifies the new development of Risk Appetite as a phenomenon within an evolving regulatory framework, the need for Risk Appetite to be considered at the overall risk and business-line levels, and the connection with Risk Committees.
5.	Jackson (2014)	Conceptual	Wide-ranging literature on risk appetite statements as part of a suite of risk governance methods; emphasises the potential for Risk Appetite to cascade down the firm, potentially generating risk culture benefits.
6.	Yoost (2014)	Conceptual	High-quality practical literature on best practice for the risk appetite framework and financial institutions; underscores the link between Risk Appetite and strategic decisions, consistent with McConnell (2012a).
7.	Stulz (2015)	Conceptual	Risk Appetite relates to management's assessment of good and bad risks (in the form of investments); connects Risk Appetite with risk management organisation, with the practical observation that Risk Appetite is dynamic due to business opportunities and changing market conditions; posits that optimal risk levels may be different for owners and society, and that better governance does not necessarily lead to safer banks but to riskier and more valuable banks.
8.	Gontarek (2016)	Conceptual	Scopes Risk Appetite as part of a suite of risk governance variables, including bank CRO, Risk Committees and risk conduct.

Source: Author's own analysis

[10] To the knowledge of the researcher, little if any empirical research on US BHC Risk Appetite arrangements and their impact on performance and risk outcomes have been disseminated or otherwise exist in the literature domain.

In light of the evidence on ERM adoption and performance, and Stulz's (2015) compelling arguments, this study hypothesises that US BHCs with Risk Appetite arrangements will be positively related to BHC performance and be negatively related to BHC risk. The testable hypotheses for Risk Appetite are:

> *Hypothesis H1a: The existence of BHC Risk Appetite arrangements is positively related to performance.*[11]
>
> *Hypothesis H1b: The existence of BHC Risk Appetite arrangements is negatively related to risk.*

These hypotheses acknowledge that banks continue to have incentives to take risks; however, risk governance frameworks may, over time, restrain unwanted risk-taking behaviors and curtail bad risks (Dermine, 2013; Stulz, 2015). The key literature on Risk Appetite is summarised in Table 2.

2.3.2 Hypothesis development: The Risk Committee

Risk Committees have the potential to play a major role in the adoption of risk governance practice. Adams and Mehran (2003) explain that bank boards of directors are critical to corporate governance activities. Boards of directors establish monitoring committees that mitigate the costs associated with larger boards (Upadhyay, Bhargava and Faircloth, 2014).

The Risk Committee is a specialist committee of the full board charged with overall oversight of the bank's risk. Its oversight role includes responsibility for the risk management function, advising the full board on the bank's overall Risk Appetite and risk strategy, and overseeing its implementation (FSB, 2013a). Bank board directors may find their risk oversight duties challenging, as they may lack the time, skills or information necessary for effective risk oversight (Ingley and van der Walt, 2008; Beasley et al., 2009).

Bank directors' duties have become significantly more demanding. Prior to the crisis, the typical duties of a bank director included agreeing on long-term strategy, ensuring risk management responsibility by others, and validating the existence of loan monitoring processes (Charkham, 2003). Even before the recent round of new regulation, bank board directors carried out certain risk oversight responsibilities, deriving directly from state and federal fiduciary laws, stock exchange listing requirements and evolving best practice. For example, the Delaware courts ruled on the Caremark case that directors are liable where there is a sustained or systemic failure to exercise oversight (Lipton et al., 2012). Arguments for even higher standards of care by bank directors are increasingly being made (Macey and O'Hara, 2016). Following the crisis, policy makers adjusted their expectations of bank directors and began to argue in favor of heightened governance arrangements (FSB, 2013b).

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[11] A positive relation of Risk Appetite to a BHC performance variable is indicative of positive performance, except for variables that are expense-related, such as the Efficiency Ratio. A declining Efficiency Ratio demonstrates an improvement in BHC operating performance (i.e., it costs less to produce one dollar of revenue), so in this instance a negative coefficient sign for Risk Appetite (as the independent variable) and the Efficiency Ratio (as the dependent variable) denotes positive BHC performance.

Many of the regulatory changes introduced since the financial crisis have sought to address perceived deficiencies in risk oversight. Failures of boards to appreciate the true risk profiles of major banks (SSG, 2009, 2010) reveal oversight deficiencies, and public policy bodies therefore encourage the formation of bank Risk Committees. Walker (2009) recommends the establishment of Risk Committees that focus on forward-looking risk profiles. Having examined the costs of the financial crisis, the United Nations (2010), EBA (2011) and G30 (2012) advocate the establishment of Risk Committees.

Independently minded and experienced directors have the potential to make an important contribution to risk oversight and openly challenge management. Risk Committees of covered BHCs are to be chaired by an independent director (Federal Register, 2014a). Regulators have now codified the requirements for board-level Risk Committees, and Basel (2015a) emphasizes the composition requirements of Risk Committees, including director independence and experience levels.

The Dodd-Frank Act and the subsequently published 12 CFR Part 252, as noted in the Federal Register in 2014, requires covered US BHCs to establish standalone, board-level Risk Committees (Federal Register, 2014b). Furthermore, every Risk Committee must include one director who has risk management expertise commensurate with the BHC's risk profile, scale and size (Federal Register, 2014b).

In carrying out their oversight duties and under the delegated authority of the full board, board-level Risk Committees are participants in the risk/return trade-off debate already identified (Chen and Lin, 2016). Risk Committees have occasionally ignored risk warnings from executives (Yale, Grove and Clouse, 2012). For example, the IIF (2008) makes the point that Lehman Brothers' Risk Committee only met twice in 2006 and 2007, while Bear Stearns only formed a Risk Committee immediately prior to its failure.

A key role of the board is the establishment of a sound risk culture and control framework. Board-level Risk Committees should consider the firm's Risk Appetite and meet frequently with the firm's CRO on risk matters. Walker (2009) calls for non-executive board directors to actively challenge the plans and strategies promoted by management, and have access to ongoing training to carry out their oversight roles.

The practitioner literature contributes materially to knowledge on the adoption of board-level Risk Committees. Deloitte's (2013c) risk governance survey reveals that in 2013, 53 per cent of large firms and 24 per cent of small firms had a single Risk Committee to carry out risk oversight, while in 54 per cent of the firms surveyed, a financial expert chaired the Risk Committee.

The workloads and levels of complexity for board-level Risk Committee members are growing. The Federal Reserve (2013b) recommends that bank boards or their Risk Committees review, approve and monitor key risk policies and ensure that such risks are properly managed. Each BHC board articulates and maintains the institutional Risk Appetite, set oversight for independent risk management, and ensure that senior management has the expertise to manage the bank's core business.

These regulations have a major impact on the corporate governance processes of US BHCs. The rules increase directors' responsibilities and potential liabilities (Deloitte, 2016a); however, federal bank regulators recognise a distinction between the oversight responsibilities of the board and day-to-day management of BHCs (The Conference Board, 2014).

As mentioned earlier, the role of a Risk Committee is both broad and increasingly detailed. Holmquist (2014) scopes the practical considerations of bank Risk Committees. His proposed Risk Committee agenda includes risk assessment changes versus established tolerance levels, proposals for new products and services, analysis of new initiatives, including strategic acquisitions and technology-driven conversions, stress testing updates, and business continuity planning.

The regulations for BHCs that are systemically important financial institutions (SIFIs) indicate that Risk Committees must issue a formal written charter approved by the full board, approve the overall enterprise-wide risk management framework and Risk Appetite, document the firm's risk governance policies and infrastructure, monitor policy and limit compliance, and integrate risk management goals into its compensation structure (Macey and O'Hara, 2016).

Pressure on board directors of banks to expand and heighten their monitoring role since the crisis has been significant, including standalone Risk Committees, Risk Appetite, oversight of capital adequacy, liquidity planning, and Basel III implementation (Federal Register, 2014b). Boards must establish and adhere to ongoing training programmes for all bank directors to ensure that they have appropriate knowledge and experience to appreciate the firm's risk profile, and conduct an annual self-assessment that includes an evaluation of its effectiveness (OCC, 2014).

Board directors and their Risk Committee members are accountable for providing risk oversight. Moody's (2008a) suggests several ways of improving board's practices, including involvement in setting and monitoring Risk Appetite, ensuring appropriate bank director skills with backgrounds in risk management, director training, and setting the tone from the top, with a CEO who attaches a high priority to risk management.

In such a period of heightened regulatory demands, the expertise and knowledge levels of bank directors are a relevant consideration. Deloitte (2016a) notes that there is a limited talent pool of qualified directors with financial background and experience. Its survey of BHCs reveals that only 39 per cent of Risk Committee charters specifically require the presence of a risk expert on the Risk Committee. Lam's (2014) survey of US banks finds that 71 per cent of those with assets between $100 billion and $1 trillion have a board-level Risk Committee. At the other extreme, 55 per cent of regional banks with $10 billion to $50 billion of assets have established a board Risk Committee. Signs of increasing risk governance activities are observed in greater disclosures by BHCs. Publicly-available Risk Committee charters enshrine the responsibilities and authority of board-level Risk Committees. For a sample Risk Committee charter, see Appendix 7.

The academic literature has begun to conceptually examine bank Risk Committees. Mongiardino and Plath's (2010) survey of a panel of global banks reveals that dedicated Risk Committees are uncommon, while heavily-burdened audit committees fail to keep up with risk-related responsibilities. Battaglia and Gallo (2016) suggest that the Basel corporate governance rules place boards of directors at the epicenter of many governance reforms.

In other conceptual research, Bugalla et al. (2012) present a model of governance that focuses on risk oversight by the board or its board-level Risk Committee. They argue that a standalone Risk Committee, distinct from the audit committee, may ensure the common application of risk management practices, a position also supported by Hopt (2013a). Yeh, Chung and Lui's (2011) cross-country empirical study of the audit committees and Risk Committees of 20 financial institutions suggests that, during crisis periods, independent directors serving on both types of committee may have a positive influence on performance. Audit committees play an important monitoring role.

Murphy (2011) also proposes that Risk Committees should be clearly separate from audit committees, as the former include both prospective and retrospective dimensions. However, some argue that audit committees focus backwards on historical accounting policy rather than looking forward at risk oversight (United Nations, 2010; McCormick, 2014).

Board-level committees provide independent oversight of management's activities by devoting specific attention to key areas of focus (Harrison, 1987). Risk oversight failures are in part the result of an information gap (Pirson and Turnbull, 2011). Therefore, Risk Committee members require access to relevant and accurate information on their institutions' risk exposures, potential exposures and market information (Packin, 2013).

The role of Risk Committees is increasingly demanding. Risk Committee members must determine not only their firms' Risk Appetite, but also risk management framework, including the risk governance structure and roles, risk competencies, and impact upon strategic initiatives. Bolton (2009) reports a dramatic growth in the leverage of US financial institutions in the run-up to the financial crisis, with average leverage levels growing to 18 and 24 times. Given its relationship with risk-taking, Risk Committees must consider leverage carefully, including during periods of changing credit cycles (Saunders, Strock and Travlos, 1990; Admati, 2014).

Oversight of firm-wide enterprise risks at banks has recently evolved into one of the board's more important fiduciary duties (Chapman and Cutler, 2016). There are well-reasoned arguments that the complexity of bank risk oversight requires high-calibre, expert directors who can be held accountable for a higher duty of care (Macey and O'Hara, 2016; Pozen, 2010). This duty can be viewed from an agency perspective, as board monitoring ensures that directors establish organisational roles to identify, evaluate, report and manage risk (Beasley et al., 2009), or through an institutional lens, as risk oversight is adopted for the appearance of regulatory compliance or good governance.

Directors and Risk Committee members increasingly interface with the regulator in detailed risk related issues. The Federal Reserve evaluates BHC directors on their ability to identify, measure and control risk (Macey and O'Hara, 2016). Risk Committee chairmen ideally should exhibit a mastery of the subject matter of their committees in order to foster debate, shape committee decision-making (Carrott, 2013) and provide feedback on the CRO. Fox, Bugalla and Narvaez (2011) report that Risk Committees are becoming a feature of best practice.

The empirical findings on board-level committees are mixed. These committees incur monitoring costs, so the gains should outweigh these costs. Empirical evidence on the impact of board committees in general shows neither positive nor negative impacts, notwithstanding the fact that they are specialised and ought to contribute to enhanced performance (El-Faitouri, 2014). Board committees may also impose excessive monitoring regimes, having a dampening impact on performance (Vafeas, 1999; El-Faitouri, 2014). The contribution of independent directors appears to be important for risk oversight (de Haan and Vlahu, 2015). However, Prager (2013) argues that BHC boards are for the most part irrelevant, as any forum that meets irregularly in a global financial institutional setting can provide little more than broad strategic advice.

A Risk Committee composed of heterogeneous individuals may help counter-balance undesirable behavioural effects relating to oversight and risk-taking, including cognitive biases (Packin, 2013). A key premise associated with the adoption of risk governance arrangements is that improved familiarity with risk profiles and effective risk oversight will lead to fewer risk surprises and scandals, as well as improved performance (Sheedy and Griffin, 2016).

An alternative view of board-level Risk Committees is that their adoption does not actually drive firm performance or risk-taking improvements. For example, Yale, Grove and Clouse (2012) chronicle many apparent risk management failures at Countrywide Financial Corporation, notwithstanding the existence of a Risk Committee. An independent and influential risk oversight function, with the active endorsement of regulators, may even be fundamentally flawed, promoting a misplaced sense of security (Lim et al., 2016).

Risk Committee charters delineate the roles, responsibilities and scope of the Risk Committees, and address the objectives, size, leadership and qualifications of members (Chapman and Cutler, 2016). One study reports that 86 per cent of the board-level Risk Committees of large US banks have developed Risk Committee charters, but only 36 per cent require the Risk Committee to oversee systems designed to protect the independence of the risk management function (Deloitte, 2016a).

The existence of Risk Committees, along with Risk Committee experience, levels of board member independence and other monitoring features, have been used to construct risk management indices to capture risk governance in the banking and insurance sectors (Lingel and Sheedy, 2012; Ellul and Yerramilli, 2013; Magee, Schilling and Sheedy, 2014). However, the few existing empirical studies that exist on bank Risk Committees do not present compelling evidence of a link with performance. Perhaps Risk Committees are formed to satisfy industry led efforts to embrace better governance?

Hines and Peters (2015) posit that voluntary measures to establish Risk Committees may be a symbolic corporate governance practice, consistent with institutional theory and the perceptions of responsible risk management. They report that firms that operate internationally report greater leverage levels and lower financial reporting quality tend to set up Risk Committees voluntarily.

In their examination of a panel of US banks up to the crisis period, Hines and Peters (2015) find no evidence that firms that voluntarily formed Risk Committees reported positive operational performance or risk outcomes. They conclude that the Risk Committee requirements of the Dodd-Frank Act may not necessarily increase the effectiveness of risk governance. Hines et al. (2015) also examine US banks and identify an association between the presence of Risk Committees and higher audit fees, suggesting that organisations requiring closer monitoring also engage in more auditing activities, which may be one vehicle that promotes better reporting oversight.

Iselin (2016) also probes Risk Committees and tests the relationship with bank capital measures as an outcome variable for covered BHCs. This is the inverse of Hines and Peters' (2015) sample, which focuses only on voluntary adopters. Empirically, Iselin (2016) examines BHC Risk Committees with respect to BHC Tier 1 ratios, both before and during the credit crisis. He finds that the existence of a Risk Committee is likely to increase capital ratios during times of crisis when systemic risks are high, while reducing Tier 1 capital levels under stable economic market conditions. The impact is significant, with a 0.9 per cent reduction in Tier 1 capital before the crisis, and a 1.16 per cent increase in capital levels during crisis conditions.

Given the frequency with which Risk Committees meet and the requirement to provide monitoring on a real-time basis, board-level Risk Committees may not provide a reliable risk-monitoring role under fast-moving market conditions, underscoring a potential shortfall of this risk governance structure (Prager, 2013).

Gao, Liao and Wang (2013) consider the enhanced mechanisms introduced by Dodd-Frank and measure the market's reaction in terms of stock returns and credit spreads as bank outcome variables. They observe mixed and limited market reactions, especially over the more advanced stages of the legislation.

Tao and Hutchinson's (2013) study of the boards of directors, Risk Committees and compensation committees of Australian firms observes a positive relationship between risk-taking and performance outcomes to Risk Committee composition. Forming Risk Committees also generate indirect benefits. Yale, Grove and Clouse (2012) argue that when the regulatory environment is dominant and risks are complex, creating a Risk Committee may make the risk profile more intelligible to the full board. Adams and Jiang's (2016) study of the UK insurance industry finds that executive financial expertise levels are significantly positively related to financial outcomes. This is consistent with the position noted in Minton, Taillard and Williamson (2014), that greater financial expertise should be consistent with lower costs of acquiring and processing complex banking information for directors in the boardroom (Minton, Taillard and Williamson, 2014, p. 352)

Board-level Risk Committees thus should have measurable effect on BHC performance and credit risk profiles over time - this is the baseline hypothesis. An alternative hypothesis is that it may be too soon for board-level Risk Committees to have had a measureable effect on legacy portfolios and return profiles. BHCs may still be scrambling to implement the full scope of the risk governance requirements in order to satisfy regulatory requirements, and thus Risk Committees may remain largely symbolic fixtures.

Thus, the hypotheses on Risk Committee existence are:

> *Hypothesis H2a: The existence of the Risk Committee is positively related to BHC performance.*
>
> *Hypothesis H2b: The existence of the Risk Committee is negatively related to BHC risk.*

The key literature on bank Risk Committees is presented in Table 3, and a conceptual map with a statement of the hypotheses is presented in Figure 4.

2.4 Exposing the Research Gap

The above literature review and hypothesis development section argue that the empirical landscape on BHC risk governance is somewhat limited, and reveals that there appears to have been virtually no empirical research on board-level Risk Appetite arrangements and BHC outcomes disseminated in the literature domains.

This observation is surprising given the importance of directors to provide effective internal monitoring given recent supervisory-led governance requirements, to say nothing of the potential systemic risk associated with commercial banks. As one team of researchers observe: “It is our contention that the Fed’s BHC regulations, the principles of corporate governance developed here, and the basic concerns about systemic risk and bank safety all indicate that BHC officers and directors have fiduciary obligations that guide, and when necessary trump, corporate form” (Macey and O’Hara, 2016, p. 92).

The field map presented in Figure 5 illustrates standard corporate governance and risk governance mechanisms, noting relevant conceptual and empirical research. This field map highlights the unambiguous research gap associated with Risk Appetite arrangements. Given the strong references in the practitioner literature and regulatory landscape already noted throughout this paper, there is a cogent and timely need to engage in and disseminate evidence-based research to address this gap.

Table 3. Significant literature on Risk Committees

No.	Name	Type of Literature	Notes
1.	Mongiardino & Plath (2010)	Conceptual	Identifies the need for a dedicated board-level Risk Committee with a majority of independent members; Risk Committees meet infrequently during a crisis.
2.	Murphy (2011)	Conceptual	Raises the issue of CRO reporting to the Risk Committee and the independence of the CRO role; identifies the CRO's role in overall enterprise risk management.
3.	Yeh, Chung and Lui (2011)	Empirical	Employs OLS regressions to evaluate global financial institutions (n=20) in an international panel from eight countries; presents evidence that banks with more independent directors involved in risk oversight performed better during the crisis.
4.	Fox, Bugalla and Narvaez (2011)	Conceptual	Identifies statutory requirement for a Risk Committee in a paradigm shift; argues that Risk Committees serve a strategic function (versus the control function of audit committees) and are becoming best practice for good governance.
5.	Wymeersch (2012)	Conceptual	Identifies CRD IV requirement for Risk Committee made up of independent members to oversee risk-taking, in close consultation with the CEO and CRO.
6.	Lingel and Sheedy (2012)	Empirical	Investigates risk governance across 60 global financial institutions with a governance index based on CRO and Risk Committee features; panel regression finds a negative relationship with risk, although no association with stock or accounting returns.
7.	Bugalla et al. (2012)	Conceptual	Emphasises the need for a board-level Risk Committee with independent members and adequate expertise levels; adds that one member of the committee should take responsibility for internal risk intelligence and information gathering.
8.	Bugalla, Kallman and Narvaez (2013)	Conceptual	Identifies Risk Committee requirement and reinforces aspects of Risk Committee and CRO performance that cannot be legislated for, namely failure of leadership at the board level and unqualified directors.
9.	Hopt (2013)	Conceptual	Advocates the establishment of a Risk Committee of the board and an independent CRO to enhance governance and mitigate complex and opaque risk profiles.
10.	Elull and Yerramilli (2013)	Empirical	Constructs a risk management index (RMI) to measure the strength of risk management functions at US BHCs during the financial crisis. The RMI is negatively related to Tail Risk and NPLs, and positively related to operating performance and stock performance during the financial crisis years.
11.	IMF (2014)		Studies 800 banks, investment firms, mortgage firms and co-operative lenders across 72 countries; findings include a growth in Risk Committees and CROs; employs panel OLS and lagged variables and finds a weak or no relationship with risk-taking.
12.	Andries and Brown (2014)	Empirical	Examines 156 banks in a multi-country study to assess risk management and corporate governance features; finds that a strong Risk Committee is associated with greater pre-crisis growth but not with lower credit losses during the crisis.
13.	Battaglia and Gallo (2015)	Empirical	Probes risk governance structures for a panel of 36 Chinese and Indian banks; finds that Risk Committee size and return performance variables are positively related, while market valuation and market growth variables are both negatively related.
14.	Hines et al. (2015)	Empirical	Evaluates a large sample of US banks and BHCs, finding that the presence of a Risk Committee is associated with higher audit fees; posits that the voluntary existence of a Risk Committee may result in closer financial monitoring and greater use of auditors.
15.	Hines and Peters (2015)	Empirical	Examines the voluntary existence of Risk Committees over a multi-year period; finds that such firms exhibit no better profitability and risk outcomes, however they are associated with well-known audit firms, more international activity, and larger, more independent boards; concludes that the voluntary existence of Risk Committees may be established simply to present a perception of responsible risk management.
16.	Iselin (2016)	Empirical	Investigates the mandatory adoption of Risk Committees by covered US BHCs; finds that their presence is consistent with increasing capital levels during crisis times and decreasing capital levels in stronger operating environments, effectively allowing banks to operate more efficiently from a capital perspective.

Source: Author's own analysis

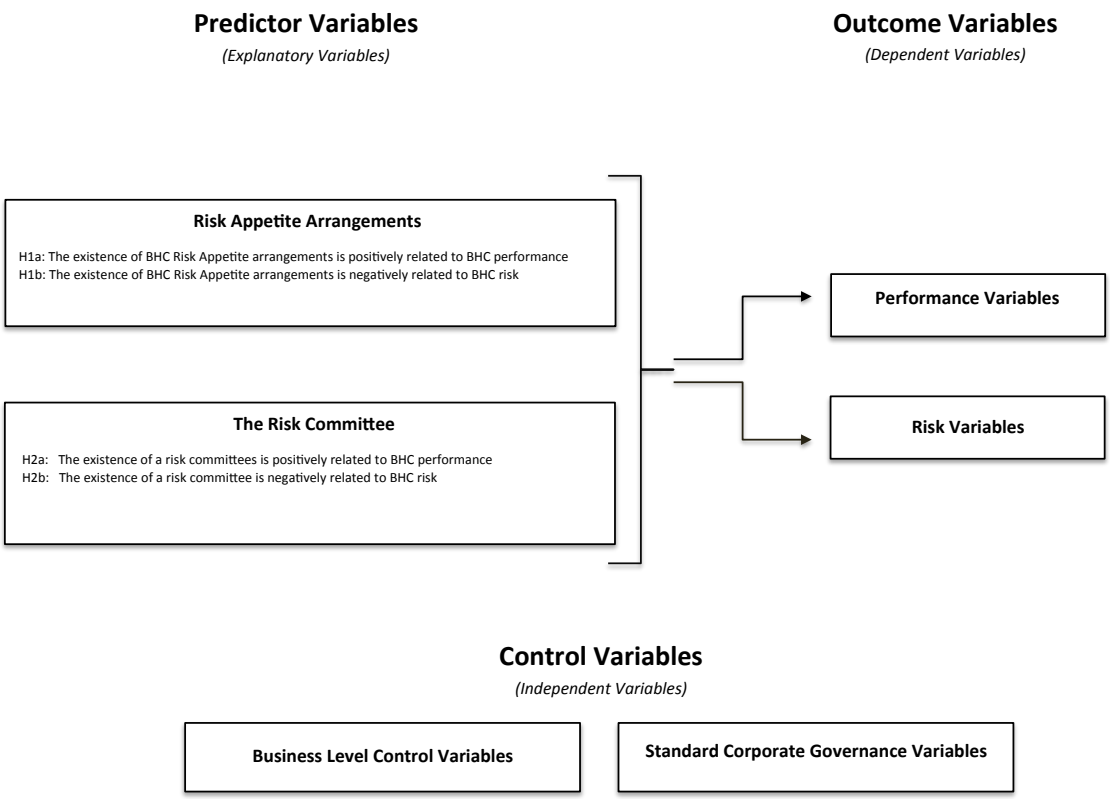

Figure 4: Conceptual map with statement of hypotheses

Source: Author's own construct

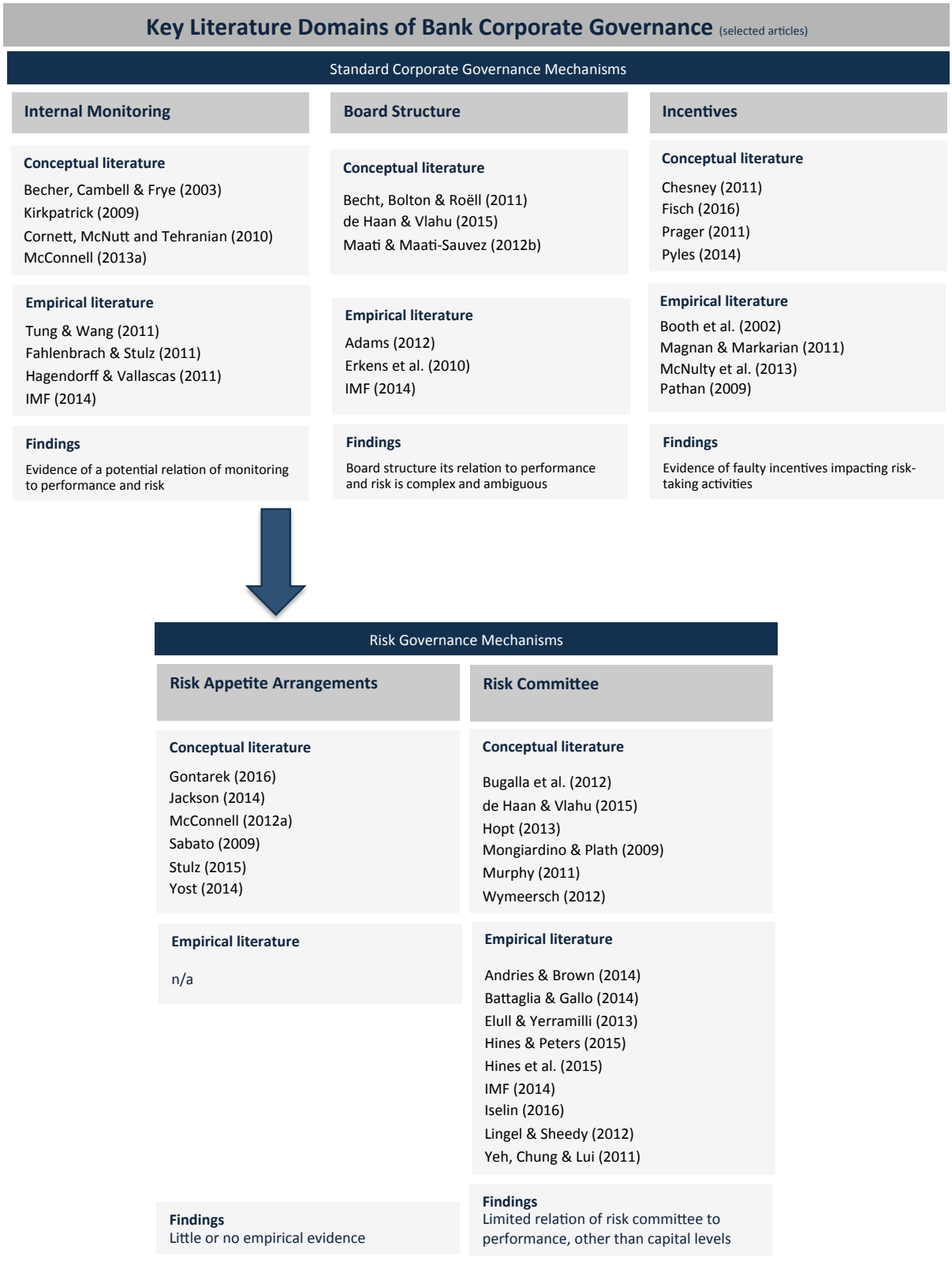

Figure 5: Selected literature domains of corporate governance research

Source: Author's own analysis

2.5 Summary

This chapter has reviewed the literature and presented an over-arching definition of corporate governance, suitable for commercial banks.[12] Several primary corporate governance mechanisms have been examined, including board structure, internal monitoring and incentives. Two major aspects of risk governance with respect to internal monitoring have also been investigated, namely Risk Appetite arrangements and board-level Risk Committees.[13] Following the literature review, a series of risk governance hypotheses has been developed for testing next in this study.

Like the exogenous governance shock observed in large Korean firms in 1999 (Black, Jang and Kim, 2006; Black and Kim, 2012), BHC risk governance practices emanating externally from the regulator provide an exceptional opportunity for empirical examination. The hypotheses in this study relate directly to supervisory authority regulations applicable to BHCs, allowing the appropriateness of the new standards of Risk Appetite and Risk Committee experience to be tested.

The research method and description of the data employed will now be presented.

[12] Recent literature reviews on bank corporate governance include de Haan and Vlahu (2015) and Maati and Maati-Sauvez (2012a).
[13] No literature review for risk governance is yet available, although Gontarek (2016) identifies key research in this area.

3 RESEARCH METHOD AND DATA DESCRIPTION

3.1 Introduction

There is no universally agreed framework for evaluating corporate governance. One approach is to adopt an interpretivist method examining hermeneutical themes. Zattoni, Douglas and Judge (2013) argue that qualitative approaches are a relevant means of conducting governance research. On the other hand, empirical studies are positivist in nature, often evaluating quantitative relationships between governance and performance metrics.

3.2 Research Method

Having considered the philosophical and researcher stance in Chapter 1, this chapter presents the sample construction, data definitions and data collection methods, and discusses relevant ethical and practical issues. This research applies valid techniques to an emerging area of corporate governance research and relies on the collection of secondary data and statistical analysis to identify and test relationships between outcome measures and explanatory variables, while controlling for firm-specific factors and standard corporate governance effects. Multivariate analysis is one technique employed in this context.

In chapter 4, the dependent (or outcome) variable is firm performance (see Equation 1) whereas in chapter 5 the dependent variable focuses on firm risk outcomes (see Equation 2). Specifically, the following two equations are estimated:

Equation 1:

$$Performance_{i,t} = a + \beta_1 Risk\ \ Appetite_{(i,t)} + \beta_2 RC\ Exists_{(i,t)} +$$
$$\beta_3 CRO\ Age_{(i\,t)} + \beta_4 BHC\ Assets_{(i,t)} + \beta_5 BOD\ Mtg\ Num_{(i,t)} + \beta_6 BOD\ Mtg\ Attend_{(i,t)} +$$
$$\beta_7 BOD\ non-insider_{(i,t)} + \beta_8 Board\ Size_{(i,t)} + \beta_9 TLTA_{(i,t)} + \beta_{10} Depo/Assets_{(i,t)} +$$
$$\beta_{11} CEO\ Market\ Valuation\ of\ Shares_{(i,t)} + Yearly\ Dummies + Error\ Term$$

Where $\text{Performance}_{i,t} \in \{\text{ROA, NIM, Efficiency Ratio, HPRs}\}$ for firm *i* at time *t*.

Equation 2:[14]

$$Risk_{i,t} = a + \beta_1 Risk\ \ Appetite_{(i,t)} + \beta_2 RC\ Exists_{(i,t)} +$$
$$\beta_3 CRO\ Age_{(i\,t)} + \beta_4 BHC\ Assets_{(i,t)} + \beta_5 BOD\ Mtg\ Num_{(i,t)} + \beta_6 BOD\ Mtg\ Attend_{(i,t)} +$$
$$\beta_7 BOD\ non-insider_{(i,t)} + \beta_8 Board\ Size_{(i,t)} + \beta_9 TLTA_{(i,t)} + \beta_{10} Depo/Assets_{(i,t)} +$$
$$\beta_{11} CEO\ Market\ Valuation\ of\ Shares_{(i,t)} + B_{12} International\ Activities_{(i,t)} +$$
$$Yearly\ Dummies + Error\ Term$$

Where $\text{Risk}_{i,t} \in \{\text{NPL, Actual Loan lossess, Tier 1 capital, Tail Risk }\}$ for firm *i* at time *t*.

[14] The extent of international activities is added to the model set-up to control for any existent relationship with the dependent variables (i.e., risk-taking), following Berger et al. (2015).

Since the data are a combination of both time-series and cross-sectional data, panel data analysis is employed as an efficient empirical tool (de Andres and Vallelado, 2008). Time dummies are used to control for yearly effects. Potential estimation approaches include random effects (RE) and fixed effects (FE).

Following Roberts and Whited (2012), a Hausman test was performed to decide between RE and FE to test the null hypothesis that unique errors are correlated with the regressors. The outcome of the test was significant; thus, FE are employed in this analysis. One of the key advantages of fixed effects analyses is the potential of controlling for unobserved heterogeneity amongst the BHCs.[15] BHC fixed effects are employed as in other US BHC and risk governance studies, including Ellul and Yerramilli (2013), Duchin and Sosyura (2014) and Bhagat and Bolton (2014).

3.3 Sample Construction

US BHCs are a credible choice for sample construction. The chosen sample consisted of 140 large US BHCs, for the period 2012 to 2015.[16] US BHCs are publicly listed firms and provide high levels of disclosure, so the sample in this study was delimited to these firms. The largest BHCs are subject to the suite of risk governance changes, while some others implement these arrangements notwithstanding the lack of formal requirement. The sample was delimited from non-bank financial institutions, which may be subject to different regulatory or business dynamics. US BHCs are commonly used in governance studies (Adams and Mehran, 2003; Elyasiani and Zhang, 2015; Merle, 2013).

This study covers most of the assets of the US banking system from 2012 to 2015. The 100 largest US BHCs control over $10 trillion (Federal Reserve System Board of Governors, 2016) of the total $15 trillion of US banking assets (Avraham, Selvaggi and Vickery, 2012). Appendix 1 provides a full list of US BHCs. BHCs became allowable under the Bank Holding Company Act, 1956. The Federal Reserve's website of the largest BHCs was used to identify the sample BHCs, and BoardEx was used to remove intermediate holding companies (IHCs), which are reported as "private". IHCs are de-limited from the sample because they are subsidiaries of foreign firms. The advantage of limiting the sample to one country is that no controls are needed for country effects, such as legal protections for minority investors and the level of economic development (see Doidge, Karolyi and Stulz, 2004).

The sample comprised 560 firm-year observations for the fiscal years 2012 to 2015. The sample of BHCs is unbalanced, as several BHCs either merged or went public, becoming listed firms during the four-year study period.

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[15] FE is the chosen multivariate technique but pooled OLS offers an alternative examination approach (Zhou, 2001). Section 2.2.5 identified empirical evidence suggesting that banks may have institutional memory or other difficult to observe unique characteristics that may affect their performance or risk-taking, further supporting the use of FE to control for the potential effect of omitted variable bias.

[16] Other studies of US BHCs include Ellul and Yerramilli (2013) with a sample of 72. Minton, Taillard and Williamson (2014) employ an unbalanced sample, where n varies from 119 to 205 over time. In this study, data collection ceased when n=140 due to decreasing quality of data. There was no evidence of differing qualitative results when only the top 100 BHCs, chosen as an arbitrary number, were examined with the suite of baseline regression tests used in this paper.

3.4 The Data

A broad array of outcome variables contributes to the validity of this research. Studies of bank corporate governance and risk sometimes employ a single, one-dimensional outcome indicator, as noted by Klomp and de Haan (2012). This research employs a broader suite of variables, extending the potential range of findings. The variables employed in this study are now identified.

3.4.1 Outcome variables: Performance

Bank performance provides a yardstick for relative value judgments of commercial banks and their success. Performance and risk are examined through a suite of headline outcome measures and a list of further analysis performance variables, later in Chapter 6. The primary analysis includes an initial suite of four variables to examine BHC performance.

Return on assets (ROA) is a headline performance variable. It is often used as an accounting-based BHC outcome variable (see Giroud and Mueller, 2010; Xu, Grove and Schaberl, 2013; Aebi, Sabato and Schmid, 2012; Battalgia and Gallo, 2015; Lingel and Sheedy, 2012). ROA is a more widely accepted performance measure in practice than ROE, as it adjusts for the leverage effects found in this sector (ECB, 2010a; Beccalli and Poli, 2015). ROA is defined as the cumulative annual net income for each year divided by that year's total assets. ROA is collected from Bloomberg.

The next performance variable, net income margin (NIM), observes the difference between the earned spread on assets and liabilities, a sign of disciplined asset and liability pricing. NIM is defined as the difference between the blended cost of funding and the average blended interest income earned on the credit portfolio, and is a common means of isolating the fundamental level of performance in any lending operation. Effective asset and liability pricing, a fundamental aspect of banking, are increasingly important given the low interest rate environment faced by banks during the study period (Deloitte, 2015b).

NIM performance is an important indicator for the board to monitor. Krawcheck (2012) explains as a practitioner, that NIM is one of the least understood parts of banking and yet may have a disproportionate impact on the bottom line, at times masking underlying strengths or weaknesses of the business. She also argues that boards should closely examine changes in every aspect underpinning NIM, such as net interest income (NII) and funding expenses to isolate their impact upon profits, a practice used later in his study.[17] Use of NIM follows studies by Cornett, McNutt and Tehranian (2010), Minton, Taillard and Williamson (2014), Dietrich and Wanzenried (2011) and Gulamhussen and Santa (2015). NIM values are collected from Bloomberg.

[17] Thanks to Dr Stijn Claessens who suggested further examination of the factors that drive NIM in this research.

If a BHC's growth opportunities remain subdued, a bank's efficiency can present opportunities for self-improvement and focus (Lei and Gelly, 2016). An example of this phenomenon includes the recent positive credit outlook awarded to Zion's Bancorporation. Moody's (2017) reports that this BHC (which is covered in this sample) achieved a target Efficiency Ratio goal below 66% that should improve to the lower 60 per cent range over time.

The Efficiency Ratio is a headline BHC performance variable. It is defined as non-interest expense divided by the sum of net interest income plus non-interest income, thus lower ratio values denote an improvement in performance (Akhighbe and Stevenson, 2010). These authors fail to detect an increase in BHC profit efficiencies in their study within relaxed regulatory conditions observed after the passage of the Gramm-Leach-Bliley Act. Jacewtiz and Kupiec (2012), who explain that the Efficiency Ratio measures a bank's ability to generate revenues from its non-funding related expense base, find that cost structures can vary across different lending specializations, generating economies of scale. This suggests that narrower Risk Appetite with less broad business models (and related infrastructure) may have lower (i.e., more efficient) cost structures. Hays, De Lurgio and Gilbert (2009) study smaller US banks and find that attention must be paid to this ratio as the industry recovers from the financial crisis. The Efficiency Ratio is collected from Bloomberg.

This study also includes a market-driven performance variable. Holding period returns (HPRs), also called annual stock returns (Magee, Schilling and Sheedy, 2014), reflect the market's perception of the BHC and its prospects, as proxied by its common share performance. This study follows Core, Guay and Rusticus (2006), Aebi, Sabato and Schmid (2012), Fahlenbrach and Stulz (2011), Beltratti and Stulz (2012) and Ellul and Yerramilli (2013) in using HPRs for the annual periods from 2012 to 2015, and assumes that dividends are re-invested in shares. This data is collected from Bloomberg. The primary performance outcome variables are shown in Table 4.

Other variables are employed in Chapter 6 and are listed in Appendix 2. These include a suite of measures linked to underlying operating performance, such as BHC Operating Income, Other Operating Income, Net Interest Income/Average Assets (NII), and (as noted earlier) NIM related underlying variables such as Total Interest Income (TII) and Total Interest Expense (TIE).

Table 4. Primary outcome variables: Performance

No.	Name	Type of Variable	Notes
1.	ROA	Performance	BHC annual ROA, collected from Bloomberg and Bankscope.
2.	NIM	Performance	BHC annual NIM is collected from Bloomberg; provides an indicator of performance originating from asset/liability pricing discipline.
3.	Efficiency Ratio	Performance	BHCs' efficiency ratio is defined as non-interest expense divided by revenues, and is collected from Bloomberg.
4.	HPRs	Performance	BHCs' annual HPRs, collected from Bloomberg and CRSP (assumes dividends re-invested in securities).

Source: Author's own analysis

3.4.2 Outcome variables: Risk

Risk-taking is commonly used as a yardstick in bank corporate governance studies. Although risk (such as credit, market, operational, liquidity, cyber threats) must be prudently adjudicated and managed, this study focuses on credit risk as a key risk faced by US BHCs (OCC, 1988), and other risks are largely delimited within this study.[18] Credit risk is a primary risk facing BHCs (OCC, 1988). Risk management in this context is the practice of reviewing, assessing and categorising various types of risk faced by the firm (Raghavan, 2003).

Banks require reliable risk measurement approaches in order to identify and capitalise on business opportunities (Pyle, 1997), and risk management includes activities to avoid, transfer or actively manage risks (Oldfield and Santomero, 1997). Risk-taking is core to the business model of banking (Becht, Bolton and Roëll, 2011). Although macroeconomic factors played a major role in the crisis, risk management also had a significant impact on performance (United Nations, 2010; Erkens, Hung and Matos, 2012). Effective board monitoring is required to oversee risk-taking in banks.

Practitioners and academics have debated various means of measuring the riskiness of banks (Laeven and Levine, 2009; EBA, 2011; Berger et al., 2015). Bank failure may have consequences for a broad range of constituents (Alexander, 2006; Becht, Bolton and Roëll, 2011; Sarra, 2012; Nguyen, 2013). Several of the variables selected in this study are similar to those found in the US Federal Deposit Insurance Corporation's measures of capital adequacy, assets, management capability, earnings, liquidity and sensitivity, otherwise known as CAMELS ratings (Kerstien and Kozberg, 2013). The risk variables employed in this study focus on asset quality, capital and equity risk to proxy overall BHC risk profiles.

The headline risk outcome variables are Non-Performing Loans/Total Loans (NPLs), Actual Net Loan Losses, the Tier 1 capital ratio and Tail Risk. Accounting-led measures of risk are used in this study, reflecting further on the distinction made earlier between good and bad risks (Stulz, 2015). The ECB (2010a), Kato and Hagendorff (2010), Grove et al. (2011) and Stefanelli and Cotugno (2011) each identify traditional measures of asset quality, and include non-performing loans as a measure. NPLs are the first headline risk variable collected and used in this study, following John, Mehran and Qian (2010), Klomp and de Haan (2012) and Chen and Lin (2016). NPLs can be recovered over time from collateral or other means before being charged off as an actual loan loss.

Risks that have negative expected outcomes identified by Stulz (2015) can be measured for example by actual net losses that are realised, impacting capital after all efforts of recovery are exhausted.

[18] See Wang and Hsu (2013) for a review of board-related issues relating to operational risk events in financial institutions, Claessens (2013) regarding the liquidity and capital risks of financial institutions, and Ellul and Yerramilli (2013) for trading risks and hedging activities.

Thus, Actual Loan Losses (charge-offs) are also collected from Bloomberg for each BHC as a further credit risk variable, following Hines and Peters (2015). The US OCC Director's Handbook defines loan losses as an indicator of bank quality, with greater net loan losses potentially reflecting severe deterioration in the credit portfolio, worsening management ability to detect or collect from NPLs in earlier stages, and the need for greater reserves (OCC, 2010, p. 44).

Capital is important for banks, as a risk buffer to absorb unexpected losses that would otherwise cause them to fail (Beccalli and Poli, 2015; Demeriguc-Kunt, Detragiache and Merrouche, 2010; Beltratti and Stulz, 2012). In other BHC studies of corporate governance, capital levels have been evaluated as an outcome variable. There is empirical evidence that suggests capital helps banks during crisis times (Berger and Bouwman, 2013). Data on Tier 1 capital ratios, the most common measure of bank capital, are collected from Bloomberg, following Minton, Taillard and Williamson (2014), Beltratti and Stulz (2012), Fahlenbrach and Stulz (2011) and Battaglia and Gallo (2015). Tier 1 is commonly used in both academic (Merle, 2013; Iselin, 2016) and practitioner publications (ECB, 2010a).

Criticisms of Tier 1 include the potential for banks to engineer capital ratios (McKinsey, 2010) or undertake other forms of regulatory capital arbitrage (Boyson, Fahlenbrach and Stulz, 2014).[19] The EBA (2011) highlights the trend toward recognising the primacy of tangible equity (e.g. capital adjusted for preferred issuance, intangibles, goodwill and deferred tax assets) as a superior bank risk absorption measure. As such, the tangible common equity to risk-weighted assets (TCE/RWA) ratio is used where noted for robustness. McKinsey (2010b) describes TCE/RWA as the capital ratio that out-performs all others in predicting future distress. TCE/RWA is collected from Bloomberg and is used as an alternative measure of capital strength.[20]

Tail Risk is another headline risk outcome measure used in this study.[21] Tail Risk reflects extreme equity risk and seeks to capture the shortfall risk associated with excessive risk-taking. It is particularly relevant for bank shareholders, as witnessed by certain European banks earlier in 2016. Lingel and Sheedy (2012), Ellul and Yerramilli (2013) and Magee, Schilling and Sheedy (2014) employ this variable. This study follows seminal research and defines it as the negative of the average return on the firm's stock over the five per cent worst days in a given year, which is collected with data from Bloomberg (Ellul and Yerramilli, 2013, p.1765).

In summary, the headline outcome risk variables used in this study are NPLs, Actual Net Loan Losses, Tier 1 capital and Tail Risk. The panel of primary risk outcome variables is shown in Table 5 below and detailed in Appendix 2.

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[19] See Ferri and Pesic (2016) for a description of banks' probable manipulation of their regulatory capital requirements.
[20] This study, like all others identified in the literature review, typically uses actual or realised Tier 1 capital ratios for each bank. Banks commonly choose a cushion above the minimum required Tier 1 capital amount in their actual operations. See Guidara et al. (2013) for a description of how this cushion changes for different economic cycles.
[21] Credit risk is the primary focus of the risk measures for this study. Tail Risk is nonetheless included as a risk outcome measure as it is widely followed in risk governance literature (see Ellul and Yerramilli, 2013) and measures extreme volatility or so-called expected shortfall.

Table 5. Primary outcome variables: Risk

No.	Name	Type of Variable	Notes
1.	NPLs	Risk Variable	BHC annual non-performing loans/total loans collected from Bloomberg.
2.	Actual Net Loan Losses	Risk Variable	Actual realised net loan losses after provisions, collected from Bloomberg.
3.	Tier 1	Risk Variable	BHC core capital divided by risk-weighted assets, the most commonly followed form of bank capital, collected from Bloomberg.
4.	Tail Risk	Risk Variable	Tail Risk is defined as the negative of the average return on the firm's stock over the five per cent worst days in a given year, following Ellul and Yerramilli (2013). These authors explain that poorly designed incentives can encourage traders to take on excessive risks that reward shareholders in the short term to only damage the firm over time. It would then follow that BHCs with more robust risk management functions exhibit lower Tail Risk on average. Daily equity returns collected from Bloomberg.

Source: Author's own analysis

Predictor variables

A common challenge relating to the measurement of corporate governance concepts is developing a reliable proxy for the unseen human element of a firm's decision-making processes (Beekes, Hong and Owen, 2010). Risk governance mechanisms are measured in this study with two independent variables: Risk Appetite and the existence of the Risk Committee. Risk Appetite arrangements are a key headline variable relating to this emerging board-level oversight practice. Risk Committee existence is used to measure the compliance to the regulatory requirement for a BHC Risk Committee.

Employment of the board-level Risk Appetite variable extends existing empirical research on bank corporate governance. Data on the articulation of Risk Appetite by the board are hand-collected from the annual reports of each BHC.[22] For each BHC, the existence of a board-approved Risk Appetite arrangements was coded as 1 (exists) or 0 (does not exist) for each year in the study.

The existence of a Risk Committee is another explanatory variable used in this study, following Ellul and Yerramilli (2013), Minton, Taillard and Williamson (2014) and Magee, Schilling and Sheedy (2014). Aebi, Sabato and Schmid (2012) argue that Risk Committees may indicate stronger risk management monitoring, and hence improved corporate governance oversight. In the Further Analysis section, Risk Committee expertise is also identified and probed, and is thus presented below.

The key predictor variables are presented in Table 6.

[22] In an alternative data collection technique, the articulation of board-level Risk Appetite arrangements in BHC board Risk Committee charter statements is also measured and examined, when noted later in this paper in Chapter 6.

Table 6. Key predictor variables

No.	Name	Variable	Notes
1.	Risk Appetite	Independent	Existence of Risk Appetite arrangements was hand-collected from BHC 10k annual reports (or otherwise as noted).
2.	Risk Committee existence	Independent	The existence of a Risk Committee at the level of the US BHC board of directors, as reported in BoardEx.
3.	Risk Committee member financial expertise[23]	Independent	Risk Committee member expertise for all members (or the chairman) is probed in the Further Analysis chapter and follows definitions used by Minton, Taillard and Williamson (2014) and was determined using BoardEx data.

Source: Author's own analysis

3.4.4 Other explanatory variables

Explanatory or control variables include business-level and bank corporate governance variables employed to isolate the effects examined in the dataset. Relevant BHC business-level control variables are described first.

BHC year-end total assets are collected from the US Federal Reserve Board, following Dietrich and Wanzenried (2011), Merle (2010), Aebi, Sabato and Schmid (2012) and Switzer and Wang (2013). It is well recognised that BHC size is associated with growth, scale and business strategies (Iqbal, Strobl and Vähämaa, 2015). For example, BHC asset size is statistically related to the number of BHC subsidiaries (Avraham, Selvaggi and Vickery, 2012), suggesting that oversight of such organisations may be complex and need to be taken into account.

Differences in BHC business models are taken into account with traditional control variables used within earlier literature. Total Loans/Total Assets, following de Andres and Valleldo, 2008; Kupeic and Lee (2012), and Battaglia and Gallo, 2015, is collected from Bloomberg to measure the breadth of credit activities. Deposits/Assets, also collected from Bloomberg, is another business level control variable, as banks with greater deposit financing, as opposed to money-market funding, may be less risky (Aebi, Sabato and Schmid, 2012; Ellul and Yerramilli, 2013).

The potential impact of BHC internationalisation on risk-taking is explicitly considered in all risk related regressions as a control variable. While some research argues that international activities promote diversification of exposure, Berger et al. (2015) finds in favour of the market risk hypothesis, which argues that international activities of US banks increase portfolio risk levels, which can be controlled for in the risk-based models in this study. The percentage of international exposure is collected from Bloomberg.

Internal monitoring variables associated with corporate governance are considered next. Board size and the ratio of non-inside directors to total directors are both factors that may influence BHC board effectiveness (Mehran, Morrison and Shapiro, 2011; Switzer and Wang, 2013).

[23] The same definition is applied to the chairman of the Risk Committee in alternative specifications later in Chapter 6.

Ferrero-Ferrero, Fernandez-Izquierdo and Munoz-Torres' (2012) examination of board characteristics and risk-taking reveals that larger boards led to poorer corporate performance and lower risk-taking before the crisis, suggesting that director coordination was impaired. Thus, such findings suggest that simply increasing BHC board size was not a guarantee of improved risk governance as a regulatory led initiative. Board size is measured as the number of directors on a bank's board (Aebi, Sabato and Schmid, 2012; Adams and Mehran, 2003). Adams and Mehran (2003) find that, on average, BHCs have larger boards than non-financial firms, possibly owing to the need to meet regulatory requirements imposed on bank boards. The proportion of non-inside directors is measured as the percentage of total directors without any employment relationship with the company except for their board seat, following BoardEx (2016).

McNulty, Florackis and Ormrod (2013) posit that high effort norms by directors may lead to lower risk-taking. Standard board-monitoring practices such as the board meeting frequency may impact monitoring efforts generally and exacerbate agency costs (Hahn and Lasfer, 2016). Attending board meetings is one of the basic standards to meet US bank director diligence requirements (Adams and Ferreira, 2012). Board meeting attendance is a further explanatory variable to measure internal monitoring efforts by the board (Aggarwal and Williamson, 2006), and is measured by the number of meetings attended as a percentage of total meetings held per annum. Battaglia and Gallo (2015) measure the number of board meetings in their risk governance study, while Aebi, Sabato and Schmid (2012) measure the degree of non-attendance of board directors and the number of Risk Committee meetings per year. Neither Boardex nor Bloomberg provides Risk Committee meeting frequency data, so board-level variables are used to proxy internal monitoring. These variables are collected from Bloomberg.

Demographic characteristics of executives and directors, such as age, education, busyness levels and firm and board tenure, are common features used to proxy experience and skills as noted earlier.

Berger, Kick and Schaeck (2014) examine demographic features of executives and bank risk-taking, including age, as an effective substitute for workforce experience, which may otherwise be adversely affected by graduate-level education, including time spent on doctoral studies. They find that younger executive management teams significantly increase bank portfolio risk, and that banks' risk profiles decline with more advanced age of senior executives. The age of senior executives' is used as a control variable in banking studies (Grove et al., 2011, Switzer and Wang, 2013, and Cooper and Uzun, 2012. Thus, in this study, CRO age is used in all regressions as a control variable and is collected from BoardEx.

CEOs are particularly well-placed to limit banks' excessive risk-taking (Fortin, Goldberg and Roth, 2010; Gropp and Köhler, 2010; Aebi, Sabato and Schmid, 2012). Unlike diversified investors, CEOs may lose their invested wealth if the BHC fails (Devriese et al., 2004). CEO Shares are determined as the dollar amount of equity ownership of the CEO, as reported by Bloomberg.

Table 7. Explanatory variables

No.	Name	Type of Variable	Notes
1.	BHC Assets	Explanatory	USD value of BHC assets from the US Federal Reserve Bank website for each year-end reporting period.
2.	Total Loans to Total Assets	Explanatory	Ratio of total BHC loans to total BHC assets as a measure of BHC business model; collected from Bloomberg.
3.	Board Size	Explanatory	Number of total BHC board members collected from BoardEx.
4.	BOD meetings Number	Explanatory	Number of board meetings held within that year, a proxy for board monitoring, collected from BoardEx.
5.	BOD Attendance percentage	Explanatory	Average percentage of board members attending each board meeting throughout the year, collected from BoardEx.
6.	Busyness	Explanatory	Total number of boards held by the governance actor as per BoardEx.
7.	CRO Centrality	Explanatory	The ratio of the CRO's total compensation less stock options to CEO total compensation, collected from Bloomberg and Morningstar. Follows Ellul & Yerramilli (2013) and Keys et al. (2009) as a proxy for power.
8.	CEO Education	Explanatory	The CEO holds a graduate business school, graduate legal or banking degree, hand-collected from Bloomberg.
9.	CEO Duality	Explanatory	The CEO and Chairman are the same person at reporting date, as reported in BoardEx.
10.	CEO Shares	Explanatory	USD amount of share ownership by the CEO, as reported by Bloomberg.
11.	CEO Board of Director Years	Explanatory	Number of years that the CEO has served on the BHC board of directors, hand-collected from BoardEx.
12.	CEO Bank Years	Explanatory	Number of years that the CEO has served with the BHC, hand-collected from BoardEx.
13.	Deposits/Assets	Explanatory	Measured as the dollar amount of deposits divided by the dollar amount of BHC assets, as reported by Bloomberg. Follows usage as a BHC level control variable in Aebi, Sabato and Schmid (2012) and Minton, Taillard and Williamson (2014).
14.	Educational Background	Explanatory	Advanced business, graduate, banking education or holds a CPA or legal designation.
15.	Executive Age	Explanatory	Age as published by BoardEx or Bloomberg for the CEO or CRO.
16.	Institutional Shareholding	Explanatory	Percentage of shareholding by institutional investors collected from Bloomberg and used in risk-related estimations.
17.	International Activities	Explanatory	Percentage of non-domestic revenue for each BHC collected from Bloomberg and used in risk-related outcome estimations.
18.	Non-inside Directors percentage	Explanatory	Percentage of supervisory directors, as published by BoardEX, denoting directors who are not currently affiliated with management; also referred to as non-inside directors (Lingel and Sheedy, 2012).
19.	Risk Committee Gender	Explanatory	A dummy variable coded as one (or zero) if the Risk Committee chairman is a female, as published in BoardEx.
20.	Tenure	Explanatory	Number of years the bank executive has worked for the BHC in total, as published by BoardEx.

Source: Author's own analysis

The key explanatory variables are shown in Table 7.

In the Further Analysis Chapter, several other risk governance variables are employed as inputs into an index construction. The role of the CEO is specifically examined and an index is created to test the influence of this important risk governance role. These characteristics include CEO Age, CEO Tenure, CEO education, CEO duality, the number of years the CEO has sat on the BHC board of directors, CEO total compensation, and CEO busyness. Several of these executive characteristics have been noted above such as age.

CEO education in the context of board risk oversight has been shown to encourage hedging activity and risk awareness (Dionne and Triki, 2005). Better-educated bankers (with advanced degrees) are positively related to lower bank risk levels (Berger, Kick and Schaeck, 2014), so this variable is used later in the index construction. Busyness of the directors and CEO may be associated with worse BHC performance, as governance actors holding more board seats may become distracted (Mehran, Morrison and Shapiro, 2011; Cooper and Uzun, 2012), so these effects are controlled for in the index.

CEO duality is measured with a dummy variable taking a value of 1 if the same individual holds the Chairman and CEO role, and 0 otherwise. In a banking context, the relationship between duality and performance remains ambiguous. Pi and Timme (1993) find a positive relationship between CEO duality and lower ROA and lower bank efficiency ratios, while Fogelberg and Griffith (2000) find no relationship with bank performance. For a sample of commercial banks, Grove et al. (2011) also find that CEO duality is negatively related to financial performance. However, Byrd et al. (2012) produce empirical evidence that the presence of duality for a sample of US thrifts was related to lower failure rates on average in the 1980s. CEO duality is also used in the construction of the index.

The number of years the CEO has sat on the BHC board of directors, as a proxy for power, is also considered in the index construction. Demographic data on CEOs was collected from BoardEx. CEO total compensation, which appears in the CEO Power section later, considers the total compensation of the CEO and was collected from Morningstar for each BHC. This includes cash compensation, including bonuses, unlike the control variable of CEO Shares used in the baseline regressions. Data were collected from Bloomberg for international activities (the percentage of international revenue divided by assets) to control for any effect associated with international activities. All control variables, including the above variables, are detailed in Appendix 2.

3.5 Summary

This chapter has described the research methods and background to the study. The study relies on the collection of secondary data and the use of statistical analysis to identify and test relationships between a broad suite of predictor variables and a range of outcome variables relating to performance and risk. A conceptual plan of the research design is presented in Figure 4 to illustrate its structure, including predictor, outcome and control variables.

Corporate governance theories have been reviewed and agency theory has been identified as the most natural lens through which to consider the adoption of risk governance practice, although other theories, including institutional theory, may also play a role in understanding the dynamics at play in this study.

Standard corporate governance mechanisms have been identified, namely board structure, incentives and internal monitoring. The evidence probed for internal monitoring argues in favour of a potential relation with bank performance and risk-taking, and is most naturally aligned with risk governance oversight.

Given their growing prominence in the Basel corporate governance literature, two key risk governance mechanisms have been probed within internal monitoring: Risk Appetite arrangements and board-level Risk Committees (Gontarek, 2016). Based on the conceptual and empirical studies in the literature, the conceptual map has been updated to include several hypotheses relating to performance and risk for each of the predictor variables.

Importantly, a material empirical research gap has been identified for further examination in this study: the use of Risk Appetite by banks. The current limited level of empirical research on BHC Risk Committees and their adoption since the financial crisis is also addressed by this research. A suite of primary outcome variables has been identified for BHC performance and risk. Predictor variables have also been identified and defined for each of the hypotheses noted above. Control variables have been defined and inventoried at the business and standard corporate governance levels.

The following three chapters present the empirical results of this study.

4 RISK GOVERNANCE AND PERFORMANCE

4.1 Introduction

Having defined the research project, methodology, framework and relevant variables in the previous chapter, this chapter describes and explains the research model used to test the developed hypotheses. Descriptive statistics are introduced before presenting and discussing the empirical results.

4.2 Descriptive Statistics

Summary statistics for the sample are presented in Table 8 for the key outcome, corporate governance and BHC-level variables. The panel data covers the period from 2012 to 2015 for 140 of the largest US BHCs. This is a promising dataset, with both accounting variables (ROA, NIM and the Efficiency Ratio for performance; NPLs, Actual Loan Losses, and Tier 1 capital for risk) and market-determined variables (HPRs and Tail Risk). This sample covers a significant proportion of the US banking system.[24]

With regard to the key BHC performance variables, the mean ROA of this sample is 1.02 per cent. This compares with a mean ROA of 1.10 per cent reported by Ellul and Yerramilli (2013) and 1.20 per cent by Minton, Taillard and Williamson (2014). NIM has a mean value of 3.49 per cent, compared with 3.71 per cent in Fernandes and Fich's (2013) pre-crisis sample. The Efficiency Ratio mean is 65.04, versus 64.96 observed in Akhighbe and Stevenson (2010). The mean HPR for this study is 20.68 per cent, which reflects strong post-financial crisis equity performance. Ellul and Yerramilli (2013) report a negative 7 per cent mean annual return for the period covered including the crisis.

Risk Appetite arrangements are published by an average of 22 per cent of the total sample. Risk appetite usage by US BHCs in this sample has grown from 14% in 2012 to 30% by 2015.[25] Risk Appetite usage by covered BHCs is noted in 82 per cent of the sample versus 10 per cent for un-covered firms.

Risk Committees exist in 67 per cent of the observations, growing from 58 per cent to 74 per cent between 2012 and 2015. These numbers are higher than the eight per cent noted for the crisis period by Aebi, Sabato and Schmid, 2012 and Hines and Peters, 2016, reflecting growing compliance to the new rules.

The mean value of financial experience as a percentage of Risk Committee membership is 71 per cent, while the Risk Committee chairman meets this standard in 74 per cent of the sample. Risk Committee financial expertise has grown since the crisis period, with Minton, Taillard and Williamson (2014) reporting a mean value of 26 per cent (for financial experts among independent directors in 2008), Aebi, Sabato and Schmid (2012) and Ellul and Yerramilli (2013) reporting a mean value of 22 per cent and 30 per cent respectively.

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[24] The US banking system represents some $16 trillion as of April 2016 (Federal Reserve Bank of St Louis, 2016). This study includes BHCs representing $11.3 trillion of US BHC assets, or just over 70 per cent of total US BHC assets.

[25] Risk Appetite arrangements are used in 17.3% of BHCs prior to the 2014 adoption date across the full sample, including 71% of covered BHCs and 7% of smaller uncovered BHCs.

The mean number of Risk Committee members is five (versus three in Battaglia and Gallo's (2015) Asian focused study) and the mean Risk Committee member age is 63 years. In this study, Risk Committee members have been board members for an average of eight years. On average, 61 per cent of Risk Committee members hold advanced business-related educational credentials. Turning to executive demographic characteristics, the mean CRO age is 54.9 years and the mean CEO age is 58 years. CEOs in this study hold an average of 14 years of tenure, versus nine years in Ellul and Yerramilli's (2013) study.

In terms of standard corporate governance measures, the average board size is 11 members (versus 10 for Aebi, Sabato and Schmid, 2012; 11 in Fernandes and Fich, 2013; and 13 in Iselin, 2016). On average, 10 of these, or 86 per cent of the total board, are non-insiders (versus 73 per cent in Zagorchev and Gao, 2015 and 79 per cent in Iselin, 2016). The data for this study reveal a mean of 10 board meetings per annum (versus 8.5 in Adams and Mehran, 2003 and 9.0 in Iselin, 2016). The 77 per cent board attendance rate is unsurprising, given the typical board quorum requirements. CEO duality applies to 52 per cent of the sample, versus 44 per cent in Berger et al. (2015).

With regard to BHC-level variables, the mean of the deposits/assets measure noted is 74 per cent, as in Zagorchev and Gao (2015), versus 73 per cent in Aebi, Sabato and Schmid (2012) and 68 per cent, in Ellul and Yerramilli (2013). The mean ratio of total loans to total assets (TLTA) is 64 per cent, versus 66 percent in Zagorchev and Gao (2015), 69 per cent in Aebi, Sabato and Schmid (2012), and 62 per cent, in Ellul and Yerramilli (2013). The mean value of BHC international activity in this sample is three per cent. The mean of total BHC assets is $74 billion, versus $84 billion in the smaller sample constructed by Ellul and Yerramilli (2013), and $82 billion noted by Elyasiani and Zhang (2015).

4.3 Correlation Analysis

Pearson pairwise correlation results are presented in Table 9 for the key BHC outcome and risk governance variables of interest. No evidence for mutlicollinearity was identified after running a VIF test for the independent variables. Risk Appetite arrangements are slightly positively correlated with performance variables such as ROA (0.03) and the Efficiency Ratio (.12), and slightly negatively correlated with NIM (-0.12) and HPRs (-0.11). The existence of a board-level Risk Committee is slightly negatively correlated with ROA, NIM and HPRs (-0.08, -0.11 and -0.09 respectively). Unsurprisingly, the existence of a Risk Committee and Risk Appetite are positively correlated (0.34). Other notable relationships include a positive correlation between ROA and NIM (0.40) and between ROA and HPRs (0.05).

Since the above analysis does not include any variables that would otherwise control for BHC corporate governance or business characteristics, no robust conclusions can be made regarding these results. Next, multivariate regression analysis is performed that enables these various firm-level and standard corporate governance characteristics to be controlled for within the sample to better understand the nature of the relationship of BHC risk governance to performance. Table 8 presents descriptive statistics for this study.

Table 8. Descriptive statistics

Variable name	Variable	Obs	Mean	Std Dev.	Min	Max
Key Predictor Variables						
Risk Appetite (Dummy)	Independent	563	.22	.41	0	1
Risk Committee Exists (Dummy)	Independent	564	.68	.46	0	1
Risk Committee Financial Expertise (%)	Independent	267	.72	.24	.14	1.00
Risk Committee Chairman Expertise (%)	Independent	286	.75	.43	0	1.00
Risk Charter Determined Risk Appetite	Independent	564	.2602	.4393	0	1
CEO Power Index[26]	Independent	541	-.01[27]	1.56	-3.21	4.93
Corporate Governance Variables						
Board Size (Number)	Explanatory	557	11.93	3.05	6	29
Board Meeting Attendance (%)	Explanatory	453	.77	.06	.70	1.00
Board Meeting Number (per year)	Explanatory	470	10.18	3.99	2	26
Board Non-Inside directors (%)	Explanatory	557	.86	.07	.16	1.00
CEO Age (Years)	Explanatory	561	58	6.40	37	81
CEO Bank Years	Explanatory	563	14.5	10	0	47
CEO Duality (%)	Explanatory	563	.52	.49	0	1.00
CEO Board Years	Explanatory	564	11	8	0	44
CEO Education (Dummy)	Explanatory	561	.56	.49	0	1
CEO Busyness (Number of board roles)	Explanatory	564	2.90	1.60	0	8
CEO Shares ($ million)[28]	Explanatory	545	29	81	.07	629
CEO Total Compensation ($ million)	Explanatory	548	45	54	.03	31
CRO Age (Years)	Explanatory	396	54	6.78	34	70
CRO Centrality (Ratio)	Explanatory	412	0.36	0.25	0.03	4.34
CRO Tenure (Years)	Explanatory	429	9.71	8.26	0	39
Risk Committee Busyness (Number)	Explanatory	280	2.14	1.41	0	9
Risk Committee Chair Gender (Dummy)	Explanatory	286	0.15	0.36	0	1
Financial Characteristics						
Actual Net Loan Losses ($ million)	Dependent	544	321	1415	-33	14,908
BHC Assets ($)	Explanatory	564	74 billion	268 billion	1.1 billion	2.09 trillion
Deposits/Assets (Ratio)	Explanatory	560	74.55	11.45	22.00	90.59
Efficiency Ratio	Dependent	549	65.04	14.85	33.64	250.72
Holding Period Returns (Annual %)	Dependent	535	20.68	26.99	-24.21	284
International Activities (%)	Explanatory	564	.03	.09	0	.58
Institutional Shareholdings (%)	Explanatory	545	.75	.20	.68	1.00
Net Interest Income / Total Assets (Ratio)	Dependent	560	3.07	.96	-2.97	7.95
NIM (%)	Dependent	560	3.49	1.15	-6.15	8.93
NPL / Total Loans (%)	Dependent	537	1.00	.80	.01	7.73
Operating Income ($ million)	Dependent	561	1246	4307	-824	330,915
Other Operating Income ($ million)	Dependent	561	325	1885	-1839	22,378
ROA (%)	Dependent	560	1.02	.56	-1.87	4.33
ROE (%)	Dependent	560	9.09	5.09	-17.07	49.25
Tail Risk (see Appendix 2 definition)	Dependent	541	-27.56	25.38	-221.73	-3.30
TCE/RWE Ratio (%)	Dependent	533	13.26	8.060	5.56	95.77
Tier 1 Ratio (%)	Dependent	549	13.8	4.36	7.50	51.90
Total Interest Income ($ million)	Dependent	551	3438	11,032	23	67,982
Total Interest Expense ($ million)	Dependent	551	657	2250	2	20.612
Total Loans to Total Assets (Ratio)	Explanatory	560	64.22	15.57	5.52	96.16

Source: Author

[26] CEO Power is a corporate governance variable created by principal component analysis, following its use in seminal literature as explained in Appendix 8.

[27] Negative values are not uncommon in PCA. See Burstyn (2004) for a brief discussion as well as Larcker, Richardson and Tuna (2007) for examples of negative component loadings in PCA.

[28] Large BHC CEOs can enjoy material stock, stock and option and overall compensation levels that accumulate over time. For example, the CEO of JP Morgan & Co. is believed to have made a total $229 million gain in early 2017 alone following his purchase of additional shares. See http://www.cnbc.com/2017/02/06/jamie-dimons-holdings-have-surged-by-229-million-since-his-2016-bottom-buy.html for more information.

Table 9. Correlation table: Key variables

	ROA	NIM	Eff. Ratio	HPRs	NPLs	Act. LL	Tier1	Tail Risk	Risk App	CEO Power	Risk Com.	RC Expert.
ROA	1.00											
NIM	.40	1.00										
Eff. Ratio	-.45	-.31	1.00									
HPRs	.05	.04	-.03	1.00								
NPLs	-.12	.01	.17	.26	1.00							
Act. LL	-.01	-.01	.02	.09	.09	1.00						
Tier1	.08	-.02	.09	-.02	.13	-.06	1.00					
Tail Risk	-.10	-.10	.12	.06	.17	.22	-.06	1.00				
Risk App	.03	-.12	.12	-.11	-.08	.30	-.15	-.20	1.00			
CEO Pwr	.07	.08	-.09	-.10	-.04	-.08	-.04	-.19	.07	1.00		
Risk com	-.08	-.11	.08	-.09	.01	.15	-.09	-.19	.34	-.04	1.00	
RC Exp.	-.08	-.09	.18	.09	.02	.16	.08	.03	.22	-.07	.01	1.00

Source: Author

4.4 The Research Model

As discussed in chapter 3, Equation 1 is used to assess the effect of Risk Appetite and the Risk Committee on firm performance. For convenience, this equation is presented below.

$$Performance_{i,t} = a + \beta_1 Risk\ \ Appetite_{(i,t)} + \beta_2 RC\ Exists_{(i,t)} + \beta_3 CRO\ Age_{(i,t)} + \beta_4 BHC\ Assets_{(i,t)} + \beta_5 BOD\ Mtg\ Num_{(i,t)} + \beta_6 BOD\ Mtg\ Attend_{(i,t)} + \beta_7 BOD\ non-insider_{(i,t)} + \beta_8 Board\ Size_{(i,t)} + \beta_9 TLTA_{(i,t)} + \beta_{10} Depo/Assets_{(i,t)} + \beta_{11} CEO\ Market\ Valuation\ of\ Shares_{(i,t)} + Yearly\ Dummies + Error\ Term$$

Where $\text{Performance}_{i,t} \in \{\text{ROA, NIM, Efficiency Ratio, HPRs}\}$ for firm i at time t.

4.5 Empirical Results for Performance

This section presents and discusses the empirical results for Risk Appetite and the Risk Committee, using a suite of performance measures as the dependent variable. Risk Appetite is the first explanatory variable, followed by the presence of a Risk Committee in each model.[29] The results of these estimations are reported in Table 10 for ROA, NIM, the Efficiency Ratio and HPRs.

Risk Appetite demonstrates a promising early relationship to BHC accounting performance measures. For example, in Model 1a, Risk Appetite exhibits a positive coefficient value which is significant at the one per cent level, indicating that firms that adopt this risk governance practice report higher levels of ROA. The value of the coefficient for Risk Appetite in this Model is 0.30% indicating adopters of this practice realise on average a higher ROA of 0.30%.

Risk Appetite also exhibits a significant positive relation to NIM, at the one per cent level, indicating that BHCs that adopt this practice enjoy greater net interest margins.

In Model 1c, Risk Appetite exhibits a negative coefficient of 6.88 and is statistically significant at the one per cent level. The dependent variable this time is the Efficiency Ratio, which as noted above defines how much a BHC must spend to produce one dollar of revenue. The negative sign of the coefficient indicates that Risk Appetite arrangements play an important role in driving positive BHC efficiency gains (and thus improved operating performance).[30] Risk Appetite does not exhibit a positive association for HPRs. In fact, the coefficient of Risk Appetite is significant, as reported in Model 1d, indicating a negative relation to equity returns for BHCs that adopt this risk governance practice. In summary, Risk Appetite demonstrates a significant relationship for headline BHC accounting performance variables.

[29] The findings related to the baseline dependent variables do not change if the model is operated by removing either Risk Appetite or Risk Committee within the estimations; thus including both within the estimations conserves space.

[30] The Efficiency Ratio, a key BHC operating outcome measure used in practice and examined in academia, has been described as ".. a popular tool used by bank financial analysts" and "..a commonly used financial performance measure that relates non-interest expenses to total operating income (Hays, De Lurgio and Gilbert, 2009, p. 2). These authors explain "… a decrease in the ratio is viewed as a positive while a rising efficiency ratio is generally undesirable" (Hays, De Lurgio and Gilbert, 2009, p. 4). A decline in this ratio is viewed as evidence of favorable performance factor.

The presence of Risk Committee is also reported in this model, which does not exhibit a significant outcome for the suite of BHC accounting performance variables, consistent with earlier research (Aebi, Sabato and Schmid, 2012, p. 3222). However, it is notable that the coefficient for both risk governance mechanisms are negative and significant in Model 1d, indicating equity markets do not appear to reward BHCs who adopt these practices, in fact both Risk Appetite and the Risk Committee are negatively related to HPRs.

Other variables of interest in Table 10 include a significant and negative relation at the one per cent level for CRO age in Model 1b. This indicates that older CROs are consistent with lower BHC net interest margins, which may mean they impose more conservative underwriting credit standards, generating lower BHC asset returns and NIMs. The coefficient for the Deposit/Asset ratio is significant at the one per cent level and positive in Models 1a and 1b, demonstrating its role as a business level control variable. BHCs with higher level of deposits relative to assets produce greater NIM and ROA.

What other corporate governance factors may be influencing these results? Final implementation for these two risk governance mechanisms occurred on 11 September 2014 (Federal Register, 2014a, p.54547). It is acknowledged that other regulatory-driven processes could have contributed to the outcomes already observed as BHCs geared up for implementation before the final deadline. The Federal Register (2014a) identifies, amongst others, director talent management processes, director training plans and director independence requirements as some of the new regulatory requirements facing BHCs. Thus, the results of this study may arguably be driven and confounded by one of these or other corporate governance factors adopted before or during 2014. Thus an empirical challenge of this study is to assess whether an increase in BHC performance levels across the sample occur for reasons other than the adoption of Risk Appetite.

While the range of explanatory variables used in this study mitigates the impact of omitted variables, other methodological refinements can be carried out to further strengthen this analysis and its findings. For example, examining BHCs that adopted the risk governance practices well before the compliance date in 2014 is one way to augment the findings, especially given the lack of direct emphasis given to Risk Appetite in the earlier Dodd Frank Act. An early adopters analysis of Risk Appetite Arrangements can estimate more precisely the relationship between Risk Appetite and outcome measures, in order to mitigate the potential effect of later adopters who may have adopted Risk Appetite and a wider range of risk governance practices in the period immediately preceding the 2014 period.

To this end, further empirical analysis is conducted where the risk governance variable is coded the value of one if this practice was adopted in 2012 and 2013, and zero otherwise. The results for this time determined sub-sample for annual periods 2012 and 2013 are presented in Table 11 Models 2a to 2d.

These results continue to validate a promising relationship for Risk Appetite and all BHC accounting performance variables. A statistically significant coefficient is noted for Risk Appetite in Models 2a, 2b and 2c, indicating an improvement in performance measures ROA, NIM and the Efficiency Ratio respectively for early adopters. The sign of the coefficient once again in the first two models is positive, indicating early adopting BHCs experience higher ROA and NIM. The sign of the coefficient for Risk Appetite in Model 2c is negative for the Efficiency Ratio as the dependent variable, thus validating in all three tests a positive link between Risk Appetite and BHC accounting performance variables, as before.

Risk Committee existence fails to exhibit a significant relationship within Table 11 Model 2, across the suite of BHC outcome measures. These later findings are consistent with seminal literature that fails to observe a significant relation for Risk Committee (Aebi, Sabato and Schmid, 2012, p. 3211; Minton, Taillard and Williamson, 2014, p. 360).

The early adopter analysis contributes to the understanding of Risk Appetite and its relation with performance outcome variables. It specifically mitigates concerns that other supervisory-led risk corporate governance measures implemented later in the sample period drive the results noted in Model 1. The estimations in Model 2 are based on the existence of Risk Appetite arrangements several years before the final rules were agreed and published by the Federal Register (2014a and 2014b), and thus seem unlikely to be affected by the subsequent adoption of other board-level or supervisory-led measures from 2014 or immediately prior to when final codification of the rules were being drafted.

Table 10. Model 1: Performance measures

Variable	Model 1a (ROA)	Model 1b (NIM)	Model 1c (Efficiency Ratio)	Model 1d (HPRs)
Risk Appetite	0.300*** (2.79)	0.493*** (3.12)	-6.889*** (-2.64)	-11.54** (-2.28)
RC Exists	0.126 (0.90)	0.0897 (0.44)	-0.226 (-0.07)	-17.87*** (-2.71)
CRO Age	0.00178 (0.11)	-0.0585** (-2.48)	-0.0694 (0.18)	0.477 (0.63)
BHC Assets	-.00000035 (-0.30)	-.0000025 (-1.49)	.000006 (0.51)	.000058 (1.09)
BOD Meeting Number	-0.00768 (-0.74)	0.0143 (0.94)	0.193 (0.76)	-1.162** (-2.36)
BOD Meeting Attendance	0.0102 (1.50)	-0.0122 (-1.23)	0.139 (0.85)	0.589* (1.72)
BOD Non-insider	0.181 (0.37)	-0.767 (-1.07)	-4.759 (-0.40)	9.277 (0.40)
Board Size	0.0524** (2.44)	0.0532* (1.68)	-0.551 (-1.03)	1.928* (1.90)
TLTA	-0.00526 (-0.65)	-0.00888 (-0.75)	0.279 (1.41)	-0.0180 (-0.05)
Deposits / Assets	0.0232*** (2.65)	0.0543*** (4.22)	-0.363* (-1.70)	-0.204 (-0.49)
CEO Shares	2.39e-10 (0.18)	2.85e-10 (0.14)	-1.43e-08 (-0.43)	-1.45e-08 (-0.23)
Observations	314	314	305	308
R^2	0.1318	0.2043	0.1011	0.6703
AIC[31]	49	291	1988	2420
BIC	106	347	2044	2476
Year Dummies	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes

*Notes: Table 10 Models 1a to 1d reports fixed effects (FE) estimations with Risk Appetite observed in BHC annual reports and Risk Committee exists as the two key explanatory variables. The dependent performance variable is labeled underneath the Model number. Significant findings are denoted with *, ** and *** for 10%, 5% and 1% levels respectively with coefficient values reported (and t values reported in parentheses).*

[31] Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) tests scores are reported to assess model complexity and goodness of fit (as well as R-Squared values), following Demigüc-Kunt and Detragiache (2002) and Sheedy, Griffin and Barbour (2015). Lower values (and even negative) of one value versus another generally indicates that the model has more validity than other models with higher values or greater differences (Sterba and Pek, 2012, p. 585).

Table 11. Model 2: Early adopter analysis - performance[32]

Variable	Model 2a (ROA)	Model 2b (NIM)	Model 2c (Efficiency Ratio)	Model 2d (HPRs)
Risk Appetite	0.594*** (3.33)	0.745** (2.28)	-15.22*** (-3.89)	-9.502 (-0.87)
RC Exists	0.266 (0.96)	-0.1290 (-0.25)	-0.7302 (-0.10)	3.454 (-0.20)
CRO Age	-0.0457 (-1.07)	-0.1253 (-1.61)	0.6843 (0.73)	.6104 (0.23)
BHC Assets	-.0000023 (-0.62)	-.00001 (-1.46)	.000111 (1.34)	.00001 (0.11)
BOD Meeting Number	0.0232 (1.13)	0.0159 (0.49)	-0.1106 (-0.23)	-1.275 (-1.01)
BOD Meeting Attendance	0.0306*** (2.84)	-0.00621 (-0.31)	0.148 (0.62)	1.087 (1.44)
BOD Non-insider	4.025 (1.63)	6.372 (1.41)	-93.22 (-1.62)	165.73 (1.09)
Board Size	0.0060 (0.13)	-0.0493 (-0.58)	-0.1956 (-0.17)	1.071 (0.38)
TLTA	-0.0182 (-0.89)	-0.1088*** (-2.91)	0.4818 (1.06)	0.2946 (0.24)
Deposits / Assets	0.0322 (1.42)	0.0842** (2.02)	-0.853* (-1.70)	-0.4824 (-0.34)
CEO Shares	-3.43e-09 (-1.28)	-4.20e-09 (-0.76)	-1.69e-08 (-0.24)	2.16e-08 (-1.17)
Observations	165	165	161	160
R^2	0.3203	0.2796	0.2844	0.4537
AIC	50	144	1985	1289
BIC	106	181	2029	1326
Yearly Dummies	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes

*Notes: Table 11 Models 2a to 2d reports fixed effects (FE) estimations with Risk Appetite observed in BHC annual reports and Risk Committee exists as the two key explanatory variables. The dependent performance variable is labeled underneath the Model number. Significant findings are denoted with *, ** and *** for 10%, 5% and 1% levels respectively with coefficient values reported (and t values reported in parentheses).*

[32] To further assess the impact of early adoption, the existence of board-approved Risk Appetite arrangements as an independent variable can also be delimited to its value only in 2012, examining only firms with this corporate governance mechanism in place for this first year and then estimated in the regression. The outcome of this exercise for the same set of variables produces a significant and positive result for ROA and the Efficiency Ratio at the five per cent level, but not significant results for NIM or HPRs.

4.6 Summary

The two hypotheses relating to risk governance practices stated earlier have been examined across a suite of BHC performance metrics, both across the full sample and in the early adopter sub-sample tests.

Risk Appetite indicates an early significant relationship in both testing regimes, to ROA, NIM and the Efficiency Ratio. Early adopter analysis of these risk governance mechanisms corroborates the initial findings reported for the full sample.[33]

These estimations provide preliminary evidence for the positive association of Risk Appetite arrangements to BHC performance and call for further reflection. Stulz (2015) suggests that one key of an effective risk management function is the ability to facilitate good risk-taking: "By contrast, in those cases where too much risk-taking results in sharp drop in a bank's value, a risk management function that is designed to limit excessive risk-taking while still allowing the bank to pursue promising opportunities has the potential to create a lot of value" (Stulz, 2015, p. 13). The findings in this chapter are consistent with this prediction for BHC accounting performance measures.

The Further Analysis chapter will probe deeper into this relation in order to ascertain the source of the performance gains noted here.

Interestingly, there is certain evidence now observed that risk governance adoption is negatively related to BHC equity returns, finding no support thus far that equity markets may favour BHCs with greater risk governance arrangements. It is plausible that equity investors may not fully appreciate the adoption of heightened risk governance or may be unaware of the full potential impact of risk governance, and Risk Appetite practices in particular, occurring within BHCs today.

No evidence is found for any significant positive link between the Risk Committee and the performance suite of variables.

This study next continues with risk related outcome variables.

[33] Interestingly, it can be also argued that late adopters present a truer sub-sample to test as the early adapters already may have established better across the board risk management practices, however these results do not bear this interpretation out as late adopters do not exhibit significant findings with this suite of outcome variables.

5 RISK GOVERNANCE AND RISK-TAKING

5.1 Introduction

In this chapter, substantially the same series of estimations are again undertaken, except that this time the suite of dependent variables is changed from performance-based measures to BHC risk measures (i.e., NPLs, Actual Loan Losses, Tier 1 capital and Tail Risk). This testing procedure changes the empirical lens from performance measures to risk outcomes to asses the impact of the adoption of the two risk governance mechanisms. Stulz (2015) does not necessarily envision a reduction in overall risk-taking with growing risk governance practice, and notes that well governed banks may in fact be riskier, a prediction that can now be further tested in this section of the study.

5.2 Descriptive Statistics

Table 8 (page 55) reports risk-related summary statistics. Several risk variables of interest are now considered. The mean value of NPLs in this study is 1.00 per cent, versus 0.99 per cent reported by John, Mehran and Qian (2010), 1.60 per cent by Berger et al. (2015), and 0.74 per cent in the pre-crisis sample of Fernandes and Fich (2013). Actual Loan Losses are recorded in Table 8 at a mean value of $321 million across the sample.

BHC capital levels are also assessed. The mean value of Tier 1 is 13.8 per cent in this study. Before this study period, capital levels were noticeably lower. Iselin (2016) reports a mean Tier 1 capital level of 11.0 per cent for the earlier period 2004 to 2010 before capital requirements were raised by regulatory fiat. Fernandes and Fich (2013) report a Tier 1 capital ratio of 11.1 per cent, which validates that bank capitalisation appears to have risen since the financial crisis, very likely as a result of other regulatory-driven initiatives. Ellul and Yerramilli (2013) also report lower BHC capitalisation for a period spanning the pre-crisis and regulatory adjustment periods, with a mean value of only 8.1 per cent.

The mean value of Tail Risk is -27.56 per cent, versus 4.7 per cent in Ellul and Yerramilli (2013) and 14.3 per cent in Lingel and Sheedy (2012), reflecting the existence of vibrant equity markets for bank shares post financial crisis during this sample period of 2012 to 2015.

5.3 Correlation Analysis

This section examines the correlation between the selected risk outcome measures and independent variables. Risk Appetite exhibits a slight negative correlation with NPLs (-0.08) and Tier 1 capital (-0.15), but a positive relationship with Actual Net Loan Losses (0.30). Actual net loan losses are also positively correlated with the presence of a Risk Committee (0.16). Risk Committee is slightly negatively correlated with Tail Risk (-0.19).

Next, further regressions are undertaken with controls to better understand the nature of the relationship with BHC risk governance risk measures for a more robust analysis.

5.4 The Research Model

As noted in Chapter 3, Equation 2 is now used to assess the impact of Risk Appetite and the Risk Committee on firm risk measures. For convenience, this equation is presented below. The empirical definition of these variables is presented in Appendix 2.

Equation 2:

$$Risk_{i,t} = a + \beta_1 Risk\ \ Appetite_{(i,t)} + \beta_2 RC\ Exists_{(i,t)} +$$

$$\beta_3 CRO\ Age_{(i\,t)} + \beta_4 BHC\ Assets_{(i,t)} + \beta_5 BOD\ Mtg\ Num_{(i,t)} + \beta_6 BOD\ Mtg\ Attend_{(i,t)} + \beta_7 BOD\ non-insider_{(i,t)} + \beta_8 Board\ Size_{(i,t)} + \beta_9 TLTA_{(i,t)} + \beta_{10} Depo/Assets_{(i,t)} + \beta_{11} CEO\ Market\ Valuation\ of\ Shares_{(i,t)} + B_{12} International\ Activities_{(i,t)} + Yearly\ Dummies + Error\ Term$$

Where $Risk_{i,t} \in \{$NPL, Actual Loan lossess, Tier 1 capital, Tail Risk $\}$ for firm i at time t.

5.5 Empirical Results for Risk

Estimations for Risk Appetite are undertaken across the suite of risk outcome measures, as shown in Table 12 Models 3a to 3d. These tests probe the relationship of Risk Appetite to NPLs, Actual Loan Losses, Tier 1 capital and Tail Risk, as dependent variables. The coefficient for Risk Appetite is not significant across any of these tests (with the exception of Models 3b and 4b which report a negative relation to loan losses).

For example, Risk Appetite does not exhibit a significant association for Tier 1 capital in Model 3c.[34] These results somewhat contrast with those of Ellul and Yerramilli (2013) report that capital levels decline as risk governance activities increase during the crisis period. While BHC risk governance appears to be on the increase, these tests suggest that absolute regulatory and risk-adjusted capital levels are largely unaffected with Risk Appetite adoption. A plausible explanation is that the regulatory requirement for higher risk based capital surcharges (Ellis, Haldane and Moshirian, 2014; Admati, 2016) outweighs any potential effect of more focused risk-taking.

However, the coefficient for Risk Appetite is statistically significant at the one per cent level, in Model 3b for Actual Loan Losses, with a negative coefficient sign. Lagging the independent variable, Risk Appetite arrangements, for one and two-years in this model, continues to exhibit a significant relation at the five and one per cent level respectively (in un-reported results to conserve space), indicating loan losses continue to decline over time for this risk governance practice adopters. Model 4b also reports evidence, which is consistent with this finding for early adopters of this practice as well. The relationship of Risk Appetite to Actual Loan Losses holds promise for further investigation.

[34] In unreported results, estimations were carried out, with TCE/RWA, a risk adjusted capital measure, replacing Tier 1 capital as the independent variable, also with insignificant findings observed.

Table 12. Model 3: Risk measures

Variable	Model 3a (NPLs)	Model 3b (Actual Loan Losses)[35]	Model 3c (Tier 1)[36]	Model 3d (Tail Risk)
Risk Appetite	0.0270 (0.24)	-644.0*** (-5.05)	0.441 (0.64)	-0.783 (-0.38)
RC Exists	0.0590 (0.42)	203.9 (1.21)	0.159 (0.18)	1.604 (0.60)
CRO Age	0.001 (0.09)	-31.26 (-1.60)	-17.21 (-0.92)	-53.85 (-0.97)
BHC Assets	-0.0000015 (-1.28)	-0.0160*** (-11.57)	-.0000066 (-0.88)	-.0000132 (-0.59)
BOD Meeting Number	0.0130 (1.27)	-11.78 (-0.95)	0.0514 (0.77)	-0.111 (-0.56)
BOD Meeting Attendance	0.00234 (0.33)	-0.132 (-0.02)	0.110** (2.53)	-0.387*** (-2.99)
BOD Non-insider	-0.781 (-1.62)	195.3 (0.33)	0.103 (0.03)	-7.266 (-0.78)
Board Size	0.00186 (0.09)	-1.698 (-0.06)	0.0234 (0.17)	0.199 (0.48)
TLTA	-0.00128 (-0.16)	7.284 (0.75)	-0.244*** (-4.75)	0.0194 (0.13)
Deposits / Assets	0.000937 (0.10)	5.746 (0.55)	-0.0978* (-1.74)	-0.321* (-1.92)
CEO Shares	2.46e-09* (1.70)	-.00000052 (-0.32)	2.32e-08*** (2.70)	-.00000012*** (-4.49)
International Activity	0.00141 (0.09)	22330.0*** (6.47)	0.0803 (0.76)	-0.165 (-0.53)
Observations	300	304	310	310
R^2	0.5235	0.6891	0.2564	0.5656
AIC	33	4346	1198	1876
BIC	93	4405	1258	1936
Yearly Dummies	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes

*Notes: Table 12 Model 3 consists fixed effects (FE) estimations with Risk Appetite observed in BHC annual reports and Risk Committee exists as the explanatory variables. The dependent risk outcome variable is named underneath the Model number. Significant findings are denoted with *, ** and *** for 10%, 5% and 1% levels respectively with coefficient values reported (and t values reported in parentheses).*

[35] Lagging the independent variable in this model by one-year results in a statistically significant and negative relation at five per cent to Risk Appetite (R-Squared value of 0.5556 across 230 observations) while lagging by 2-years results again in a statistically significant negative relation of one per cent (R-Squared value of 0.3987 across 144 observations).
[36] Substituting TCE/RWA, as a risk adjusted capital dependent variable versus Tier 1, leaves these results qualitatively similar with no significant relation noted.

Table 13. Model 4: Early adopters analysis and risk[37]

Variable	Model 4a (NPLs)	Model 4b (Actual Loan Losses)	Model 4c (Tier 1)	Model 4d (Tail Risk)
Risk Appetite	-0.111 (-0.54)	-887.0*** (-5.97)	0.330 (0.39)	-2.059 (-1.25)
RC Exists	0.1908 (0.57)	-57.19 (-0.20)	-0.0903 (-0.07)	1.977 (0.76)
CRO Age	0.0003 (0.01)	-77.03** (-2.17)	0.0126 (0.06)	-0.0129 (-0.03)
BHC Assets	1.24e-06 (-0.22)	-.03310000*** (-9.68)	-.00000926 (-0.48)	.0000225 (0.60)
BOD Meeting Number	-.002943 (-0.12)	18.47 (1.03)	-0.0675 (-0.69)	-0.125 (-0.66)
BOD Meeting Attendance	-0.0141 (-0.98)	4.444 (0.48)	0.174*** (3.36)	-0.247** (-2.47)
BOD Non-insider	-3.969 (-1.42)	2346.3 (1.07)	1.247 (0.11)	19.92 (0.88)
Board Size	0.0675 (1.19)	-76.95* (-1.76)	0.151 (0.67)	-0.133 (-0.31)
TLTA	-0.0191 (-0.41)	-26.81 (-1.54)	-0.193* (-1.97)	-0.307 (-1.64)
Deposits / Assets	0.0053 (0.20)	5.006 (0.26)	-0.103 (-0.93)	-0.117 (-0.54)
CEO Shares	3.15e-09 (0.65)	-.0000069** (-2.56)	-5.17e-10 (-0.04)	-.00000026*** (-9.36)
International Activity	5.409 (0.50)	24257.4*** (4.98)	-12.19 (-0.44)	-16.25 (-0.30)
Observations	158	160	162	163
R^2	0.4730	0.8679	0.3135	0.7941
AIC	15	2085	444	663
BIC	54	2128	488	707
Yearly Dummies	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes

*Table 13 Model 4 consists reports fixed effects (FE) estimations for early adopters of BHC Risk Appetite at the board- level as the key explanatory variable. In this set of estimations, early adopters are BHCs that adopted risk appetite statements during the 2012 and 2013 fiscal years only. The dependent performance variable is again labeled underneath the Model number. Significant findings are denoted with *, ** and *** for 10%, 5% and 1% levels respectively with coefficient values reported (and t values reported in parentheses).*

[37] To further assess the impact of early adoption, the existence of board-approved Risk Appetite arrangements as an independent variable can also be delimited to its value only in 2012, taking only those firms with this risk governance mechanism in place for this first year and then estimating in the regression. The outcome of this exercise for the same set of variables reports a significant and negative result for Risk Appetite (as the predictor variable) and NPLs at a one per cent level but not significant results for Actual Loan Losses, Tier 1 or Tail Risk.

Risk Committee presence again fails to report a significant relationship, this time to BHC risk measures. More tests are undertaken in the Further Analysis chapter to continue to probe the role of the BHC Risk Committee.

Other explanatory variables that exhibit significant relationships in Model 3 include BHC Assets, Board of Directors' attendance percentage, TLTA, and CEO Shares, validating their role as control variables within each model.

In both Tables 12 and 13, it is interesting to highlight the positive and one per cent significant relationship of international activities as an explanatory variable to Actual Loan Losses. This finding is consistent with seminal research by Berger et al. (2015) that demonstrates that US BHCs with greater international exposures exhibit greater levels of portfolio risk.

5.6 Summary

This chapter has described the substitution of BHC risk-based measures for the performance metrics used earlier in Chapter 4. These estimations indicate the impact of Risk Appetite arrangements upon reducing Actual Loan Losses in both the full sample and the early adopter sub sample. BHCs that adopt this risk governance practice experience lower Actual Loan Losses, whereas Risk Appetite fails to produce compelling relation to NPLs, Tier 1 capital and Tail Risk, thus far.

Actual Loan Losses can be viewed as failed attempt, as evidence of ineffective risk-taking for the BHC. Thus, the significant and negative relationship of Risk Appetite to this dependent variable provides material validation in both the full sample, lagged and early adopter examinations.

Risk Committee existence fails to exhibit a significant relationship with risk measures across the estimations. Certain explanatory variables continue to control the relationship with outcome measures, including BHC Size, Board Attendance, TLTA, CEO Shares and International Activities.

International exposures have in fact been found to be related with riskier portfolio profiles in seminal literature for US banks (Berger, 2015, p. 18) and the findings above of significant and positive outcomes for this explanatory variable to losses is consistent with the market risk hypothesis. This hypothesis suggests (in this context) that exposures far from home can lead to an increase is bad risks due to market-specific factors involved in international markets (Berger et al., 2015). Rather than enjoying the fruits of greater portfolio diversification, international activities, in both Berger et al. (2015) and this study, is significantly related to BHC risk measured by greater risk measures.

Further research might examine how Risk Appetite might be potentially employed to curtail losses within international activities, as such exposures are likely to be captured and delimited as the board establishes its risk boundaries for international exposures within its Risk Appetite processes.

This study continues in the next chapter with a further analysis of the impact of Risk Committees and Risk Appetite upon BHC outcome measures.

6 FURTHER ANALYSIS

6.1 Introduction

Given the results described thus far in Chapters 4 and 5, this chapter undertakes further examination in order to develop a more detailed understanding of the two risk governance practices of interest. First, a new independent variable, Risk Committee Financial Expertise, is collected and employed as an alternative to Risk Committee existence, to test its impact on BHC outcome measures.

Next, the relative power of the CEO, an important actor relating to risk governance, is probed to determine if its influence may somehow be driving the results observed thus far. A series of horserace regressions are then undertaken to determine the impact of Risk Appetite arrangements across different sub-samples. The final baseline regressions conclude the analysis with a broader suite of outcome variables and also re-testing the baseline estimations with an extended set of control variables to mitigate any potential concerns of omitted variables. This study concludes with a simple difference-in-difference analysis to bolster the interpretation of these findings.

6.2 Risk Committee Expertise

As shown earlier in Tables 10, 11, 12 and 13, the existence of the Risk Committee failed to exhibit a significant relationship to BHC outcome measures across a battery of examinations. How else can the impact of US BHC Risk Committees be probed?

Beyond the presence of a Risk Committee, the heightened risk governance standards also require covered BHCs[38] to ensure that the Risk Committee has at least one member with risk expertise in identifying, assessing, and managing risk exposures (Federal Register, 2014b, p. 17286).[39] This may provide a further opportunity to test the role of the Risk Committee in providing heightened governance during this early phase of their adoption by US BHCs.[40]

The existing evidence presented within the literature domains relating to directors' risk expertise levels is mixed. On the one hand, Fernandes and Fich (2013) find that the presence of experienced directors is associated with reduced risk exposure prior to the crisis, greater stock returns, and lower TARP funding. Hau and Thum's (2009) examination of the demographic details of supervisory board members reveals that the monitoring abilities and competence levels of these monitors relate positively to profitability. Conceptual research argues that Risk Committees (along with other mechanisms) may also curtail excessive risk-taking (IMF, 2014; Yeh, Chung and Lui 2011).

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[38] In this instance, a covered BHC for Risk Committee expertise is defined as BHC, with at least $10 billion of assets if publicly traded, otherwise the $50 billion asset size requirements still holds.

[39] The heightened risk governance standards also require at least one Risk Committee member of the board of directors to be independent in order to ensure an objective view of its operations and the Risk Committee meet quarterly (Federal Register, 2014b, p. 17287).

[40] The Pearson pairwise correlation between Risk Committee Exists and Risk Committee Financial Expertise is 0.01.

However, other research challenges this position. Lam (2014) posits that bank boards' risk governance shortcomings include fragmented or ambiguous oversight responsibilities, insufficient risk expertise among board members, and a lack of integration between strategy and risk. Empirical research has found that financial institution Risk Committees have little if any measurable association with financial outcomes (Hines and Peters, 2015), and may be only a symbolic forum to demonstrate good governance. Other findings are presented by Andries and Brown (2014) reports that greater expertise on bank boards is associated with rapid pre-crisis credit growth and greater credit contraction after the crisis. Seminal research by Minton, Taillard and Williamson (2014) examine US BHCs and find that independent directors' expertise is strongly associated with greater risk-taking and lower BHC performance, during the crisis period.

In view of the mixed position taken by the academic literature, board-level Risk Committee member expertise, as a predictor variable, is now tested with BHC performance and risk outcomes, given the unambiguous requirement voiced by bank supervisors for experienced directors and Risk Committee members. The predictor variable in this next battery of estimations is Risk Committee financial expertise as defined in the literature.[41] These results are presented in Tables 14 and 15 (Models 5 and 6) for all outcome measures.[42]

Models 5a to 5c in Table 14 relate to BHC performance outcomes ROA, NIM and the Efficiency Ratio. The coefficient for Risk Committee financial expertise is not significant in this round of estimations. However, interestingly in Model 5d, the independent variable exhibits a positive coefficient for HPRs and is statistically significant at the one per cent level. This provides evidence that equity markets appear to value greater levels of Risk Committee financial expertise, not withstanding the lack of compelling evidence presented from headline BHC accounting measures noted in this analysis.

Risk Committee financial expertise is again tested, this time on a suite of risk outcome variables presented in Models 6a to 6d in Table 15. In these tests, the level of Risk Committee financial expertise does not exhibit a significant association. Once again, notwithstanding the efforts undertaken, this study has failed to unearth a material impact of the Risk Committee upon BHC operating results. In examining coefficients and t-score values within Models 5a and 5b for performance, and 6b for risk, it is Risk Appetite as an explanatory variable that exhibits a more significant relationship to BHC outcomes than the expertise composition of BHC Risk Committee members.[43]

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[41] Risk Committee financial expertise is defined as the percentage of Risk Committee member with previous executive responsibilities in a banking firm, executive responsibilities in a non-bank financial firm or executive financial responsibilities in a non-financial firm, or being an academic in finance or a related discipline, or a professional investor, following seminal literature (Minton, Taillard and Williamson, 2014, p.355).

[42] The testing set up is similar as before except Risk Committee exists is replaced with Risk Committee expertise levels and Risk Appetite arrangements are added as a control variable given the findings observed in this study.

[43] In one final set of unreported tests (to conserve space), Risk Committee financial expertise percentage is replaced with a dummy variable of one (or zero) if the chairman of the Risk Committee meets the same noted expertise definition. The chairman of the Risk Committee should meet the heightened regulatory experience levels, given his or her prominence to the regulator and role to coordinate committee activities with the CEO and CRO. However this predictor variable fails again to exhibit any significant relationship to the suite of performance and risk measures employed in this study thus far.

Empirical predictions easily may have been different, as noted earlier, that financial expertise should produce lower costs of acquiring and processing financial data and information related to complex banking activities (Minton, Taillard and Williamson, 2014, p. 352). Across multiple test settings and after substituting different variable definitions relating to the heightened risk governance standards of the BHC Risk Committee, this study fails to find a positive empirical relationship between Risk Committees features and BHC accounting outcomes, and instead chimes with the position that Risk Committees may simply be satisfying “the perception of responsible risk management” (Hines and Peters, 2015, p. 267).

Table 14. Model 5: Risk Committee expertise and performance

Variable	Model 5a (ROA)	Model 5b (NIM)	Model 5c (Efficiency Ratio)	Model 5d (HPRs)
Risk Committee Financial Expertise	0.183 (0.61)	-0.340 (-0.78)	1.138 (0.15)	30.42*** (2.82)
CRO age	0.00358 (0.12)	-0.0486 (-1.14)	0.170 (0.23)	0.188 (0.18)
BHC assets	-.00000152 (-0.84)	-.00000444* (-1.68)	.0000378 (0.82)	.000115* (1.75)
BOD meeting Number	0.000369 (0.02)	0.00237 (0.11)	0.148 (0.39)	-0.498 (-0.91)
BOD meeting Attendance	0.0190* (1.81)	-0.0117 (-0.76)	0.112 (0.42)	0.763* (1.80)
BOD non-insider	-0.0886 (-0.05)	-2.751 (-1.11)	0.874 (0.02)	85.92 (1.40)
Board size	0.0430 (1.17)	0.0441 (0.83)	-0.854 (-0.83)	1.724 (1.31)
TLTA	-0.0204 (-1.37)	-0.0277 (-1.28)	0.658* (1.68)	-0.435 (-0.80)
Deposits/Assets	0.0296* (1.84)	0.0473** (2.02)	-0.590 (-1.42)	-0.270 (-0.47)
CEO Shares	-5.41e-10 (-0.20)	2.97e-09 (0.77)	-1.38e-08 (-0.18)	-.00000021** (-2.19)
Risk Appetite	0.427*** (2.67)	0.745*** (3.20)	-7.501* (-1.86)	-6.678 (-1.16)
Observations	197	197	189	195
R^2	0.1841	0.1826	0.1116	0.7183
AIC Test	78	226	1284	1473
BIC Test	123	272	1330	1518
Yearly Dummies	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes

*Table 14 Model 5 reports fixed effects examinations for BHC Risk Committee expertise[44] levels as the independent variable. The dependent variable for performance is named underneath the model number. Significant findings are denoted with *, ** and *** for 10%, 5% and 1% levels respectively with coefficient values reported (and t values reported in parentheses).*

[44] The definition of BHC Risk Committee expertise follows Minton, Taillard and Williamson (2014).

Table 15. Model 6: Risk Committee expertise and risk measures

Variable	Model 6a (NPLs)	Model 6b (Actual Loan Losses)	Model 6c (Tier 1)	Model 6d (Tail Risk)
Risk Committee Financial Expertise	0.309 (1.13)	-20.40 (-0.07)	-0.0773 (-0.05)	0.697 (0.16)
CRO age	0.00793 (0.32)	4.433 (0.15)	0.155 (1.09)	-0.0984 (-0.24)
BHC assets	-.00000101 (-0.57)	-.0174*** (-9.07)	-.00000428 (-0.46)	.0000346 (1.28)
BOD meeting Number	0.00408 (0.31)	-12.32 (-0.80)	0.0294 (0.40)	-0.0865 (-0.40)
BOD meeting Attendance	0.00265 (0.27)	3.535 (0.33)	0.136*** (2.66)	-0.173 (-1.16)
BOD non-insider	-1.403 (-0.96)	-1270.6 (-0.64)	15.30 (1.86)	42.30 (1.76)
Board size	0.0396 (1.21)	-9.291 (-0.23)	-0.0319 (-0.18)	0.0782 (0.15)
TLTA	0.00399 (0.30)	8.424 (0.54)	-0.222*** (-3.08)	-0.108 (-0.51)
Deposits/Assets	0.000430 (0.03)	-2.564 (-0.15)	-0.187** (-2.35)	-0.554** (-2.38)
CEO Shares	3.90e-09 (1.33)	-.00000102 (-0.33)	1.32e-08 (1.02)	-.0000003*** (-7.05)
Risk Appetite	0.103 (0.71)	-775.2*** (-4.85)	0.439 (0.57)	-1.095 (-0.49)
International activities	-1.908 (-0.34)	26022.7*** (5.11)	7.095 (0.29)	90.11 (1.25)
Observations	187	188	189	196
R^2	0.5415	0.7738	0.2892	0.6849
AIC Test	15	2660	1284	1116
BIC Test	63	2709	1330	1117
Yearly Dummies	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes

*Table 15 Model 6 reports fixed effects examinations for BHC Risk Committee expertise[45] levels as the independent variable. The dependent variable for risk measures is named underneath the model number. Significant findings are denoted with *, ** and *** for 10%, 5% and 1% levels respectively with coefficient values reported (and t values reported in parentheses).*

[45] The definition of BHC Risk Committee expertise follows Minton, Taillard and Williamson (2014).

6.3 Examination of Risk Governance Indices: CEO Power Index

The CEO has been described as "… the top risk manager of a bank…" (Stulz, 2015, p. 16). Therefore, the role of the CEO now deserves further empirically focus. This section explains how an index (created with principal component analysis) can be used to proxy the power of the CEO, in order to further test whether or not this important actor may be driving the results observed thus far in this study.

Principal component analysis (PCA), a multivariate technique that extracts information from data to represent a new set of variables known as principal components, is used to display patterns of similarity. It is one of the most popular statistical techniques used across scientific disciplines (Adbi and Williams, 2010). Its use in the corporate governance arena has been motivated by a desire to create governance indices or reduce the number of variables within a model. Jolliffe (2002) also explains that PCA identifies different linear combinations of the variables of interest, and the linear combination with the maximal variance is defined as the first principal component.

Risk governance literature has also employed PCA to create risk management indices as a practical tool to assess risk management structures, often during the financial crisis period. Ellul and Yerramilli (2013) construct a risk management index (RMI) to measure the strength of BHC risk management functions before the financial crisis, finding that BHCs with higher RMI at the onset of the financial crisis had lower Tail Risk during the crisis years.

This research stream has spawned a series of working papers using PCA to create different risk governance indices for other financial institutions. Lingel and Sheedy (2012) create an RMI using PCA to test associations for a panel of 60 international banks for the period 2007 to 2010. They find a significant relationship between RMI and selected risk outcomes, but fail to detect an association with performance. Magee, Schilling and Sheedy (2014) examine the insurance sector across 18 countries during the crisis period and find that their RMI is negatively associated with Tail Risk and default predictors in 2008, and positively associated with performance measures.

Seminal research investigates the potential for CEO Power to impact on financial outcomes. Minton, Taillard and Williamson (2014) acknowledge that a competing explanation for their risk governance findings is that strong CEOs may be prone to recruit directors who rubber-stamp their decisions. In order to mitigate the concern that CEO Power characteristics may drive the results, these authors use alternative methods to validate their position that their results are not driven by the existence of powerful CEOs.

Minton, Taillard and Williamson (2014) employ four CEO Power proxies in their extended analysis, including CEO duality, the time period (in years) of independent director tenure relative to CEO tenure, and two further variables directly relating to director tenure and CEO tenure. Their further analysis reveals evidence that powerful CEOs do not select weaker independent directors to approve risk-taking objectives.

Other risk governance empirical research has considered this issue. Pathan (2009) examines whether powerful BHC boards relate positively to bank risk-taking, and whether CEO Power (proxied by CEO duality and internal recruitment) is inversely related to risk. He finds that CEO Power is associated with lower bank risk in this pre-crisis sample. Other empirical studies find that CEO Power is positively related to excessive risk-taking in financial institutions, necessitating a range of mechanisms to balance CEO Power (Lewellyn and Muller-Kahle, 2012). These authors gather data on a series of variables to proxy CEO Power, including duality, incentives and tenure.

Inspired by the same concerns as Minton, Taillard and Williamson (2014) and others, that a powerful CEO may somehow drive the observed results, this study identifies relevant proxies of CEO Power. Seven CEO-related measures of power are identified for inclusion in the index: CEO age, CEO years on the board of directors, CEO tenure, CEO busyness, CEO duality, CEO education and CEO total compensation.[46] Thus, rather than employing several multiple regressions, an index can now be used to test the relationship between CEO Power and the suite of performance and risk-taking measures.[47]

This analysis is presented in Table 16 Model 7 and includes both performance and risk measures within one empirical framework. The same model set-up is used as before using fixed effects, except that CEO Power is now the independent variable, and Risk Appetite is added as an incremental explanatory variable given earlier observations in this study.

Tellingly, the coefficient of CEO Power is not significant in Models 7a to 7g used to assess the impact of the CEO upon the standard suite of outcome variables.

However, other explanatory variables are noted in the analysis. The coefficient for Risk Appetite arrangements is significant across five of the eight models at either a one or five per cent level, continuing to demonstrate its important role as a risk governance variable. The coefficient for Risk Appetite is significant in this battery of tests, where the dependent variable is ROA, NIM, and the Efficiency Ratio, as well as Actual Loan Losses, with t-values demonstrating its importance relative to the CEO Power variable.

CEO Shares deserves further focus in Table 16. In banking, managerial incentives matter (Bhagat and Bolton, 2014) and they may interact with other aspects of corporate governance (Lasfer, 2006). In a general sense, CEO ownership may be used to overcome risk aversion, which may otherwise manifest as an agency cost (Jensen and Meckling, 1976).[48] CEO Shares as an explanatory variable is always negatively and significantly related to Tail Risk, as noted in Models 3, 4, 6, and now 7h. Later in Further Analysis, the negative relation of CEO Shares to Tail Risk continues to be observed.[49]

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[46] These variables are defined in further detail in Appendix 2.

[47] The methodology to create the first principal component (labeled CEO Power) is explained in Appendix 8.

[48] See Spong and Sullivan (2007) for analysis of how agency costs are mitigated by share ownership of the CEO in a US banking context.

[49] Fahlenbrach and Stulz (2011) examine CEO incentives including shares for US financial institution performance and risk for the period prior to and during the crisis. They note that CEOs failed to sell their shares and experienced on average at least $30 million of personal losses as share prices fell. It is plausible that BHC CEOs with large shareholdings face incentives to not incur excessive risk-taking and mitigate Tail Risk measures following these losses.

This revelation indicates that BHCs in which the CEO enjoys higher ownership levels exhibit lower Tail Risks. This observation is broadly consistent with the literature that suggests that bank executive wealth concentration is negatively related to bank risk levels (Spong and Sullivan, 2007). These findings suggest an area of future examination for researchers who wish to evaluate incentives and bank risk-taking.

From the review of the CEO Power index estimations performed in this section, it can reasonably concluded that the power of the CEO is not driving the headline outcome measures observed thus far in this study. Following the reasoning of Minton, Taillard and Williamson (2014), if CEO Power exhibits a consistent significant (positive or negative) relationship with outcome measures, it might be argued that a powerful CEO might be driving the findings presented in this study. Instead, there is no such finding observed across the battery of tests and it appears that CEO Power is not a material or significant driver of BHC outcome measures.

Table 16. Model 7: CEO Power index – performance and risk

Variable	Model 7a (ROA)	Model 7b (NIM)	Model 7c (Eff Ratio)	Model 7d (HPRs)	Model 7e (NPLs)	Model 7f (Actual LL)	Model 7g (Tier 1)[50]	Model 7h (Tail Risk)
CEO Power	0.0729 (1.61)	0.0359 (0.55)	-1.184 (-1.07)	-0.180 (-0.08)	-0.00773 (-0.17)	0.0571 (0.00)	-0.145 (-0.50)	-0.407 (-0.47)
RC Exists	0.130 (0.93)	0.103 (0.51)	-0.240 (-0.07)	-17.9*** (-2.69)	0.0610 (0.43)	209.8 (1.24)	0.143 (0.16)	1.568 (0.58)
CRO Age	.00426 (0.26)	-.0512** (-2.21)	0.0286 (0.07)	0.429 (0.56)	0.00199 (0.12)	-29.39 (-1.48)	0.0794 (0.74)	-0.200 (-0.63)
BHC Assets	-.00001 (-0.47)	-.000003 (-1.60)	.0000172 (0.61)	.000059 (1.09)	-.000001 (-1.24)	-0.016*** (-11.38)	-.000006 (-0.86)	-.000012 (-0.52)
BOD Mtg. Number	-0.0057 (-0.54)	0.0168 (1.12)	0.157 (0.61)	-1.163** (-2.32)	0.0137 (1.31)	-10.56 (-0.83)	0.0379 (0.56)	-0.118 (-0.59)
BOD Mtg. Attend.	0.0108 (1.58)	-0.0131 (-1.35)	0.129 (0.78)	0.599* (1.73)	0.00232 (0.32)	-0.294 (-0.04)	0.105** (2.42)	-0.38*** (-2.95)
BOD Non-insider	0.245 (0.50)	-0.720 (-1.02)	-5.984 (-0.50)	8.566 (0.37)	-0.790 (-1.62)	198.6 (0.34)	0.0721 (0.02)	-7.827 (-0.83)
Board Size	0.05** (2.52)	0.0603 (1.93)	-0.587 (-1.08)	1.809 (1.74)	.00052 (0.02)	-1.134 (-0.04)	0.0482 (0.34)	0.132 (0.32)
TLTA	-0.0047 (-0.57)	-0.0175 (-1.48)	0.265 (1.28)	0.0150 (0.04)	-0.00211 (-0.25)	5.360 (0.53)	-0.25*** (-4.79)	0.0438 (0.28)
Deposits /Assets	0.02** (2.49)	0.06*** (4.81)	-0.35 (-1.58)	-0.24 (-0.57)	0.001 (0.21)	8.11 (0.75)	-0.09 (-1.58)	-0.34* (-1.97)
CEO Shares	1.16e-10 (0.09)	5.57e-11 (0.03)	-1.24e-08 (-0.37)	-1.27e-08 (-0.20)	2.45e-09 (1.68)	-.000001 (-0.36)	2.33e-08*** (2.70)	-.0001*** (-4.40)
Risk Appetite	0.31*** (2.75)	0.377** (2.36)	-7.005** (-2.57)	-10.91** (-2.05)	.00988 (0.08)	-677.3*** (-5.07)	0.342 (0.48)	-0.448 (-0.21)
International Activities					0.262 (0.07)	22318*** (6.42)	-16.79 (-0.90)	-54.12 (-0.97)
Obs.	311	311	302	305	297	301	307	307
R^2	0.1413	0.2287	0.1025	0.6703	0.5228	0.6912	0.2547	0.5669
AIC	49	270	1971	2401	38	4306	1187	1861
BIC	108	330	2039	2460	101	4369	1250	1924
Yearly Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Notes: This table presents FE estimations, with CEO Power index designated as the predictor variable defined in Appendix 2 in terms of seven CEO demographic features. The dependent variable is named underneath the model number. Significant findings are denoted with *, ** and *** for 10%, 5% and 1% levels respectively, reporting coefficient values (with* t *values in parentheses).*

[50] Substituting TCE/RWA for Tier 1 does not qualitatively change the results and the coefficient of the predictor variable remains not statistically significant.

6.4 Channels of Impact

This section seeks a more detailed understanding of the underlying relationship between risk appetite statements and performance. In order to accomplish this, further performance and risk outcome data are identified, collected and tested in a similar empirical framework. The purpose of this section is to test key underlying sources of income to determine whether a thread of underlying performance drivers can be detected beneath the headline ROA and NIM measures, in order to gain an improved understanding of channels of impact relating to Risk Appetite.

Roman (2015) employs an analysis of the channels of impact to determine the underlying drivers of her empirical results for US BHCs. This analysis of risk governance seeks further evidence of the potential underlying channels of impact to explain the headline results already observed.

Copeland (2012) helpfully identifies the key components of BHC operating revenue attribution as interest income, other operating income (non-interest income), and loan losses provisions and actual loan losses.[51] These elements of underlying income are defined further below:

- Interest income (less interest expense), which may be thought of as the traditional banking activities of borrowing and lending, at different interest rates in order to create a positive lending margin.
- Other operating income is more volatile, and includes service charges, trading revenues, fees, investment banking and advisory services (Duane, Schuermann and Reynolds, 2013).[52]
- Provisions for loan losses[53] and Actual Loan Losses, resulting in the so-called bad risks identified by Stulz (2015) in the conceptual literature if not otherwise recovered.[54]

In order to probe the headline performance measures more deeply, further data is collected from Bloomberg for various underlying BHC variables, including Operating Income, Other Operating Income, Net Interest Income (as a percentage of average assets), and Total Interest Income and Total Interest Expenses.

These variables, defined in Appendix 2, may serve as more precise underlying BHC performance variables, potentially driving the headline source of BHC performance gains noted earlier in this study.[55]

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[51] See Copeland 2012, Chart 1, p 86. DeYoung and Rice (2004) and Li and Zou (2014) who use similar descriptions of this bank revenue-modeling frameworks.

[52] In Chapter 1, it was noted that some firms began to increase this source of revenue and alter their risk governance structures just as the credit cycle was beginning to turn, as described in Blundell-Wingnall, Atkinson and Lee, 2008.

[53] This study has focused on Actual Loan Losses consistent with Hines and Peters (2015) as a proxy for credit risks that generate a negative net present value. Loan loss provisions (LLPs) would have been an alternative variable of choice, however recent evidence argues that LLPs are positively, as opposed to negatively, related to good corporate governance as boards embrace income smoothing and compliance to reserving standards (Zagorchev and Gao, 2015).

[54] Many thanks to Tom Millar, Partner of Deloitte LLP, for guidance related to basic BHC accounting practices.

[55] The first two of these three variables rest within the conceptual diagram framework illustrated earlier as BHC performance variables. As such, they are consistent with hypotheses H1a and H2a. Actual Loan Losses, on the other hand, rest within BHC risk variables as noted earlier in this paper in Table 5. It rests with hypotheses H1b and H2b, which have already been tested in Chapter 5.

Table 17 presents the results of this set of new estimations. Starting with the first two models, the coefficient values observed for Risk Appetite are significant and positive in Models 8a and 8b, indicating improved BHC performance demonstrated by greater Operating Income and greater Net Interest Income (NII). This suggests that adopters of Risk Appetite arrangements report greater Net Interest Income that may find its way up to Operating Income and ROA.

It may be that improvements in ROA through this NII channel are a result of either better (i.e., higher) asset or improved (i.e., lower) liability-pricing discipline on the part of BHCs that have adopted Risk Appetite arrangements. However, it is not possible to ascertain, at this stage, whether improved performance relates to higher-priced assets or lower-cost BHC liabilities and debt structure. In order to probe this question, it is necessary to delve deeper and examine BHC interest income and expense profiles separately and in greater detail.

Interest income and interest expense can now be isolated in this regard. Table 17 considers the relationship of Risk Appetite arrangements to Total Interest Income (TII) and Total Interest Expense (TIE) in Models 8c and 8d. Model 8c reports that the coefficient for Risk Appetite is not significant, suggesting the performance gains do not originate with more disciplined asset pricing which might otherwise come with the greater focus associated with Risk Appetite setting.

However, Risk Appetite in Model 8d does report a significant and negative coefficient at the one per cent level, indicating that TIE (i.e., funding costs) are lower on average for Risk Appetite adopters. This indicates that adopters of Risk Appetite enjoy a lower cost of funding relative to other BHCs, which appears to also contribute to improved headline performance measures.[56]

This finding provides preliminary evidence that BHCs that adopt Risk Appetite arrangements appear to enjoy higher levels of ROA, NIM and NII levels, apparently originating with lower funding costs (typically from depositors and other debt capital providers). This analysis unearths a plausible and precise source of the value created by the adoption of Risk Appetite arrangements, which originates with TIE and makes its way up the NII channel to Operating Income and eventually contributes to broad BHC headline measures such as ROA.[57]

[56] This observation calls out for a plausible explanation. Why would adopters of Risk Appetite arrangements enjoy a lower cost of funds relative to non-adopting BHCs? Effective liquidity is a first order requirement for BHCs. BHCs face liquidity risks given their asset and liability mismatch but may also expose firms to a bank run (Elyasiani and Zhang, 2015, p. 240). Certain banks may have impaired liquidity and engage in excessive risk-taking, especially in the presence of a public safety net (Claessens, 2013, p. 756). It may be that BHCs that are perceived in the funding markets as better managed and also use Risk Appetite arrangements may attract funding at superior (i.e., lower) rates relative to BHCs that are perceived to be less well managed, thus needing to "pay up" for money market and deposit funding, especially in difficult market conditions. Thanks to Dr Gabriele Sabato for insight into this plausible explanation.

[57] The Pearson pairwise correlation of TIE and ROA is -0.07.

Table 17. Model 8: Examining the channels of impact upon performance

Variable	Model 8a (Operating Income)	Model 8b (NII)	Model 8c (Total Interest Income)	Model 8d (Total Interest Expense)[58]	Model 8e (Other Op. Income)
Risk Appetite	1183.5 *** (2.83)	0.243*** (2.66)	-658.7 (-0.52)	-752.3*** (-2.94)	226.7** (2.18)
RC Exists	-39.29 (-0.07)	0.0407 (0.34)	-26.42 (-0.02)	207.3 (0.61)	160.7 (1.19)
CRO Age	50.30 (0.80)	-0.0259* (-1.90)	98.66 (0.52)	20.73 (0.54)	-13.93 (-0.90)
BHC Assets	.0121*** (2.74)	-.000001 (-1.02)	-0.00881 (-0.66)	-.00757*** (-2.79)	-.00233** (-2.12)
BOD Meeting Number	-59.33 (-1.47)	0.00888 (1.01)	38.88 (0.32)	5.007 (0.20)	11.04 (1.10)
BOD Meeting Attendance	-1.409 (-0.05)	-0.00487 (-0.85)	-16.58 (-0.21)	0.0363 (0.00)	-5.928 (-0.91)
BOD Non-insider	446.1 (0.23)	-0.482 (-1.16)	-317.5 (-0.05)	26.85 (0.02)	146.1 (0.31)
Board Size	11.06 (0.13)	0.0325* (1.79)	27.72 (0.11)	-67.27 (-1.28)	11.45 (0.55)
TLTA	16.70 (0.53)	0.00639 (0.94)	18.37 (0.19)	-1.714 (-0.09)	-3.739 (-0.48)
Deposits / Assets	67.00* (1.97)	0.0285*** (3.85)	49.38 (0.48)	-31.23 (-1.49)	2.792 (0.33)
CEO Shares	.000003 (0.50)	8.46e-11 (0.07)	-.000006 (-0.38)	-.000004 (-1.23)	-.000001 (-1.08)
Observations	314	314	306	306	314
R^2	0.1782	0.2012	0.0322	0.1848	0.0896
AIC	5241	-54	5781	4802	4365
BIC	5297	2	5837	4858	4421
Yearly Dummies	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes	Yes

*Notes: Table 18 and Model 9 probes further into what may be driving BHC performance observed thus far (ROA and NIM) across a set of underlying BHC performance metrics in order to better appreciate potential channels of impact of Risk Appetite. It consists of fixed effects estimations with Risk Appetite as the predictor variable. The dependent variable is named underneath the Model number, such as Operating Income, NII, Interest Income and Expense, and Other Operating Income. All dependent variables defined in Appendix 13.2. Significant findings are denoted with *, ** and *** for 10%, 5% and 1% levels respectively with coefficient values reported (and t values reported in parentheses).*

[58] Total Interest Expense is an expense line item and part of net interest income, a performance measure. Thus, Risk Appetite arrangements are related to improved BHC performance levels when its coefficient sign is negative in model 8d.

6.5 Risk Appetite: Mandatory versus Voluntary Adoption

This section describes an extended analysis of Risk Appetite arrangements using sub-samples (determined by BHC size) to examine their impact upon the suite of performance measures. Covered BHCs are those with assets of $50 billion or more, are required to adopt Risk arrangements over a phased period (Federal Register, 2014a). Below this level, adoption is not a requirement, but firms may voluntarily adopt such measures. Thus, two types of BHCs are present in the full sample: covered BHCs (mandatory adopters) and uncovered BHCs (including non-adopters and voluntary adopters).[59]

Although the two types of BHCs arguably face different motivations for Risk Appetite arrangements, the same model set up can be applied to each sub-sample. Next, following Black and Kim (2012) and Fogel, Ma and Morck (2014), a horserace regression is run, pitting the two camps in a horserace to evaluate the strength of any relationship across several BHC performance variables.

Table 18 Model 9 reports the findings of a series of baseline regressions to estimate the relationship between Risk Appetite arrangements and BHC performance for both mandatory and voluntary adopters. The coefficient for Risk Appetite is not significant for mandatory adopters as noted in Models 9a and 9b.[60] BHC's that voluntarily adopt Risk Appetite reports a positive association at the one per cent significance level in Models 9c and 9d, indicating these BHCs report higher ROA and NIM. Moreover, the coefficient values are 0.51% and 1.20% for ROA and NIM, indicating a material economic impact for voluntary adopters of Risk Appetite of 0.51% and 1.20% respectively on average upon their performance.

The voluntary adopters are further split in columns 9e and 9f, creating a third sub-sample of BHCs, with assets of less than $25 billion. Once again, Risk Appetite exhibits a positive significant association with ROA and NIM at the one per cent level. This indicates that where this risk governance practice is adopted, regardless if directly covered by regulations or not, significant and impactful performance results are reported. Moreover, the coefficient values portray an economically impactful relation for these voluntary adopters.

These results are both surprising and enlightening. There was no expectation that voluntary adapters of this risk governance mechanism would report a significant and impactful link with BHC performance.

This suggests that institutional corporate governance theories (which might view BHCs adopting risk governance for appearances purposes only on a voluntary basis) are unsupported, as these BHCs instead appear to be contributing to the strong associations and impact across BHC performance measures.

[59] As of 2015, 29 per cent of the BHCs reported using Risk Appetite arrangements, up from 23 per cent in 2014.

[60] Interestingly, for the first time, these two models report that the coefficient for Risk Committee Exists is positive and significant for these large BHCs, indicating ROA and NIM gains within this sub-sample for large BHCs with a Risk Committee. This is an area deserving of examination in future research.

Table 18 Model 9: Mandatory vs. voluntary adopters horserace #1

Variable	Model 9a (ROA)	Model 9b (NIM)	Model 9c (ROA)	Model 9d (NIM)	Model 9e (ROA)[61]	Model 9f (NIM)[62]
	Mandatory Adaptors (>$50bio)	Mandatory Adaptors (>$50bio)	Voluntary Adaptors (<$50bio)	Voluntary Adaptors (<$50bio)	Voluntary Adaptors (<$25bio)	Voluntary Adaptors (<$25bio)
Risk Appetite	0.145*	-0.102	0.514***	1.200***	0.740***	1.789***
	(1.97)	(-0.90)	(2.81)	(4.80)	(4.44)	(5.68)
Risk Committee Exists	0.639***	0.726**	-0.0747	-0.209	-0.141	-0.443
	(3.41)	(2.51)	(-0.40)	(-0.83)	(-0.93)	(-1.56)
CRO Age	0.00714	-0.0387***	-0.0674	-0.312**	-0.0647	-0.244*
	(0.87)	(-3.05)	(-0.73)	(-2.46)	(-0.94)	(-1.88)
BHC Assets	.000000243	-.0000019**	.0000173	.0000344	.0000245	.0000335
	(0.40)	(-2.08)	(1.02)	(1.47)	(1.50)	(1.09)
BOD Meeting Number	0.00175	0.00897	0.00104	0.0332*	-0.00715	0.0336
	(0.18)	(0.61)	(0.07)	(1.66)	(-0.65)	(1.62)
BOD Meeting Attendance	0.00113	-0.0234***	0.0161	-0.00409	-0.0191	-0.00857
	(0.22)	(-2.96)	(1.52)	(-0.28)	(-1.98)	(-0.47)
BOD Non-Insider	-0.668	-1.068	0.0757	-1.068	0.00264	-1.252
	(-0.84)	(-0.88)	(0.13)	(-1.33)	(0.01)	(-1.53)
Board Size	0.0126	-0.0211	0.0576*	0.0723	0.0459*	0.0735
	(0.66)	(-0.71)	(1.78)	(1.63)	(1.86)	(1.57)
TLTA	0.0182*	0.00572	-0.0106	-0.00828	-0.0110	-0.0106
	(2.00)	(0.41)	(-0.94)	(-0.54)	(-1.27)	(-0.65)
Deposits / Assets	0.0196**	0.0475***	0.0187	0.0443**	0.0211**	0.061***
	(2.09)	(3.29)	(1.45)	(2.52)	(2.07)	(3.21)
CEO Shares	6.84e-10	1.26e-09	1.51e-09	1.80e-09	1.50e-09	3.05e-09
	(0.62)	(0.74)	(0.74)	(0.65)	(0.98)	(1.06)
Observations	86	86	228	228	204	204
R^2	0.4323	0.5829	0.1842	0.3298	0.3744	0.4258
AIC[63]	-110	-35	84	227	-65	193
BIC	-75	-125	135	278	-15	243
Yearly Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

*Notes: Table 16 Model 7 presents FE estimations, with BHC Risk Appetite as the independent variable. The dependent variable, either ROA or NIM, is named underneath the model number. This horserace compares the ROA and NIM performance of mandatory adopters (BHCs >$50 billion) and all voluntary adopters (all BHCs < $50 billion), and a third sub-set of even smaller voluntary adopters with (only BHCs < $25 billion). Significant findings are denoted with *, ** and *** for 10%, 5% and 1% levels respectively, reporting coefficient values (with t values in parentheses).*

[61] Lagging the independent variable by one-year results in a positive finding for ROA at the one per cent significance level.
[62] Lagging the independent variable by one-year results in a positive finding for NIM at the five per cent significance level.
[63] As noted earlier on Table 10, negative values for AIC and BIC are not at all problematic.

As a result of these estimations, a growing body of evidence is emerging suggesting that Risk Appetite arrangements may be an important addition to the current suite of established risk governance mechanisms for banks, regardless of whether adoption is on a mandatory or voluntary basis. These estimations also refute any evidence of institutional corporate governance theory at work. Instead of adopting this board-level practice as a box-ticking exercise, voluntary adopters are demonstrating greater performance, seemingly more in tune with effective internal monitoring.

Given these results observed in horserace #1, two more sets of horserace regressions can now be estimated by delving deeper into underlying performance measures to further validate the adoption by voluntary adopters. The first set examines the relation of Risk Appetite to Operating Income and Net Interest Income (as reported in Table 19 Model 10), and the final set considers this risk governance mechanism and its relation to Other Operating Income and the Efficiency Ratio (as reported in Table 20 Model 11).

Tables 19 and 20 now present further evidence that voluntary adopters of Risk Appetite arrangements exhibit significant positive associations with underlying BHC performance measures. Horserace regression #2, Table 19 probes how Risk Appetite impacts Operating Income and NII across the different sub-samples. In Table 19, a positive and one per cent significant coefficient for Risk Appetite is observed, exhibiting an association with Operating Income and NII for voluntary adopters in Models 10c and 10d.

These findings suggest an impactful relationship as well. The coefficient values for Risk Appetite are noted as 0.56 and 0.83 per cent in Models 10d and 10f respectively for NII, indicating on average economically impactful relationship for voluntary adopters in both sub-samples.

Earlier in this study, Risk Appetite arrangements exhibited significant positive results across the full sample for the Efficiency Ratio (in Tables 10 and 11) and for Other Operating Income (in Table 17). Horserace regression #3 now probes this relationship within the mandatory and voluntary adopter sub-sample framework. These estimations continue to validate the impact of this risk governance mechanism in Table 20 for voluntary adopters. Risk Appetite does not report a significant relation for mandatory adopters in Models 11a and 11b. However, the coefficient for this risk governance practice becomes significant in Model 11e for voluntary adopters relating to Other Operating Income.[64] Also, a significant coefficient for Risk Appetite is observed at the one per cent level in both sets of voluntary sub-samples for the Efficiency Ratio, as reported in Models 11d and 11f. This round of horserace regressions indicate that BHCs, which voluntarily adopt Risk Appetite arrangements, report greater underlying operating performance measures, even if their motivation for adoption was not strictly a regulatory driven requirement.[65]

[64] Income and losses from the Trading Book and other risk-taking activities typically roll up to Other Operating Income, providing a prism through which to view the impact of Risk Appetite arrangements outside of the NII channel.

[65] Separately, it is noted that RC Exists exhibits a positive and significant association to Other Operating Income in Model 11a for mandatory adopters, providing an opportunity for further examination in later research.

Table 19 Model 10: Mandatory versus voluntary adaptors horserace #2[66]

Variable	Model 10a (Operating Income)	Model 10b (NII)	Model 10c (Operating Income)	Model 10d (NII)[67]	Model 10e (Operating Income)[68]	Model 10f (NII)[69]
	Mandatory Adaptors (>$50bio)	Mandatory Adaptors (>$50bio)	Voluntary Adaptors (<$50bio)	Voluntary Adaptors (<$50bio)	Voluntary Adaptors (<$25bio)	Voluntary Adaptors (<$25bio)
Risk Appetite	1680.8 (1.45)	-0.0396 (-0.58)	176.7*** (2.94)	0.564*** (3.81)	317.6*** (6.46)	0.833*** (4.35)
RC Exists	1853.5 (0.63)	0.403** (2.32)	-39.59 (-0.65)	-0.107 (-0.72)	-78.53* (-1.77)	-0.199 (-1.15)
CRO Age	11.33 (0.09)	-0.0139 (-1.82)	-14.11 (-0.46)	-0.179** (-2.39)	-10.57 (-0.52)	-0.143* (-1.81)
BHC Assets	0.0125 (1.31)	-.00000088 (-1.57)	.0139** (2.48)	.0000106 (0.77)	.00950* (1.98)	.0000108 (0.58)
BOD Meeting Number	-290.4* (-1.93)	0.0115 (1.30)	2.944 (0.61)	0.0160 (1.35)	3.185 (0.98)	0.0155 (1.23)
BOD Meeting Attendance	-1.764 (-0.02)	-.0138*** (-2.91)	-4.959 (-1.43)	0.000761 (0.09)	-2.631 (-0.92)	-.000369 (-0.03)
BOD Non-Insider	-3087.1 (-0.25)	-0.720 (-0.98)	-28.11 (-0.15)	-0.665 (-1.40)	-54.87 (-0.43)	-0.727 (-1.46)
Board Size	247.9 (0.82)	-0.0146 (-0.82)	8.287 (0.78)	0.0421 (1.61)	5.257 (0.72)	0.0466 (1.65)
TLTA	46.83 (0.33)	0.0226** (2.67)	-6.588* (-1.79)	0.00567 (0.62)	-5.029* (-1.97)	.00565 (0.57)
Deposits / Assets	126.9 (0.86)	0.0261*** (3.01)	6.140 (1.45)	0.0213** (2.05)	5.980** (1.99)	.0305*** (2.61)
CEO Shares	-.000001 (-0.06)	9.17e-10 (0.89)	.0000009 (1.47)	7.65e-10 (0.47)	.000001** (2.25)	1.22e-09 (0.70)
Observations	86	86	228	228	204	204
R^2	0.4323	0.6280	0.2307	0.2736	0.4829	0.3326
AIC	1553	-123	2726	-12	2254	-9
BIC	1590	-88	2778	39	2304	40
Yearly Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

*Notes: Table 19 and Model 10 consists of fixed effects estimations with BHC Risk Appetite as the independent variable and the dependent variable named underneath the model number, either Operating Income or Net Interest Income. This horserace Regression compares the performance of Mandatory Adapters (BHCs >$50bio) and all Voluntary Adapters (all BHCs <$50bio), and a third subset of even smaller Voluntary Adapters with (only BHCs <$25bio). Significant findings are denoted with *, ** and *** for 10%, 5% and 1% levels respectively with coefficient values reported (and t values reported in parentheses).*

[66] Using Total Interest Income (TII) and Total Interest Expense (TIE) as an outcome variable in these estimations was ambiguous within the BHC size bucketing approaches used herein (>$50 billion, <50 billion and < $25 billion). However, TIE is significant for BHCs greater than $30 billion at the five per cent level (93 observations, R-Square value of 0.4798), which becomes more significant at the one per cent level if the sample is further delimited to BHCs greater than $30 billion level and less than $100 billion.

[67] Lagging the independent variable by one-year results in a negative coefficient at the five per cent significance level in this model run, perhaps a sign of greater asset pricing discipline or otherwise.

[68] Lagging the independent variable by one-year results in a positive finding at the one per cent significance level.

[69] Lagging the independent variable by one-year results in a negative finding at the five per cent significance level.

Table 20 Model 11: Mandatory versus voluntary adapters horserace #3

Variable	Model 11a (Other Operating Income)	Model 11b (Efficiency Ratio)	Model 11c (Other Operating Income)	Model 11d (Efficiency Ratio)	Model 11e (Other Operating Income)[70]	Model 11f (Efficiency Ratio)[71]
	Mandatory Adaptors (>$50bio)	Mandatory Adaptors (>$50bio)	Voluntary Adaptors (<$50bio)	Voluntary Adaptors (<$50bio)	Voluntary Adaptors (<$25bio)	Voluntary Adaptors (<$25bio)
Risk Appetite	367.9 (1.26)	-1.971 (-0.97)	17.23* (1.90)	-12.18*** (-2.74)	28.45*** (2.79)	-19.87*** (-4.99)
RC Exists	1509.7** (2.04)	-3.196 (-0.62)	-1.599 (-0.17)	1.235 (0.27)	-8.560 (-0.93)	5.117 (1.38)
CRO Age	-3.529 (-0.11)	-0.108 (-0.48)	-27.85*** (-6.05)	1.051 (0.47)	-25.70*** (-6.13)	1.158 (0.71)
BHC Assets	-0.00215 (-0.89)	-0.0000015 (-0.09)	0.000793 (0.94)	-0.000612 (-1.45)	0.00259** (2.60)	-0.000615 (-1.53)
BOD Meeting Number	9.419 (0.25)	0.0597 (0.23)	0.250 (0.34)	-0.0132 (-0.04)	0.505 (0.75)	0.0331 (0.12)
BOD Meeting Attendance	-7.540 (-0.37)	0.0659 (0.47)	-0.299 (-0.57)	0.286 (1.11)	-0.582 (-0.99)	0.387* (1.68)
BOD Non-Insider	50.76 (0.02)	9.877 (0.46)	-3.952 (-0.14)	-2.671 (-0.19)	-12.80 (-0.48)	-0.909 (-0.09)
Board Size	69.89 (0.93)	-0.168 (-0.32)	2.819* (1.76)	-0.526 (-0.64)	2.596* (1.72)	-0.110 (-0.18)
TLTA	10.15 (0.28)	-0.174 (-0.69)	-0.109 (-0.20)	0.460* (1.65)	-0.314 (-0.59)	0.298 (1.41)
Deposits / Assets	-12.10 (-0.33)	-0.539** (-2.10)	2.235*** (3.50)	-0.165 (-0.52)	2.847*** (4.57)	-0.128 (-0.52)
CEO Shares	-0.0000038 (-0.87)	-2.51e-08 (-0.82)	-8.23e-08 (-0.82)	-1.24e-08 (-0.25)	-5.43e-08 (-0.58)	-2.14e-08 (-0.57)
Observations	86	84	228	221	204	197
Adjusted R^2	0.2116	0.2747	0.4798	0.1496	0.6172	0.3497
AIC	1316	449	1864	1489	1613	1182
BIC	1352	485	1916	1540	1666	1232
Yearly Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes

Notes: *Table 20 Model 11 consists of fixed effects estimations with BHC Risk Appetite as the independent variable and the dependent variable named underneath the Model number (either Other Operating Income or the Efficiency Ratio). This horserace regression compares the performance of Mandatory Adaptors (BHCs >$50bio) and all Voluntary Adaptors (all BHCs <$50bio), and a third subset of even smaller Voluntary Adaptors with (only BHCs <$25bio). Significant findings are denoted with *, ** and *** for 10%, 5% and 1% levels respectively with coefficient values reported (and t values reported in parentheses).*

[70] Lagging the independent variable by one-year results in positive finding at the one per cent significance level.
[71] Lagging the independent variable by one-year results in a positive finding at the five per cent significance level.

6.6 Mitigating Omitted Variables

A final set of full sample baseline regression estimations are now undertaken within this research. Robust empirical research seeks to mitigate omitted variables and include all reasonable control variables (Antonakis et al., 2010, p. 1091). The following estimations are carried out using the same set-up as found in Models 10 and 11, but now add an extended suite of controls after further consultation of the literature, following Vyas (2010) and Black and Kim (2012). The further control variables added to the estimations include: Institutional Shareholdings, Risk Committee Busyness, CRO Centrality, CRO Tenure and Risk Committee Chairman Gender.

The rationale for selecting these variables now follows. Institutional shareholders may have the power, influence, incentives and access to monitor bank risk-taking (Laeven and Levine, 2009; Aebi, Sabato and Schmid, 2012). BHC director busyness levels suggest an element of director distraction, however Elyasiani and Zhang (2015) present evidence of improved performance measures (ROE, Tobin's Q and EBIT) and lower risk measures (credit risks) associated with busy BHC directors. Other research validates a positive association between busyness and BHC risk (Cooper and Uzun, 2012).

Female representation on banks' boards of directors may also be associated with better performance. Emerging research reveals that BHCs with more female directors performed better or exhibit lower risk during the crisis (St Claire et al., 2016; Gulamhussen and Santa, 2015).

The important role of the CRO as a key risk governance actor can also be catered for in this analysis. Ellul and Yerramilli (2013) use the concept of CRO Centrality to proxy empowerment and independence from the CEO.[72] CRO Tenure measures the number of years of service with that particular BHC, providing a proxy for experience sought by regulators specifically "in identifying, assessing, and managing risk exposures of large, complex financial firms" (Federal Register, 2014b, p. 17289). The regulator seeks that in every case, the BHC shall demonstrate that the CRO's experience is relevant to the kind of risks facing the company and commensurate with the BHC's structure, risk profile, complexity, activities and size (Federal Register, 2014b, p 17251). Definitions for these control variables are reported in Appendix 2.

Across the standard suite of estimations including the extended suite of controls, Risk Appetite continues to relate to key accounting performance measures (ROA and NIM) and a risk measure (Actual Loan Losses). Tables 22 and 23 are presented in the Appendix with the empirical results reported.[73] This exercise of adding a broader suite of control variables presents further evidence of the impact of Risk Appetite upon BHC outcomes while further mitigating the risk of omitted variables confounding the reported findings.[74]

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[72] CRO Centrality is strictly followed following seminal research (Ellul and Yerramilli, 2013, p. 1799), and is determined by the calculating the ratio of the CRO's total compensation, less stock options and awards, to the CEO's total compensation. As within this literature, if the CRO compensation level is not publically available, one per cent is removed from the compensation of the fifth highest paid executive and this is used as a conservative proxy.

[73] Only the estimation for Risk Appetite and its relation to the Efficiency Ratio fails perform in this round of testing.

[74] The use of FE in the estimations should also mitigate any time-invariant omitted variables.

6.7 Differences-in-Differences Analysis

Love (2011) challenges researchers to produce robust corporate governance studies. She argues that while research often supports a positive correlation between governance practice and market-based measures of performance, such findings are weaker for operating performance. Love (2011) adds that while it is important to control for unobserved firm level heterogeneity using FE, this approach itself does not credibly establish causality (Love, 2011, p. 15).

She also indicates that the direction of the relation in this literature domain is not always clear, suggesting that causality may operate in reverse. Reverse causality occurs when better firm performance leads to better corporate governance practices. While a randomized experiment would be an ideal remedy, replicating such opportunities are rare and impractical. Love (2011) does however explain that the next most credible means to establish a true causal relationship is to use a change in laws or regulation, as it is likely to be exogenous to the firm. The legal or regulatory shock can be combined with a differences-in-differences approach.

The differences-in-differences (DiD) design method in empirical finance has a long history in econometrics generally and in banking-led research specifically. It is often used in empirical research for estimating the effects of policy change or intervention in economics (Lechner, 2010; Black and Kim, 2012).

The DiD methodology has been employed in earlier related research. Berger, Roman and Sedunov (2016) assess the impact of the Troubled Asset Relief Program (TARP) on US BHCs using DiD and find that that the bailout led to statistically significant decreases in systemic risk levels. Berger, Kick and Schaeck (2014) consider changes in executive board composition with DiD estimation and find a robust positive relationship between younger executives and risk-taking. Black and Kim (2012) use DiD in their sample of Korean firms after the changes to corporate governance regulations for large (treated) and small (control) firms, and find that the latter enjoy valuation gains.

DiD facilitates an assessment of the impact of regulatory intervention for control and treated groups of BHCs.[75] The applicable treatment here, is the adoption of Risk Appetite arrangements by boards of directors from 2012 to 2015. In this sample, twenty BHCs were already treated (i.e. already using Risk Appetite) in the first year of the sample in 2012, so the impact of these early adopters were coded within the DiD analysis in order to ensure all BHCs were untreated in 2012 (effectively removing treated BHCs from the pre-treatment period). In this way, the sample now includes only untreated BHCs for 2012 while BHCs begin to adopt Risk Appetite only in 2013. A weakness of this approach is that sample bias is introduced, but this is necessary to use the DiD method.[76]

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[75] It could be argued that early and voluntary adopting BHCs may be different from later and mandatory adopting BHCs in such a way that is not otherwise controlled for in the earlier estimations, such as conservative risk management practices. Thus the use of DiD may be viewed as a superior test as it can control for unobservable differences not captured in earlier estimations. Thanks to Dr Stijn Claessens for this observation.

[76] Section 6.2 has already provided certain evidence that early adopters exhibit a statistically strong relationship with certain outcome variables, so it might be argued that removing these early adopters might result in conservative results in the DiD estimations.

This DiD analysis produces further evidence of the impact of Risk Appetite upon BHC outcome measures. Models 12a to 12g report the findings of the DiD estimation, including the time, treated and DiD variables typically produced in such estimations in Panel A.[77]

The DiD coefficient (the third variable reported in the table) is positive and significant in Model 12c, indicating a positive impact upon BHC Operating Income. Further, the DID coefficient for Risk Appetite in Model 12d is negative and significant at the one per cent level, validating earlier findings reported establishing the impact of lower BHC funding costs and thus improved BHC operating performance.

The DiD analysis also presents further evidence for some impact of Risk Appetite arrangements upon selected BHC risk measures. The coefficient for DiD is both negative and significant at the one per cent level when evaluating its relation to both Actual Loan Losses and Tail Risk.[78]

On the whole, these results provide further evidence of the impact of Risk Appetite Arrangements upon BHC operating measures, relying on an alternative empirical method.

6.8 Risk Appetite Arrangements: Alternative Settings

Minton, Taillard and Williamson (2014) employ alternative variable definitions to add to the robustness of their findings for risk governance. In this study, the existence of Risk Appetite arrangements has been observed through board-articulated risk appetite statements noted in BHC annual reports. This section now changes tack and describes the use of a different data source than that used thus far to observe Risk Appetite practice by BHCs.

Risk Committee charters provide an alternative means of observing the adoption of Risk Appetite arrangements, independent of BHC annual reports. A risk charter by Wells Fargo and Co. is presented at Appendix 7. As demonstrated in this document, the Risk Committee reviews and recommends the company's Risk Appetite to the full board, and approves any amendments to Risk Appetite. Thus, BHC risk charters may provide an independent window for researchers to observe the practice of articulating board-level-approved Risk Appetite. BHC risk charters were hand-collected for the 2012 to 2015 sample period and were manually reviewed to determine whether or not responsibility for BHC Risk Appetite articulation and formal approval rests with the Risk Committee.[79]

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[77] DiD regressions are undertaken for Risk Appetite and its impact upon the noted dependent variables noted in Model 12. The output of seven models is reported in Table 21, Model 12. Risk Appetite in the DiD exercise does not exhibit a significant outcome using the remaining dependent variables, which is unreported to conserve space.

[78] Risk Appetite arrangements report a positive outcome for NPLs in the DiD estimations. Further data collection and analysis for final publication may shed light on this finding.

[79] Risk Committee charters are relatively recent phenomenon for US BHCs and have only accelerated recently. This data collection technique records the articulation of this practice by BHC Risk Committees within their charters as opposed to the full board's responsibility as documented within BHC annual reports. Also, in certain cases, earlier BHC Risk Committee charters have been removed from BHCs' websites and only the most recent risk charters remain. In such cases, the previous quarterly BHC proxy statement was inspected for evidence of approval of the Risk Committee charter by the board or board Risk Committee, noting whether or not risk approval had occurred in order to generate the dummy value of one or zero for that period.

A new dummy variable, labeled Risk Charter Determined Risk Appetite, is coded with a value of one (otherwise zero) if the BHC Risk Committee Charter explicitly records the requirement for an approval and articulation of Risk Appetite by the full board of directors or the Risk Committee of the board. This new dummy variable relies on a different data collection method, independent of the previous method and source, to collect Risk Appetite practices at the board level.[80]

Table 14 Models 12h to 12n in Panel B reports the results of these estimations.[81]

Risk Charter Determined Risk Appetite, as an independent variable, continues to validate the impact of this board level practice upon BHC operating performance and selected risk measures. In terms of BHC operating performance measures, the coefficient of this risk governance mechanism is significant at the one per cent level, providing evidence that Risk Appetite impacts BHC performance via the NIM, Operating Income and TIE channel of impact in Models 12i to 12k respectively, in Panel B. As before, the coefficients for NIM and Operating Income are positive signs while the coefficient in Model 12k is negative and significant for TIE, validating a positive impact to performance.

Negative coefficients are reported for Risk Appetite in Models 12m and 12n which are significant at the one per cent level, indicating that adopting BHCs experience lower Actual Loan Losses and also lower Tail Risk measures. This provides validation of the similar findings in Panel A of the DiD examination for these two BHC outcome measures. Risk Appetite is not significant related to NPLs in this round of estimations. Once again, the coefficient for Risk Appetite is negatively related and significant to Actual Loan Losses, as observed in Table 21, corroborating the findings across all the earlier standard regressions.

This exercise demonstrates the findings of an alternative data collection specification for BHC Risk Appetite, using an independent secondary source from the earlier examinations. In this round of estimations, Risk Appetite continues to indicate a positive relation to BHC performance measures, including the role of revenue-based channels of impact underpinning these results.

[80] The pairwise correlation of Risk Appetite arrangements and this new variable, risk charter risk appetite, is 0.4842.
[81] Control variables are not included in these estimations as they are directly affected by the treatment and the passage of the heightened guidelines that may taint casual inferences (Lechner, 2010, p. 187; Roberts & Whited, 2012, p.35).

Table 21. Model 12: Differences-in-differences examination

Panel A: Risk Appetite

Variable	Model 12a (ROA)	Model 12b (NIM)	Model 12c (Oper. Income)[82]	Model 12d (Total Interest Expense)	Model 12e (NPLs)	Model 12f (Actual Net Loan Losses)	Model 12g (Tail Risk)
Time	0.00913 (0.19)	-0.138*** (-2.85)	107.2 (0.96)	-83.99 (-1.19)	-0.745*** (-12.98)	-79.18 (-1.24)	-6.918*** (-9.58)
Treated	0.323** (2.09)	0.247 (1.57)	320.1 (0.88)	115.0 (0.51)	-0.324 (-1.69)	65.03 (0.32)	-0.324 (-0.14)
Difference in Difference	-0.0336 (-0.27)	-0.00849 (-0.07)	718.5** (2.49)	-608.3*** (-3.34)	0.347** (2.28)	-720.4*** (-4.38)	-6.294*** (-3.32)
Observations	560	560	561	561	537	544	541
R^2	0.0191	0.0276	0.0691	0.0716	0.3229	0.1221	0.3314
AIC	502	515	9212	8513	657	8283	3390
BIC	519	532	9229	8530	674	8310	3410
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Risk Charter Determined Risk Appetite

Variable	Model 12h (ROA)	Model 12i (NIM)	Model 12j (Operating Income)[83]	Model 12k (Total Interest Expense)	Model 12l (NPLs)	Model 12m (Actual Net Loan Losses)	Model 12n (Tail Risk)
Time	0.000592 (0.01)	-0.163*** (-3.35)	91.84 (0.81)	-121.0 (-1.69)	-0.710*** (-12.22)	-113.5 (-1.73)	-6.391*** (-9.10)
Treated	-0.208 (-1.55)	-0.422*** (-3.15)	-661.8** (-2.10)	537.4*** (2.69)	-0.482*** (-3.03)	588.8*** (3.24)	-2.404 (-1.25)
Difference in Difference	0.218* (1.79)	0.373*** (3.07)	1088.0*** (3.82)	-610.5*** (-3.38)	0.273* (1.92)	-759.7*** (-4.62)	-5.821*** (-3.33)
Observations	560	560	561	551	537	544	541
R^2	0.0093	0.0409	0.0624	0.0550	0.3308	0.0928	0.3823
AIC	507	507	9216	8522	650	8311	3350
BIC	525	524	9233	8540	668	8328	3367
Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*Notes: Table 21 Model 12 consists of differences-in-differences regressions using fixed effects for Risk Appetite as the independent variable. Panel A consists of differences-in-differences regressions using fixed effects for Risk Appetite as normal. Panel B consists of differences-in-differences regressions using fixed effects for Risk Appetite as collected and identified from Risk Committee charters as the independent variable. The dependent variable is named underneath the model number and was selected from previous FE tests reported in this study producing significant results. All dependent variables defined in Appendix 2. Significant findings are denoted with *, ** and *** for 10%, 5% and 1% levels respectively with coefficient values reported (and t values reported in parentheses). Early adopter BHCs in 2012 are coded in the sample to exclude from the Time variable in order to create a before and after treatment effect for these estimations.*

[82] Delimiting the sample again to small BHCs (voluntary adopters with assets of less than $50 billion) again reports a positive DiD coefficient at the one per cent significance level for Risk Appetite and its impact upon Operating Income, further corroborating the earlier findings.

[83] As in Panel A, Risk Charter Determined Risk Appetite indicates a positive DiD coefficient for Operating Income at the one per cent significance level if the sample is delimited to voluntary adopters.

6.9 Summary

This chapter presents a further analysis of the relationship of risk governance mechanisms to selected BHC outcome measures. Specifically, Risk Committee expertise has been employed as a further robustness check on the otherwise insignificant findings observed thus far for existence of the Risk Committee, with underwhelming results.[84] The presence of Risk Committees which are a requirement for certain BHCs, fail to exhibit an enduring relationship with return or risk measures in the post-crisis environment, other than noted in limited sub-sample estimations.

As for Risk Appetite, the evidence validates a positive and significant relationship between Risk Appetite and BHC performance measures across a series of alternative analyses. The relationship between Risk Appetite and risk measures remains an open question deserving further testing, although loan losses appears to be negatively related to the risk governance practice.[85]

The robustness checks carried out in this chapter also include probing CEO Power as an alternative explanation for these results. This however fails to refute the initial findings. An extended and more detailed set of performance outcome variables has also been collected and used in testing to unearth an underlying thread of value associated with Risk Appetite, such as Operating Income, Other Operating Income and funding costs.

The sample was further decomposed into both mandatory and voluntary adopters, to observe significant findings for voluntary adopters, which suggests that the benefits of Risk Appetite is not limited to those covered by regulatory fiat. Following Cornett, McNutt and Tehranian (2009), influential observations may be removed from the sample using Cook's (1997) with qualitatively similar findings and similar or improved R-Square values. Risk Appetite exhibits a positive five per cent significant relation with ROA and NII and a one per cent significant relation with Operating Income, Other Operating Income, TIE and Actual Loan Losses when removing outliers.

Reverse causality, as noted in Section 6.7, is always a possible concern in the design of governance studies; however this study is driven by the occurrence of an external regulatory-driven or shock event, in which Risk Appetite exhibits a significant relation in both early adopter analysis and the DiD analysis.

To summarize, the existence of Risk Appetite arrangements has a consistent and compelling association with select BHC performance measures in multiple empirical settings. A conceptual map showing the outcomes of testing is presented in Figure 6, illustrating the original hypotheses and the empirical findings.

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[84] As observed in Table 18, the coefficient for Risk Committee Exists is significant and positive in in Models 9a, 9b and 10b, indicating an impact to certain performance measures in this one sub-sample. In unreported results (to conserve space), the sample BHC size sub-sampling technique was applied to Risk Committee Financial Expertise to observe if mandatory or voluntary adopters of this risk governance mechanism exhibited positive results, with no significant findings.

[85] Stulz (2015) concludes his seminal paper with the final line: "Nevertheless, while better risk management should lead to better risk-taking, there is no reason for a bank with good risk management to have low risk" (Stulz, 2015, p. 17).

Hypotheses H1a and H1b relate to the existence of Risk Appetite arrangements and their positive (negative) relationship with performance (risk). H1a is supported, but H1b is not fully supported in this study.

Hypotheses H2a and H2b relate to the existence of the BHC board-level Risk Committee for a positive (negative) relationship with performance (risk). Neither hypothesis is fully supported.

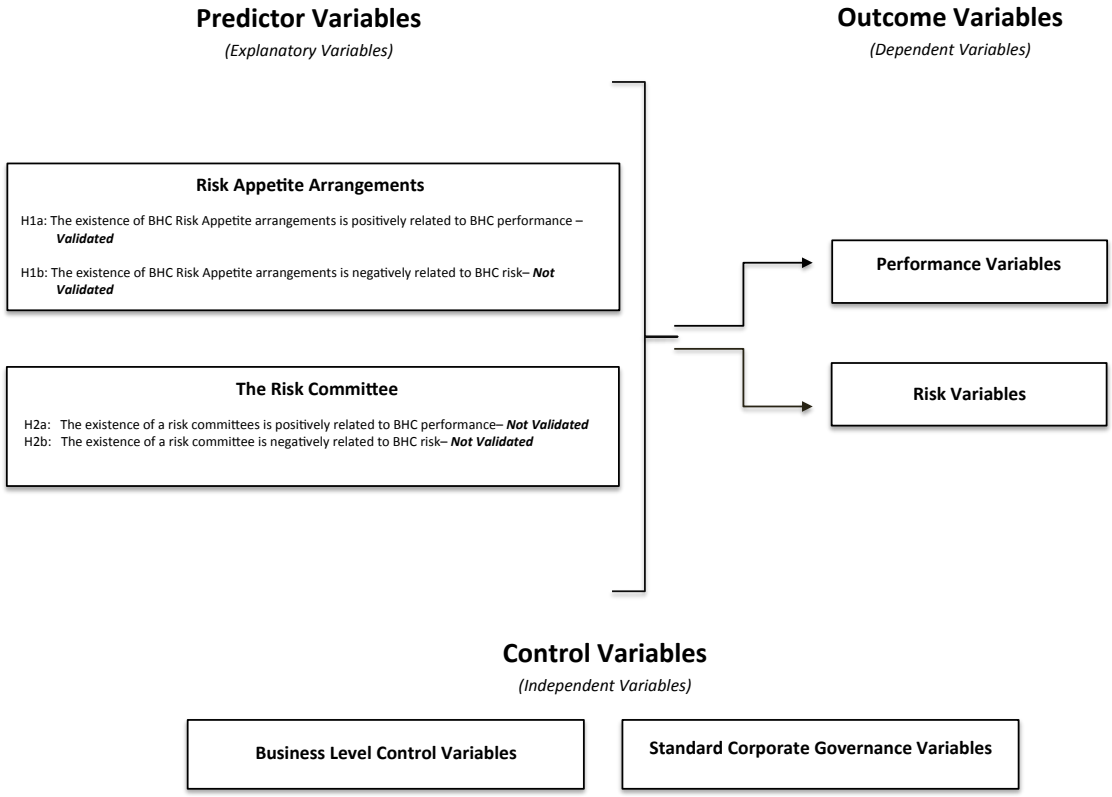

Figure 6: Conceptual map with statement of hypothesis outcomes

Source: Author

7 CONCLUSIONS, LIMITATIONS AND FURTHER STUDY

7.1 Conclusions

Certain aspects of recent bank regulation may have an adverse impact on external monitoring of banks, underscoring the role of internal monitoring. For example, greater capital cushions alone, which mitigate on the one hand systemic risks, but may have the unintended effect of reducing incentives for effective external monitoring and market discipline by depositors, customers and supervisors on the other hand (Dermine, 2013). Regulatory practices that promote improved internal monitoring may mitigate agency rents, resulting in a complementary relationship between governance and regulation (de Haan and Vlahu, 2015). Thus, activities that facilitate more focused risk-taking are consistent with these attempts to better control agency costs.

Given the idiosyncratic nature of this industry, including information asymmetries, greater risk opacity, and its systemic risk profile, internal monitoring has been identified as a key corporate governance mechanism (de Andres and Vallelado, 2008). Following the financial crisis, bank regulators intervened with a set of heightened regulations to improve internal monitoring (Federal Register, 2014, Basel, 2015). But simply relying on larger boards may be insufficient as they face coordination challenges (Upadhyay, Bhargava and Faircloth, 2014 and Faleye, Hoitash and Hoitash, 2011).

Risk governance mechanisms have been introduced to enhance monitoring, including the requirement to form a Risk Committee and the articulation and approval of firm-wide Risk Appetite.

Risk governance mechanisms associated with the Dodd-Frank Act but only codified into law in 2014 (Federal Register, 2014) have been analysed in this study for their relation to BHC performance measures and risk profiles. Specifically, Risk Appetite arrangements and the existence of Risk Committees are key aspects of the heightened standards tested for 2012 to 2015 inclusive.

There is little doubt banks require a strong and knowledgeable board (Greuning and Bratonovic, 2003). But there is limited evidence to put forward to demonstrate the Risk Committee of the full board exhibits a significant relationship to BHC performance measures (beyond share returns), consistent with empirical studies by Aebi, Sabato and Schmid (2012) and Hines and Peters (2015).

The latter authors posit that risk management committees may represent a symbolic governance practice to enhance the firm's reputational legitimacy (Hines and Peters, 2015, p. 288). Similarly, the findings of this study find little to overturn this position, unless other explanations can be identified.

Moving on to more promising territory, Risk Appetite arrangements are expected to have a fundamental effect on how banks are managed (Jackson, 2014). However, until now, there has been little empirical testing of the efficacy of this risk governance practice.

Compelling empirical evidence is presented in this study for the adoption of board-level Risk Appetite arrangements and their impact to BHC outcomes. Risk Appetite is positively and significantly related to a suite of BHC operating performance measures and negatively related to Actual Loan Losses, on a consistent basis and in a variety of settings.

Moreover, a channel of impact analysis of Risk Appetite unearths evidence of improvements that originate with greater Net Interest Income (driven by lower funding costs), supporting higher Operating Income levels, and eventually driving improved NIM and ROA levels at the top line performance levels.

In effect, Risk Appetite arrangements lead to more profitable banks.

There is no obvious alternative explanation for these findings. The results cannot be explained by differences in BHC managerial qualities, given the use of fixed effects in all the regressions. Year dummies control for time trends.

The evidence presented expands the typical limited headline factors found in many bank governance studies, with significant findings also reported for a broader set of BHC operating performance measures. A variety of robustness checks have been performed, including time (for early adopter) and size-based sub-samples (indicating the impact of Risk Appetite practices appear to be realised by voluntary adopters).

Omitted variables have been addressed by a series of further analyses. A suite of extended control variables have been added to the baseline estimations with reasonably consistent results observed, further mitigating omitted variable bias. An index has been designed to measure CEO Power in order to test this potential predictor, but in the end not providing an alternative explanation for the findings observed.

These findings chime with the seminal conceptual literature in bank corporate governance. Kashyap, Rajan and Stein (2008) flag the potential for agency conflicts within banks and posit that risk managers were unaware or unable to restrain traders and risk-takers effectively during the financial crisis. Risk Appetite arrangements can contribute to that daily challenge. Stulz (2015) states that risk managers must determine or assist in determining when a limit should be changed and when it is appropriate for the institution to adjust its Risk Appetite for better risk governance (Stulz, 2015, p.15).

The findings within this study also resonate with Jackson (2014) whom argues that better Risk Appetite articulation by bank boards should improve firm performance and with Gontarek (2016) who posits that the cascading of Risk Appetite arrangements can encourage the development of a more effective risk-taking culture within banking, currently a leading area of interest.

Ellul and Yerramilli (2013) observe in seminal research that BHCs underlying business model or possibly risk culture may determine the choice of risk and the strength of their risk management system. These authors posit that conservative BHCs may take lower risk and establish stronger risk management systems, while aggressive BHCs take higher risks and put into place weaker risk management controls.

Given the evidence presented in this research, the articulation, approval and monitoring of Risk Appetite boundaries by BHC boards, whether required by regulators or otherwise embraced as a better risk management practice by voluntary adopters, sit comfortably within the former, more conservative risk management ethos noted by Ellul and Yerramilli (2013).

A somewhat surprising secondary outcome is that, while Risk Appetite arrangements and BHC accounting measures are significantly and positively related, BHC stock returns do not exhibit a significant positive relationship with Risk Appetite. In fact, some evidence in this study suggests equity markets may react negatively to risk governance practices. This suggests that public markets may not be aware of the significance of the use of Risk Appetite arrangements and the potential to impact underlying operating performance.

Of direct relevance to practitioners, regulators may consider publishing in their call reports (including BHC Y9 reports) information on the use of Risk Appetite in order to illuminate this practice for investors, counterparties and bank customers. This measure might also promote greater market discipline, another corporate governance monitoring mechanism, and improve the transparency of BHC risk profiles in historically opaque risk-taking activities.

Bank corporate governance researchers call for the development of better indicators and tools that may signal risks in a timelier manner as well as selective dissemination of risk based information as a means to enhance market discipline (Claessens and Kodres, 2014). Bank supervisors echoed these calls with the requirement to adopt new corporate governance standards: “Another important objective is to emphasize key components of the risk governance responsibility of the board of directors, such as a Risk Committee, Risk Appetite and its relationship to a bank’s risk capacity” (Basel, 2015a, p. 4).

An unambiguous claim of contribution to knowledge, however modest, is made with respect to the impact of Risk Appetite practices upon selected BHC outcome measures.

This claim is based on the empirical evidence presented herein and the observed findings presented in this research. This study has identified a new and emerging practice worthy of further investigation and explanation.

One expert writes: “Better articulation of Risk Appetite, facilitated with the appropriate infrastructure and supported by a strong risk culture, should improve firm governance and performance… While global regulators have pushed for progress, this cannot be viewed as simply a regulatory compliance exercise - or it will be doomed to fail” (Jackson, 2014, p. 78 Chapter 5). This relevance of this observation is underscored given the voluntary adopter evidence presented herein.

The popular press has started to speculate that certain aspects of US banking regulations might soon be relaxed, specifically with respect to the Dodd-Frank Act (PBS, 2016). If true, policy makers and bank supervisors will benefit from an evidence-based approach when considering the appropriateness of the key risk governance arrangements adopted thus far. This research seeks to contribute meaningfully to this current and impactful debate.

7.2 Limitations

As with all empirical studies in the social science arena, this research has its limitations.

First, this study covers a time period which is relatively early in the phased adoption of risk governance arrangements. As more time passes, more data can be collected relating to the practice of risk governance practices.

Next, the techniques employed herein have certain limitations. It is acknowledged that governance and risk oversight arrangements or their proxies are endogenous by nature (Hermalin and Weisbach, 2003; Adams, Hermalin and Weisbach, 2010; Beltratti and Stulz, 2012). For example, Board Attendance may be determined in part by BHC performance or risk related developments. Moreover, risk governance has not been randomly allocated across BHCs, presenting methodological challenges to prove causality. Nonetheless, applying the DiD approach in the context of exogenous regulatory change appears to be one of the more reliable means to approach causal inferences (Love, 2011, p.19).

Another limitation is that representations from governance actors relating to the adoption of Risk Appetite arrangements are not necessarily a guarantee that BHCs adopt this practice on a uniform basis with an equal degree of seriousness of purpose.

Lastly, as also acknowledged by Hines and Peters (2015), the actual scope of responsibilities of the Risk Committees observed in this study may vary across different BHCs (notwithstanding the regulatory guidelines defining their characteristics), which may explain the lack of a relationship between this risk governance practice and the outcome variables.

There are two potential interpretations of these findings for the relationship between Risk Appetite arrangements and BHC outcomes. The first is that risk governance practices may lead to improved bank performance, as posited by Jackson (2014) and Stulz (2015). Alternatively, selected risk governance mechanisms such as Risk Appetite may be determined by other unobserved time-varying influences, which simultaneously impact these findings.

All that can be said is that reasonable efforts were made to test the heightened regulatory standards across a variety of empirical settings, with reasonably consistent results across the full sample and sub-samples for Risk Appetite arrangements and BHC performance measures.

7.3 Further Study

The findings of this study provide ample opportunities for further investigation of Risk Appetite specifically, and risk governance generally.

This sample comprised only US BHCs, which brought certain data collection and empirical benefits. However, banks outside the US face similar regulatory shocks and requirements to adopt Risk Appetite arrangements and a broader set of risk governance measures. Future research might apply the framework used in this study to a panel of global banks or other international financial institutions. A sample of US BHCs may not be generalisable to a global scale, notably in cross-country banking contexts. Appropriate country-specific variables might be collected to test the hypothesis relating to Risk Appetite with an international sample of large banks, notably in Europe where challenges relating to the banking sector continue to this day.

From a methodological perspective, expanding the data to the beginning of the financial crisis period or earlier would permit further examination to supplement the methods used in this study.

This study is not the first to fail to identify compelling associations between the Risk Committee and performance or risk, which deserves further empirical consideration. It may be that critical board features that do promote better performance or lower risk-taking are not captured by the academically driven definitions adopted within the existing literature and adopted in this study, or perhaps other explanations may be subsequently offered or the large BHC sub-sampling may provide further opportunities to examine this risk governance mechanism further.

Actual Loan Losses is used here as one proxy for bad risks, identified by Stulz (2015) with compelling effect. However this is in some ways not so challenging given such measures are identified on an ex-post basis. However, the question arises how can bank governance researchers proxy good risks identified by Stulz (2015), where the risk-taking benefits outweigh their costs?

For example, can Tail Risk as a market determined measure serve as a proxy? Alternatively and more likely, can changes in risk adjusted capital levels, such as TCE/RWA or economic capital play a more prominent role? Developing new risk proxies within this framework would shed light on risk profiles as this sector faces the next risk-based challenge, preferably on a predictive or ex ante basis.

Lastly, both quantitative and qualitative research approaches might be used to investigate extended areas of Risk Appetite. The process and effectiveness of cascading the risk appetite statement, and critically probing for any links with banker conduct, would offer great insights into this topical area, given the missteps observed by banking firms in recent history. Of particular promise is the phenomenon of cascading the Risk Appetite practice down the organisation and evaluating its impact upon risk culture (Jackson, 2014; Gontarek, 2016), including any reduction in bank fines and enforcement actions.

REFERENCES

Abels, P. and Martelli, J. (2011) CEO Duality: how many hats are too many, *Corporate Governance*, 13(2), pp, 135 – 147.

Accenture (2010) *Risk management: It's all about balance,* Available at: http://www.gelending.com/Clg/CapitaLens/5-2010/readmore/Accenture_Outlook_Its_all_about_balance_Risk_management.pdf (Accessed: 14 January 2015).

Accenture (2015) *Top Ten Challenges for Investment Banks.* Available at: https://www.accenture.com/us-en/research-investment-banks-top-ten-challenges-2015 (Accessed: 19 December 2015).

Acharaya, V., Philippon, T., Richardson, M., and Roubini N. (eds.) (2009) *Restoring Financial Stability*. New York: Wiley.

Acharaya, V., Pedersen, L, Philippon, T. and Richardson, M. (2010) Measuring Systemic Risk. Available at: http://pages.stern.nyu.edu/~tphilipp/papers/Systemic.pdf (Accessed:19 December 2014).

Acharya, V., Cooley, T., Richardson, M., and Walter, I. (eds.) (2011) *Regulating Wall Street. The Dodd-Frank Act and the New Architecture of Global Finance*. New York: Wiley.

Acharya, V., Litov, L., and Sepe, S. (2013) *Non-Executive Incentives and Bank Risk-Taking*. Available at: http://www.u.arizona.edu/~litov/NonExecIncentivesBankRisk.pdf (Accessed: 30 January 2015).

Acrey, J., McCumber, W., and Nguyen, T. (2011) CEO incentives and bank risk, *Journal of Economics and Business,* 63(2011), pp. 456 – 471.

Adams, M. and Jiang, W. (2015) Do outside directors influence the financial performance of risk trading firms? Evidence from the UK insurance industry, *Journal of Banking & Finance,* 64(2016), pp. 36 -51.

Adams, M., Lin, C., and Zou, H. (2011) CEO Incentives, Monitoring, and Corporate Risk Management. Evidence from Insurance Use, *Journal of Risk and Insurance*, 78(3), pp. 551 – 582.

Adams, R. and Mehran, H. (2003) Is Corporate Governance Different for Bank Holding Companies? *FRBNY Economic Policy Review,* 9(1), pp. 123–142.

Adams, R. and Mehran, H. (2005) *Corporate Perfomance, Board Structure and Their Determinants in the Banking Industry.* Available at: http://papers.ssrn.com/Sol3/papers.cfm?abstract_id=302593. (Accessed: 4 January 2015).

Adams, R, Hermalin, B. and Weisbach, M. (2010) The Role of Boards of Directors in Corporate Governance: A Conceptual Framework and Survey, *Journal of Economic Literature*, 48 (1), pp. 58–107.

Adams, R. and Mehran, H. (2012) Bank board structure and performance: Evidence for large bank holding companies, *Journal of Financial Intermediation*, 21(2012), pp. 243 – 267.

Adams, R. (2012) Governance and the Financial Crisis, *International Review of Finance,* 12(1), pp. 7–38.

Adams, R., and Ferreira, D. (2012) Regulatory pressure and bank director incentives to attend board meetings, *International Review of Finance,* 12(1), pp. 227 – 248.

Adams, R. and Ragunathan, V. *Lehman Sisters*. (2013) FIRN Research Paper. Available at: SSRN: http://ssrn.com/abstract=2380036 or http://dx.doi.org/10.2139/ssrn.2380036 (Accessed: 4 January 2015).

Adams, R. and Gramlich, J. (2014) *Where are all the new banks? The role of regulatory burden in new charter creation*. Available at: https://www.stlouisfed.org/~/media/Files/PDFs/Banking/CBRC-2014/SESSION1_Adams_Gramlich.pdf (Accessed: 15 April 2015).

Adbi, H., and Williams, J. (2010) Principal Component Analysis. *Wiley Interdisciplinary Reviews,* 2(4), pp. 433 – 454.

Adelopo, I. (2010) *The Imact of corporate governance on auditor independence: A study of audit comittees in UK listed companies*. Available at: https://www.dora.dmu.ac.uk/bitstream/handle/2086/3836/Ismail%20Adelopo%20thesis.pdf?sequence=1 (Accessed: 5 Septmber 2015).

Admati, A., Conti-Brown, P., and Pfeiderer, P. (2012) Liability Holding Companies,*UCLA Law Review,* 852(2012), pp. 859 – 913.

Admati, A. (2014) *The compelling case for stronger and more effective leverage regulation in banking.* Available at: https://www.gsb.stanford.edu/faculty-research/working-papers/compelling-case-stronger-more-effective-leverage-regulation-banking (Accessed: 22 September 2015).

Admati, A. (2016) The Missed Opportunity and Challenge of Capital Regulation, *National Institute Economic Review*, 235, pp. R4 – R14.

Aebi, V., Sabato, G. and Schmid, M. (2012) Risk management, corporate governance, and bank performance in the financial crisis, *Journal of Banking & Finance,* 36 (12), pp. 3213–3226.

Agarwal, S., Lucca, D., Seru, A., and Trebbi, F. (2014) Inconsistent regulators: Evidence from Banking, *Quarterly Journal of Economics*, pp. 889 – 938

Aggarwal, R. and Williamson, R. (2006) *Did new regulations target the relevant corporate governance attributes?* Available at: http://faculty.msb.edu/aggarwal/governance.pdf (Accessed: 12 January 2015).

Agrawal, A. and Mandelker, G.N. (1987) Managerial Incentives and Corporate Investment and Financing Decisions, *The Journal of Finance*, 42(4), pp. 823–837.

Ahmed, A. (2015) Exploring the corporate governance in Lloyd's and the Co-operative Bank: The role of the board, *Journal of Business and Management Sciences*, 3(1), pp. 6 – 19.

Akhigbe, A., and Martin, A. (2007) Influence of disclosure and governance on risk of US financial services firms following SOX, *Journal of Banking & Finance*, 32(2008), pp. 2124 – 2135.

Akhighbe, A. and Stevenson, B. (2010) Profit Efficiency in US BHCs: Effects of increasing non traditional revenue sources, *The Quarterly Review of Economics and Finance*, 50(2010), pp. 132 – 140

Al-Najjar, B. and Belghitar, Y. (2011) Corporate cash holdings and dividend payments: Evidence from simultaneous analysis, *Managerial and Decision Economics,* 32(4), pp. 231 – 241.

Albertazzi, U. and Gambacorta, L. (2009) Bank profitability and the business cycle, J*ournal of Financial Stability*, 5(2009) pp. 393 – 409.

Aldman, H., Duncan, K., Kelly, S., McNamara, R., and Nagel, S. (2012) Audit committee characteristics and firm performance during the global financial crisis, *Accounting and Finance*, 52(2012), pp. 971 – 1000.

Alexander, K. (2006) Corporate governance and banks: the role of regulation in reducing the principal - agent problem, *Journal of Banking Regulation*, 7(1/2), pp. 17 - 40.

Alexandre, H. and Bouaiss, K. (2008) The Complementary of Regulatory and Internal Governance Mechanisms in Banks, *Banquiers, Markets and Investors*, 98, pp. 6 – 18.

Alghamdi, D. (2012) *Investigating earnings management practices and the role of corporate governance and the external audit committee in emerging markets: Empirical evidence from Saudi listed companies*. Available at: http://etheses.dur.ac.uk/3438/1/SALIM_ALGHAMDI_(2012)PDF.pdf (Accessed: 22 November 2015).

Alix, M. (2012) *Risk Governance: Appetite, Culture and the Limits of Limits*. Federal Reserve Bank of New York. Available at: https://www.newyorkfed.org/newsevents/speeches/2012/alix121114 (Accessed: 13 September 2015).

Alix, M. (2014) Risk Appetite and Risk Culture: A Regulatory View, in Jackson, P. (eds.) *Risk Culture and Effective Risk Governance,* London: Risk Books.

Ammann, M., Oesch, D., and Schmid, M. (2011) Corporate Governance and Firm Value: Interantional Evidence, *Journal of Empirical Finance,* 18(2011), pp. 36 – 55.

Amorello, L. and Huber, S. (2014) Recovery Planning: A new valuable corporate governance framework for credit insititutions. Available at: http://ssrn.com/abstract=2577760 (Accessed: 22 July 2015).

Anderson, R., Fraser, D. (2000) Corporate control, bank risk-taking and the health of the banking industry, *Journal of Banking & Finance*, 24(2000) pp. 1383 – 1398.

Anderson, C., Becher, D. and Campbell, T. (2004) Bank mergers, the market for bank CEOs, and managerial incentives, *Journal of Financial Intermediation,* 13(1), pp. 6–27.

Andries, A. and Brown, M. (2014) Credit Booms and Busts in Emerging Markets, The Role of Bank Governance and Risk Management, *University of St Gallen Working Papers of Finance,* 14(4), pp. 131–155.

Anginer, D., Demirgüc-Kunt, A., Huizinga, H., and Ma, K. (2013) *How does corporate governance affect bank capitalization strategies?* Available at: http://documents.worldbank.org/curated/en/438291468166183285/How-does-corporate-governance-affect-bank-capitalization-strategies (Accessed: 10 February 2015).

Anginer, D., Demirgüc-Kunt, A., Huizinga, H., and Ma, K. (2014) *Corporate Governance and Bank Insolvency Risk, International Evidence*, Available at: https://ideas.repec.org/p/wbk/wbrwps/7017.html (Accessed: 10 July 2015).

Antonakis, J., Bendahan, S., Jacquart, P., and Lalive, R. (2010) On making casual claims: A review and recommendations. *Leadership Quarterly*, 21(2010). pp. 1086 – 1120.

Antonakis, J., Bendahan, S., Jacquart, P., and Lalive, R. (2014) *Causality and Endogeneity: Problems and Solutions.* Available at: http://www.hec.unil.ch/jantonakis/Causality_and_endogeneity_final.pdf (Accessed: 3 May 2015).

Arcot, S. and Bruno, V. (2009) *Silence is not Golden: Corporate Governance Standards, Transparency and Performance.* Available at: http://www.parisschoolofeconomics.eu/IMG/pdf/sarcot_1105.pdf. (Accessed: 22 September 2014).

Argenti, J. (1976) *Corporate Collapse: The Causes and Symptoms,* Maidenhead, McGraw-Hill.

Arksey, H. and Malley, L. (2005) Scoping Studies: Towards a Methodological Framework, *International Journal of Social Research Methodology: Theory and Practice,* 8(1), pp. 19–32.

Armour, J., Awrey, D., Davies, P., Enriques, L., Gordon, J., Mayer, C. and Payne, J. (2014) *Principles of Financial Regulation.* Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2526740 (Accessed: 30 June 2015).

Armour, J. and Gordon, J. (2014) *Systematic Harms and Shareholder Value.* Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2307959 (Accessed: 20 January 2015).

Arjani, N. and Paulin, G. (2013) Lessons from the Financial Crisis: Bank Performance and Regulatory Reform. *Bank of Canada Discussion Paper.* 2013-4. pp. 1 – 40. Available at: http://www.bankofcanada.ca/wp-content/uploads/2013/12/dp2013-04.pdf (Accessed: 21 November 2015).

Ashby, S., Palermo, T. and Power, M. (2012) *Risk culture in financial organisations: an interim report.* Available at: http://www.lse.ac.uk/accounting/CARR/pdf/risk-culture-interim-report.pdf (Accessed: 28 January 2016).

Ashby, S., Peters, L., and Devlin, J. (2014) When an irresistible force meets an immovable object: the interplay of agency and structure in the UK financial crisis, *Journal of Business Research*, 67(2014), pp. 2671 – 2683.

Atkinson, T., Luttrell, D. and Rosenblum, H. (2013) How bad was it? The costs and consequences of the 2007 – 2009 financial crisis, *Dallas Federal Reserve Board Papers,* 20, pp. 1 – 24.

Aven, T. (2013) On the meaning of risk appetite concept, *Risk Analysis*, 33(3), pp 462 - 468.

Avgouleas, E. and Goodhart, C. (2015) Critical Reflections on Bank Bail-ins, *Journal of Financial Regulation,* Vol 1(1), pp. 3–29.

Avraham, D., Selvaggi, P., and Vickery, J. (2012) A structural view of US BHCs, *FRBNY Economical Review*, pp. 65 - 81.

Bai, G. and Elyasiani, E. (2013) Bank stability and managerial compensation, *Journal of Banking & Finance*, 37(3), pp. 799–813.

Baldan, C., Geretto, E., and Zen, F. (2014) *Managing Banking Risk with the Risk Appetite Framework: A Quantitative Model for the Banking System*. Available at: http://mpra.ub.uni-muenchen.de/59504/ (Accessed: 2 February 2015).

Baltagi, B., (2005) *Econometric Analysis of Panel Data,* Chichester: Wiley.

Bank Director. (2015) *The 2015 Risk Practices Survey Summary Report.* Available at: http://www.fisglobal.com/ucmprdpub/groups/public/documents/document/c027869.pdf (Accessed: on 12 October 2015).

Bank Director. (2016) *The 2016 Risk Practices Survey Report*. Available at: http://www.bankdirector.com/issues/risk/2016-risk-practices-survey-banks-beef-up-on-cybersecurity/ (Accessed: 5 August 2016).

Bank Safety and Soundness Advisor. (2014) *Regulators Push for More Formalized Risk Appetite Statement.* Available at: http://www.finpro.us/uploads/1/2/8/4/12842898/072114_bssa_newsletter.pdf (Accessed: 20 October 2015).

Banking Ireland . (2015) *Risk Culture is at the forefront of bank's agenda*. Available at: http://www.iob.ie/sites/default/files/Banking_Ireland_-_semi_2015.pdf (Accessed: 30 December 2015).

Barakat, A. and Hussainey, K. (2013) Bank governance, regulation, supervision, and risk reporting: Evidence from operational risk disclosures in European banks, *International Review of Financial Analysis,* 30(12), pp. 254–273.

Barfield, R. (2010) *Risk Appetite: How hungry are you? PWC Risk Governance Series*. Available at: https://www.pwc.com/gx/en/banking-capital-markets/pdf/risk_appetite.pdf (Accessed: 14 June 2015).

Barker, R. (2009) *The Walker Review of Corporate Governance: An Assesment. Big Picture.* Available at: http://www.google.co.uk/url?sa=tand rct=jand q=and esrc=sand source=weband cd=1and ved=0CCYQFjAAahUKEwjd97Kcp-jIAhUJdD4KHY7NDFUand url=http%3A%2F%2Fwww.iod.com%2F~%2Fmedia%2FDocuments%2FPDFs%2FInfluencing%2FBig%2520Picture%2FBP%25202009%2FSept%2FThe%2520Walker%2520Reviewand usg=AFQjCNGrHDjyGidbuRxDOy3iEing0ElDqw (Accessed: 21 February 2015).

Barrell, R., Davis, E., Fic, T., and Karim, D. (2011) *Bank capital composition, regulation and risk-taking.* Available at: http://www.niesr.ac.uk/sites/default/files/publications/dp375_0.pdf (Accessed: 15 September 2015).

Barrow, J., and Smalt, S. (2013) A case for banking oversight reform in crisis mitigation, *Economics, Management and Financial Markets*, 8(4), pp. 11 – 26.

Barro, J., and Barro, R. (1990) *Pay, Performance and Turnover of Bank CEOs*. Available at: http://nrs.harvard.edu/urn-3:HUL.InstRepos:3451300 (Accessed: 22 September 2014).

Barth, J., Caprio, G., and Levine, R. (2004) Bank regulation and supervision, What works best? *Journal of Financial Intermediation,* 13(2), pp. 105 - 248.

Barth, J., Caprio, G., and Levine, R. (2006) *The Design and Governance of Bank Supervison.* Working paper prepared for the 2006 Riksbank conference on the Governance of Global Central Banks. Available at: http://www.riksbank.se/Upload/Dokument_riksbank/Kat_foa/Caprio%20Levine%20-%20Governance%20of%20bank%20supervision%20July%2019_paper.pdf (Accessed: 30 August 2014).

Barth, J. Gan, J., and Nolle, D. (2005) *Global Banking Regulation and Supervision. What are the Issues and What are the Practices?* Available at: http://cn.ckgsb.com/Userfiles/doc/BARTHnolle%20gan_bood.pdf (Accessed: 1 November 2015).

Barth, J. (2015) *Examining the Designation and Regulation of BHC SIFIs. The Statement before the House Financial Services Committee, U.S. House of Representatives.* Available at: http://financialservices.house.gov/calendar/?EventTypeID= (Accessed: 1 February 2016).

Basel. (2006) *Basel Committee on Banking Supervision. Enhancing Corporate Governance for Banking Organizations.* Available at: http://www.bis.org/publ/bcbs122.htm (Accessed: 13 September 2014).

Basel. (2010) Basel Committee on Banking Supervision (BCBS, 2010), *An Assessment of the Long-Term Economic Impact of Stronger Capital and Liquidity Requirements* Available at: http://www.bis.org/publ/bcbs173.pdf (Accessed: 15 August 2015).

Basel. (2014) *Basel Committee on Banking Supervision. Corporate governance principles for banks*. Available at: http://www.bis.org/publ/bcbs294.pdf (Accessed: 5 January 2015).

Basel. (2015a) Basel Committee on Banking Supervision Guidelines. *Corporate Governance Principles for Banks.* Available at: http://www.bis.org/bcbs/publ/d328.htm (Accessed: on 25 August 2015).

Basel. (2015b) Basel Committee on Banking Supervision. *Report on the impact and accountability of banking supervision.* Available at: http://www.bis.org/bcbs/publ/d326.htm (Accessed: 25 July 2015).

Basel. (2015c) Basel Committee on Banking Supervision. *Revised Pillar 3 Disclosure Requirements.* Available at http://www.bis.org/bcbs/publ/d309.pdf (Accessed: 2 February 2016).

Basel. (2015d) Basel Committee on Banking Supervision. *Making Supervisory Stress Tests More Macroprudential: Considering Liquidity and Solvency Interactions and Systemic Risk*. Available at: http://www.bis.org/bcbs/publ/wp29.htm (Accessed: 29 November 2015)

Battaglia, F., Curcio, D., and Gallo, A. (2014) *Board structure and tail and systemic risk-taking: Evidence form European banks.* Available at: http://www.efmaefm.org/0EFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2014-Rome/papers/EFMA2014_0476_fullpaper.pdf (Accessed: 2 January 2015).

Battaglia, F., and Gallo, A. (2015) Risk governance and Asian bank performance: An empirical investigation over the financial crisis, *Emerging Markets Review,* 30(2015), pp. 1- 16.

Battaglia, F., and Gallo, A. (2016) Strong boards, ownership concentration and EU bank's systemic risk-taking: Evidence from the financial crisis, *Journal of International Financial Markets, Institutions, and Money*, (2016), pp. 1 – 31.

BBA. (2015) *Response to Consultative Document on Guidelines for Corporate Governance Principles for Banks*. Available at: https://www.bba.org.uk/policy/financial-and -risk-policy/parliamentary-commission-of-banking-stand ards/corporate-governance/bba-response-to-bcbs-corporate-governance-principles-for-banks/ (Accessed: 24 September 2015).

Beasley, M., Carcello, J., Hermanson, D. and Neal, T. (2009) The Audit Committee Oversight Process, *Contemporary Accounting Research*, 26(1), pp. 65 – 122.

Beatty, A. and Liao, S. (2014) Financial accounting in the banking industry: a review of the empirical literature, *Journal of Accounting and Economics*, 58(2014), pp. 339 – 383.

Bebchuk, L., and Cohen, A. (2005) The cots of entrenched boards, *Journal of Financial Economics*, 78, pp. 409 – 433.

Bebchuk, L., Cohen, A. and Ferrell, A. (2004) What Matters in Corporate Governance, *The Review of Financial Studies*, 22(2), pp. 783-827.

Bebchuk, L., Cremers, M., and Peyer, U. (2007) *CEO Centrality.* NBER Working Paper No 13701. Available at: http://admin.nber.org/custom?client=test3_feand proxystylesheet=test3_feand site=default_collectionand btnG=Searchand entqr=0and ud=1and output=xml_no_dtdand oe=UTF-8and ie=UTF-8and q=13701 (Accessed: 20 August 2014).

Bebchuck, L. and Spamann, H. (2010) *Regulating Banker's Pay.* Available at: http://www8.gsb.columbia.edu/rtfiles/leadership/may2010/Regulating_Bankers_Pay.pdf (Accessed: 24 September 2014).

Bebchuk, L., Cohen, A., and Wang, C. (2013) Learning and the disappearing association between governance and returns, *Journal of Financial Economics,* 108(2013), pp. 323 – 348.

Beccalli, E. & Poli, F. (2015). *Bank risk, governance and regulation*. 1st Edition. Palgrave: New York.

Becher, D., Campbell, T. and Frye, M. (2003) *Incentive Compensation for Bank Directors: The Impact of Deregulation.* Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=425441 (Accessed: 4 January 2015).

Becher, D and Frye, M. (2011) Does regulation substitute or complement governance? *Journal of Banking & Finance,* 35(2011), pp. 736 - 751.

Becht, M., Bolton, P. and Röell, A. (2011) Why bank governance is different, *Oxford Review of Economic Policy,* 27 (3), pp. 437–463.

Beekes, W., Hong, A., and Owen, S. (2010) An Alternative Measure of Corporate Governance Using Discrete Principal Component Analysis. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1623005 (Accessed: 28 January 2016).

Begley, T., Purnanandam, A., and Zheng, K. (2015) The strategic under-reporting of bank risk. Available at: http://www.dnb.nl/en/binaries/paper%20T.%20Begley_tcm47-320966.pdf (Accesed 4 April 2016)

Belghitar, Y. and Clark, E. (2012) The Effect of CEO Risk Appetite on Firm Volatility: An Empirical Analysis of Financial Firms, *International Journal of the Economics of Business*, 19(2), pp. 195 – 211.

Bellemare, M., Masaki, T., and Pepinsky, T. (2015) *Lagged Explanatory Variables and Estimation of Causal Effects.* Available at: http://marcfbellemare.com/wordpress/wp-content/uploads/2015/02/BMPLagIdentificationFebruary2015.pdf (Accessed: 13 April 2015).

Beltratti, A. and Stulz, R. (2012) The credit crisis around the globe: Why did some banks perform better? *Journal of Financial Economics,* 105(1), pp. 1–17.

Bennett, R., Güntay, L, and Unal, H. (2014) Inside debt, bank default risk and performance in the crisis. *FDIC Working Paper Series*. Available at: https://www.fdic.gov/bank/analytical/cfr/2012/wp2012/CFR_WP_2012_03.pdf (Accessed: 8 October 2015).

Berger, A. and de Patti, E. (2002) *Capital structure and firm performance: A new approach to testing agency theory and an application in the banking industry.* Available at: https://www.federalreserve.gov/pubs/feds/2002/200254/200254pap.pdf. (Accessed: 30 December 2014).

Berger, A., Imbierowicz, B., and Rauch, C. (2012) *The roles of corporate governance in bank failures during the recent credit crisis.* Available at: http://www.erim.eur.nl/fileadmin/erim_content/documents/Berger_Sep21.pdf (Accessed: 27 December 2014).

Berger, A., Kick, T., and Schaeck, K. (2014) Executive board composiition and bank risk-taking, *Journal of Corporte Finance,* 28(30), pp. 48 - 65.

Berger, A., Bouwman, C. (2013) How does capital affect bank performance during financial crises*? Journal of Financial Economics,*109(2013), pp. 146 – 176.

Berger, A., and di Patti, E. (2003) *Capital Structure and Firm Performance: A new approach to testing agency theory and an application in the banking industry*. Available at: https://www.federalreserve.gov/pubs/feds/2002/200254/200254pap.pdf (Accessed: 29 December 2014).

Berger, A., El Ghoul, S., Guedhami, O. and Roman, R. (2015) Internationalization and Bank Risk. Available at: https://www.kansascityfed.org/~/media/files/publicat/reswkpap/pdf/rwp15-08.pdf (Accessed: 27 December 2014).

Berger, A., Roman, R., and Sedunov, J. (2016) *Do bank bailouts reduce or increase systemic risk? The effects of TARP on financial system stability.* Available at: http://www.cbs.dk/files/cbs.dk/paper_allennberger_0.pdf (Accessed: 8 August 2016).

Berle, A. and Means, G. (1932) *The Modern Corporation and Private Property. Indiana Law Journal*, Vol. 8(11). Available at: http://www.repository.law.indiana.edu/ilj/vol8/iss8/11 (Accessed: 14 September 2014).

Bhagat, S. and Black, B. (2001) The Non-Correlation Between Board Independence and Long Term Firm Performance, *Journal of Corporation Law,* 27(2), pp. 231–274.

Bhagat, S. and Bolton, B. (2009) *Corporate Governance and Firm Performance: Recent Evidence*. Available at: http://ssrn.com/abstract=1361815. (Accessed: 15 March 2015).

Bhagat, S. and Bolton, B. (2011) Director ownership, governance and performance, *Journal of Financial and Quantitative Analysis,* 48(1), pp. 105 – 135.

Bhagat, S. and Bolton, B. (2014) Financial crisis and bank executive incentive compensation, *Journal of Corporate Finance,* 25(2014), pp. 313 – 341.

Bhaskar, R. (1998) *From Science to Emancipation: Alienation and the Actuality of Enlightenment,* New Delhi: Sage Publications.

Bhattacharya, S., Boot, A., and Thakor, A. (2006) The economics of bank regulation, *Journal of Money, Credit and Banking,* 30(4), pp. 745 – 770.

Bhattacherjee, A. (2012) *Social Science Research: Principles, Methods and Practices.* 2nd edn. Tampa: Creative Commons Attribution.

BHC Rating Manual. (2015) *The Bank Holding Company Rating System.* Available at: https://www.federalreserve.gov/boarddocs/supmanual/bhc/bhc.pdf (Accessed: 4 April 2016).

Black, B., Jang, H., and Kim, W. (2006) Does corporate governance affect firm's market values? Evidence from Korea, *Journal of Law, Economics and Organization*, 22, pp. 366 – 413.

Black, B., Kim, W., Jang, H., and Park, K. (2008) *How corporate governance affects firm value: Evidence on channels from Korea.* Available at: http://admin.darden.virginia.edu/emUpload/uploaded2009/black-kim-jang-park-081208-clean.pdf (Accessed: 4 Apirl 2016).

Black, B. and Kim, W. (2012) The effect of board structure on firm value: a multiple identification strategy approach using Korean data, *Journal of Financial Economics*, 104(2012), pp. 203 – 226.

Bliss, R., and Flannery, M. (2001) *Market discpline in the governance of US BHCs: Monitoring versus influencing.* Available at: https://core.ac.uk/download/pdf/6899673.pdf (Accessed: 3 September 2016).

Bloomberg. (2014) *Bankers find costs won't stay cust as new expenses mount*. Available at: http://www.bloomberg.com/news/articles/2014-03-14/bofa-to-citigroup-find-new-expenses-negating-cost-cuts (Accessed: 1 July 2015).

Bloomberg. (2016) Tidjane Thiam: "I will never declare victory", *Bloomberg Magazine*, 25(4), pp. 75 – 81.

Blundell-Wignall, A., Atkinson, P., and Lee, S. (2008) *The Current Financial Crisis. Causes and Policy Issues. OECD Publications*. Available at: https://www.oecd.org/finance/financial-markets/41942872.pdf (Accessed: 2 October 2014).

BoardEx. (2016) Available at: http://corp.boardex.com/academics/ (Accessed: 14 October 2016).

Boaz, A., Ashby, D., and Young, K. (2002) *Systematic Reviews: What do they have to offer evidence based policy and practice?* Available at: https://www.kcl.ac.uk/sspp/departments/politicaleconomy/research/cep/pubs/papers/assets/wp2.pdf (Accessed: on 26 July 2015).

BOE. (2014) CRD IV. *Updates for credit risk mitigation, credit risk, governance and market risk.* Available at: http://www.bankofengland .co.uk/pra/Pages/publications/cp/2014/cp1214.aspx Available at: http://www.bankofengland .co.uk/pra/Pages/publications/cp/2014/cp1214.aspx (Accessed: 1 February 2015).

BOE. (2015a) *Corporate Governance: Board Responsbilities. The Bank of England - Prudential Regulation Authority Consultation Paper CP18/15.* Available at: http://www.bankofengland .co.uk/pra/Pages/publications/cp/2015/cp1815.aspx (Accessed: 25 May 2015).

BOE. (2015b) Internal Governance. *The Bank of England - Prudential Regulation Authority Supervisory Statement.* Available at: http://www.bankofengland .co.uk/pra/Pages/publications/ss/2015/ss2115.aspx (Accessed: 15 July 2015).

BOE. (2015c) *The failure of HBOS Plc*. Available at: http://www.bankofengland .co.uk/pra/Documents/publications/reports/hbos.pdf (Accessed: 30 January 2016).

Board Leadership. (2012) *Toward Effective Governance of Financial Institutions. 123*. Available at: http://www.boardleadershipnewsletter.com/article-print-page/toward-effective-governance-of-financial-institutions.aspx (Accessed: 10 January 2015).

Bohren, O., and Odegaard, B. (2005) Governance and performance revisited. *International corproate governance after Sarbanes-Oxley*. Gregouriu, G and Ali, P. (eds). London: Wiley and Sons Ltd.

Bolton, B. (2009) *The US Financial Crisis: A Summary of Causes and Consequences*. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2133576 (Accessed: 4 November 2015).

Bolton, P. (2010) Is Bank Governance Different? Available at: https://www0.gsb.columbia.edu/faculty/pbolton/papers/TCGDconference1010%20[Compatibility%20Mode].pdf (Accessed: 13 November 2014).

Bolton, P., Mehran, H., and Shapiro, J. (2011*) Executive Compensation and Risk-taking.* Available at: https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr456.pdf (Accessed: 24 June 2014).

Booth, J., Cornett, M., and Tehranian, H. (2002) Boards of directors, ownership and regulation, *Journal of Banking & Finance,* 26(2002), pp. 1973 – 1996.

Börsch-Supan, A. and Koke, J. (2000) *An applied econometrician's view of empirical corporate governance studies.* ZEW Discussion Paper 00(17). Available at: https://www.researchgate.net/publication/5061298_An_Applied_Econometricians'_View_of_Empirical_Corporate_Governance_Studies (Accessed: 30 Novemver 2014).

Boubaker, S., Gounopoulos, D., and Lasfer, M. (n.d.) Does firm's location explain IPO first-day returns? Available at: http://www.research.mbs.ac.uk/accounting-finance/Portals/0/Users/002/02/2/Does%20firms'%20location%20explain%20IPO%20first-day%20returns.pdf (Accessed 21 November 2016).

Bouwens, J. and Verriest, A. (2014). *Putting Skin in the Game: Managerial Ownership and Bank Risk-taking.* Available at: http://www.hbs.edu/faculty/Publication%20Files/14-070_19f210b3-5b2e-4fcd-99b1-fbb304c7d54a.pdf (Accessed: 28 November 2015).

Bouwman, C., and Malmendier, U. (2015) Does a bank's history affect its risk-taking? *American Economic Review*, 105(5), pp. 1 – 7.

Bowen, D., Frésand , L., and Taillard, J. (2016) What's your identification strategy? Innovation in corporate finance research, *Management Science,* 1, pp. 1 – 21.

Boyd, J. and Runkle, D. (1993) Size and performance of dbanking firms, *Journal of Monetary Economics*, 31(1993), pp. 47 – 67.

Boyson, N., Fahlenbrach, R., and Stulz, R. (2014) *Why do banks practice regulatory arbitrage? Evidence from usage of trust preferred securities.* NBER Working Paper Series no. 19984. Available at: http://www.nber.org/papers/w19984 (Accessed: 1 August 2016).

Branson, B. (2010) The Role of the Board of Directors and Senior Management in Enterprise Risk Management. In J. Fraser and B. Simkins (eds.). *Enterprise Risk Management.* Chapter 4. pp 51 - 67. London: Wiley.

Brealey, R., Cooper, I., and Kaplanis, E. (2012) International Propagation of the Credit Crisis: Lessons for Bank Regulation, *Journal of Applied Corporate Finance*, 24(4), pp. 36 – 46.

Briner, R. and Denyer, D. (2010) *Systematic review and evidence synthesis as a practice and scholarship tool*. In D. Rousseau (eds.), Hand book of evidence-based management: Companies, classrooms, and research. Oxford University Press. London.

Brogi, M (2008) *Regulation, Corporate Governance and Risk Management in Banks and Insurance Companies.* Available at: https://www.researchgate.net/publication/228126293_Regulation_Corporate_Governance_and_Risk_Management_in_Banks_and_Insurance_Companies (Accessed: 3 April 2015).

Breakingviews. (2015) *Marginal Utlity*. Available at:http://www.breakingviews.com/ubs-seals-new-banking-era-of-utility-like-returns/21223268.article (Accessed: 27 January 2016)

Brown, P., Beekes, W., and Verhoeven, P. (2011) Corporate governance, accounting and finance: A review, *Accounting and Finance,* 51(2001), pp. 96 – 172.

Brown, L.D. and Caylor, M.L. (2006) Corporate governance and firm valuation*, Journal of Accounting and Public Policy,* 25(4), pp. 409–434.

Browne, F., Llewellyn, D., and Molyneux, P. (eds.). (2011) *Regulation and Banking after the Crisi*s. Vienna: Larcier.

Bruner, C. (2011) *Corporate Governance Reform in a Time of Crisis.* Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1617890 (Accessed: 13 September 2015).

Bugalla, J., Kallman, J., and Narvaez, K. (2013) CROs: The high wire act in the financial sector, *Journal of Risk Management in Financial Institutions*, 7(3), pp. 287 - 298.

Bugalla, J., Kallman, J., Lindo, S., and Narvaez, K. (2012) The new model of governance and risk management for financial institutions, *Journal of Risk Management in Financial Institutions,* 5(2), pp. 181 - 193.

Burr , V. (2003) *Social constructionism,* 2nd ed. London: Routledge.

Burrell, G. and Morgan, G. (1979) Sociological Paradigms and Organizational Analysis. Franham: Ashgate Publishing.

Burstyn, I. (2004) Principal Component Analysis is a powerful instrument in Occupational Hygiene Inquires, *The Annuals of Occupational Hygiene,* 48(8), pp. 655 – 661.

Byrd, J., Fraser, D., Lee, D., and Tartaroglu, S. (2012) Are two heads better than one? Evidence from the thrift crisis, *Journal of Banking & Finance*, 36(4), pp. 957 - 967.

Cadbury, A. (1992) The Report on the Committee on the Financial Aspects of Corporate Governance and Code of Best Practice, *The Committee on Corproate Governance of UK,* London: Gee Publishing.

Caldarelli, A., Fiondella, C., Maffei, M., and Zagaria, C. (2015) Managing risk in credit cooperative banks: Lessons from a case study, *Management Accounting Research,* 32(2015), pp. 1 – 15.

Calomiris, C. (2013) Reforming Banks without Destroying their Productivity and Value, *Journal of Applied Corporate Finance,* 25(4), pp. 14 – 21.

Caner, S., Özyldrum, S., and Ungan, A. (2012) How sensitive are bank managers to shareholder value? *Journal of Financial Services Research*, 42, pp. 187 – 205.

Capco. (2014) *Study on Board Risk Committee Expertise at Financial Institutions in the US.* Available at: http://www.capco.com/insights/capco-blog/study-on-board-risk-committee-expertise-at-financial-institutions-in-us (Accessed: 20 April 2016).

Capriglione, F. and Casalino, N. (2014) Improving Corporate Governance and Managing Skills in Banking Organizations, *International Journal of Advanced Corporate Learning*, 7(4), pp. 17 – 28.

Caprio, G., Laeven, L., and Levine, R. (2007) Governance and bank valuation, *Journal of Financial Intermediation*, 16(2007), pp. 584 – 617.

Carcello, J. V., Hermanson, D.R. and Ye, Z. (2011) Corporate Governance Research in Accounting and Auditing: Insights, Practice Implications, and Future Research Directions, *Auditing: A Journal of Practice and Theory*, 30 (3), pp. 1–31.

Carrillo, G. (2012) *The impact of regulation and governance on the risk profile of banks.* Available at: http://engagedscholarship.csuohio.edu/cgi/viewcontent.cgi?article=1051and context=etdarchive (Accessed: 10 October 2016).

Carrott, G. (2013) The real work and worth of board committees, *Directors and Boards*, Forth Quarter, pp. 26 – 29.

Carey, M. and Stulz, R. (2007) The Risks of Financial Institutions. *National Bureau of Economic Research.* Available at: www.nber.org/chapters/c9603 (Accessed: 10 September 2014).

Carney, M., Gedajlovic, E., and Sur, S. (2011) Corporate Governance and Stakeholder Conflict, *Journal of Management and Governance,* 15, pp. 483 – 507.

CEBS (2010) *Committee of European Banking Supervisors: High Level Principles for Risk Management.* Available at: https://www.eba.europa.eu/documents/10180/16094/HighLevelprinciplesonriskmanagement.pdf (Accessed: 12 September 2014).

Center for Financial Inclusion. (2013) *Governing Banks: MFI Edition.* Available at: http://www.centerforfinancialinclusion.org/publications-a-resources/browse-publications/512-governing-banks-mfi-edition-part1 (Accessed: 12 June 2014).

Central Bank of Ireland. (2014) *Feedback Statement on Risk Appetite – A Discussion Paper.* Available at: https://www.centralbank.ie/press-area/press-releases/Pages/FeedbackStatementonRiskAppetiteDiscussionPaper.aspx (Accessed: 13 January 2015).

Cetina, J., and Loudis, B. (2016) The influence of systemic importance indicators on bank's CDS spreads, *Journal of Risk Management in Financial Institutions,* 9(1), pp. 17 – 31.

Chapman and Cutler. (2016) *Risky business: Is it time to consider establishing a separate Risk Committee? A corporate governance quarterly update.* Available at http://www.chapman.com/insights-publications-Risk_Committee_Corporate_Governance.html (Accessed: 3 April 2016).

Chan-Lau, J., and Sy, A. (2006) Distance-to-Default in Banking: A Bridge too Far? *IMF Working Paper.* Available at: https://www.imf.org/external/pubs/ft/wp/2006/wp06215.pdf (Accessed: 2 December 2014).

Charkham, J. (2003) Guidance for the Directors of Banks. The Global Corporte Governance Forum - The World Bank. Available at: http://www.ifc.org/wps/wcm/connect/bd9bc00048a7e730aa6fef6060ad5911/Focus_2_Guidance_for_Directors_of_Banks.pdf?MOD=AJPERES (Accessed: on 20 June 2015).

Cheffins, B. (2014) *The Corporate Governance Movement, Banks and the Financial Crisis.* Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2365738and (Accessed: 15 March 2015).

Chen, C., Barry Lin, J. and Yi, B. (2008) CEO duality and firm performance - an endogenous issue, *Corporate Ownership and Control,* 6 (1), pp. 58–65.

Chen, C., Li, M., Chou, Y., Chen, L., and Liou, W. (2011) Are large banks less risky? *The Services Industry Journal,* 31(13), pp. 2111 – 2116.

Chen, C., Lu, H., and Sougiannis, T. (2012) The Agency Problem, Corporate Governance and the Asymmetrical Behavior of Selling, General and Administrative Costs, *Contemporary Accounting Research*, 29(1), pp. 252 – 282.

Chen, H. and Lin, K. (2016) How do banks make the trade-offs among risks? The role of corporate governance, *Journal of Banking & Finance,* 2016, pp. 1 – 31.

Cheng, I., Hong, H. and Scheinkman, J. (2010) Yesterday's Heroes: Compensation and Creative Risk-Taking. *NBER Working Paper.* Available at: www.nber.org/papers/w16176 (Accessed: 14 March 2015).

Chernobai, A., Jorion, P., and Yu, F. (2011) The determinants of operational risk in US financial insitutions, *Journal of Financial and Quantiative Analysis,* 46(6), pp. 1683 - 1725.

Chesney, M., Stromberg, J., and Wagner, A. (2012) *Risk-Taking Incentives and Losses in the Financial Crisis.* Available at: https://www.tilburguniversity.edu/upload/28149ef9-b87a-4de8-a78e-145dea7408e1_lhstromberg.pdf (Accessed: 12 September 2014).

Chiaramonte, L. and Casu, B. (2010) *Are CDS spreads a good proxy for bank risk? Evidence from the banking crisis*. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1666793 (Accessed: 27 January 2016).

Chou, H., Chung, H. and Yin, X. (2013) Attendence of board meetings and company performance: Evidence from Taiwan, *Journal of Banking & Finance*, 37(11). pp. 4157 – 4171.

Claessens, S. (2014) Capital and liquidity requirements: A review of the issues and literature, *The Yale Journal of Regulation,* 31, pp. 735 – 772.

Claessens, S., and Fan, J. (2002) Corporate Governance in Asia: A Survey, *International Review of Finance*, 3(2), pp. 71 – 103.

Claessens, S. and Kodres, L. (2014) The Regulatory Responses to the Global Financial Crisis: Some Uncomfortable Questions, *IMF Working Papers*, 14(46), 1-39.

Claessens, S, Kose, M., and Terrones, M. (2011) *Financial cycles: What? How? When?* IMF Working Paper. Available at: https://www.imf.org/external/pubs/ft/wp/2011/wp1176.pdf (Accessed: 15 August 2015).

Claessens, S. and Yurtoglu, B. (2012) Corporate Governance and Development: *An Update. Global Corrporate Governance Forum - IFC*. Avaialble at: http://www.ifc.org/wps/wcm/connect/518e9e804a70d9ed942ad6e6e3180238/Focus10_CG%26Development.pdf?MOD=AJPERES (Accessed: 16 March 2015).

Clark, E. and Jokung, O. (2015) The role of regulatory credibility in effective bank regulation, *Journal of Banking & Finance,* 50(2015), pp. 506 – 513.

Clarke, T. (2004) Cycles of Crisis and Regulation: The Enduring Agency and Stewardship Problems of Corporate Governance, *Corporate Governance: An International Review*, 12(2), pp. 153 – 161.

The Clearing House. (2015) *Guiding Principles for Enhancing US Banking Organization Corporate Governance - 2015 Edition*. Available at: https://www.theclearinghouse.org/-/media/files/association%20related%20documents/20150624%20tch%20guiding%20principles%20for%20enhancing%20u%20s%20bank%20organization%20corporate%20governance.pdf (Accessed: 1 August 2016).

Cohen, J., Krishamoorthy, G., and Wright, A. (2007) *Form versus substance: The implications for auditing practice and research of alternative perspectives on corporate governance.* Available at: https://www.researchgate.net/publication/228238609_Form_vs_Substance_The_Implications_for_Auditing_Practice_and_Research_of_Alternative_Perspectives_on_Corporate_Governance (Accessed: 30 December 2015).

Coles, J., Daniel, N. and Naveen, L. (2008) Boards: Does one size fit all? *Journal of Financial Economics*, 51, pp. 371 – 406.

Conference Board. (2006) *The role of US corporate boards in ERM.* Available at: https://www.conference-board.org/topics/publicationdetail.cfm?publicationid=1190 (Accessed: 20 November 2014).

Conference Board of Canada. (2010) *Risk watch: thought leadership on risk and governance.* Available at: http://www.conferenceboard.ca/e-library/bytopicid.aspx?records=180and topic=38 (Assessed 14 January 2015).

Conference Board. (2014) *Risk Oversight: Evolving Expectations for Boards.* Available at: http://www.fsb.org/wp-content/uploads/c_140206w.pdf (Accessed: 4 January 2015).

Conyon, M., Judge, W.Q. and Useem, M. (2011) Corporate Governance and the 2008-09 Financial Crisis, *Corporate Governance: An International Review,* 19(5), pp. 399–404.

Cooper, E. (2009) Monitoring and governance of private banks, *Quarterly Review of Economics and Finance*, 49(2), pp. 253 – 264.

Cooper, E., and Uzun, H. (2012) Directors with a full plate: the impact of busy directors on bank risk, *Managerial Finance*, 38(6), pp. 571 - 586.

Cook, R. (1977) Detection of influential observations in linear regression, *Technometrics*, 19, pp. 15 – 18.

Copeland , A. (2012) Evolution and Heterogeneity amoung Larger BHCs: 1994 to 2010. *Federal Reserve Bank of New York Policy Review.* July. pp. 83 – 93. Available at: https://www.newyorkfed.org/medialibrary/media/research/epr/12v18n2/1207cope.pdf (Accessed: 28 August 2015).

Cordery, C. (2007) NABs Annus Horribilis: Fraud and Corporate Governance, *Australian Accounting Review*, 17(2), pp. 62 – 70.

Core, J., Holthausen, R., Larcker, D. (1999) Corporate governance, chief executive officer compensation, and firm performance, *Journal of Financial Economics*, 51(1999), pp. 371 – 406.

Core, J., Guay, W. and Rusticus, T.O. (2006) Does weak governance cause weak stock returns ? An examination of firm operating performance and analysts expectations, *Journal of Finance*, 61 (2), pp. 665 - 687.

Cornell University Law School. (2016) *Risk Management Requirements and Risk Committee Requirements as published in the Federal Register*. Available at: https://www.law.cornell.edu/cfr/text/12/252.33 (Accessed: 3 February 2016).

Cornett, M., McNutt, J. and Tehranian, H. (2009) Corporate governance and earnings management at large US BHCs, *Journal of Corporate Finance*, 15(2009), pp. 412 – 430.

Cornett, M., McNutt, J. and Tehranian, H. (2010) *The financial crisis, internal corporate governance , and the performance of publically traded US BHCs*. Available at: http:ssrn.com/abstract=1476969 (Accessed: 19 January 2015).

COSO. (2004) Enterprise Risk Management - An Integrated Framework. Available at: http://www.coso.org/documents/coso_erm_executivesummary.pdf (Accessed: 4 September 2015).

COSO. (2015) *Board Risk Oversight. A Progress Report.* Available at: http://www.coso.org/documents/cososurveyreportfull-web-r6finalforwebposting111710.pdf (Accessed: 4 September 2015).

Cowan, M., English, S., Hammond, S. (2015) *Conduct Risk Report. Thomson Reuters. Available* at: http://thomsonreuters.com/en/press-releases/2015/01/survey-reveals-conduct-risk-regulatory-focus-expected-to-increase.html (Accessed: 14 January 2016).

Crow, P. and Lockhart, J. (2012) On the use of critical realism to advance governance research beyond correlations. Available at: http://www.petercrow.com/uploads/8/6/4/1/8641405/contribution438.pdf (accessed 14 December 2015).

D'Hulster, K. (2009) Crisis Response: The Leverage Ratio. World Bank / IFC Publication. Available at: http://www.worldbank.org/financialcrisis/pdf/levrage-ratio-web.pdf (Accessed: 13 September 2014).

da Veiga, B., Chan, F., and McAleer, M. (2012) It pays to violate: how effective are the Basel Accord penalities in encouraging risk management? *Accounting and Finance,* 52(2012), pp. 95 – 116.

Dalton, D., Daily, C., Ellstrand , A. and Johnson, J. (1998) Meta-Analytic Reviews of Board Composition, Leadership Structure, and Financial Performance, *Strategic Management Journal,* 19(3), pp. 269–290.

Das, S. and Sy, A. (2012) How risky are bank's RWAs? Evidence from the financial crisis. *IMF Publication.* Available at: https://www.imf.org/external/pubs/ft/wp/2012/wp1236.pdf (Accessed: 3 December 2014).

Davies, B. (2013) How do boards address risk management and oversight? *Journal of Risk Management in Financial Institutions,* 6(4), pp 352 - 365.

Davies, H. (2014) The Dilemna of Defining Risk Appetite in Banking. The Financial Times. September 14, 2014. Available at: http://www.ft.com/cms/s/0/8363a88c-380c-11e4-a687-00144feabdc0.html#axzz3gbSy2ygG (Accessed: 29 May 2015).

Davis Polk LLP. (2014a) *Risk Governance: Visual memorand um on guidelines proposed by the OCC.* Available at: file:///Users/Downloads11.07.14.Risk_Governance_Visual_Memorand um_on_Final_Guidelines_Issued_by_the_OCC%20(2).pdf (Accesed 4 March 2015).

Davis Polk LLP. (2014b) US BHCs: *Overview of Dodd-Frank Enhanced Prudential Standards Final Rule.* Available at: file:///Users/Downloads/Visual.Summary.US_.Bank_.Holding.Companies.Dodd_.Frank_.Enhanc ed.Prudential.Stand ards.pdf (Accessed: 4 March 2015).

de Andres, P. and Vallelado, E. (2008) Corporate governance in banking: The role of the board of directors, *Journal of Banking & Finance*, 32 (12), pp. 2570–2580.

de Andres, P., Romero-Merino, E., Santamaria, M., and Vallelado, E. (2012) Board determinants in banking industry, An international perspective, *Managerial and Decision Economics,* 33, pp. 147 – 158.

de Haan, J. and Jansen, D. (2011) Corporate culture and behaviour: A survey. *DNB Working Paper.* Available at: https://www.econbiz.de/Record/corporate-culture-and -behaviour-a-survey-haan-jakob/10009409758 (Accessed: 2 October 2015).

de Haan, J. and Vlahu, R. (2015) Corporate governance of banks: A survey, *Journal of Economic Surveys*, 00(0), pp 1 - 50.

de Larosière Report (2009) *The high level group on financial supervison in the EU.* Available at: http://ec.europa.eu/internal_market/finances/docs/de_larosiere_report_en.pdf. Accessed: 4 September 2014.

De Simone, A. (2012) Governance Structure, Risk and Performance in the European Banking Sector, (2012) *The IEB International Journal of Finance,* 2012(4), pp. 116 – 143.

de Wild, A. (2013) *Unravelling Risk Appetite: Applications of decision theory in the evaluation of organizational risk appetite.* Available at: repub.eur.nl/pub/38243/DeWild2013-B.pdf (Accessed: 28 September 2015). b

Deal, T and Kennedy, A. (1982) *Corporate Cultures: The rites and rituals of corporate life,* Reading: Addison-Wesley.

DeAngelo, H. and Stultz, R. (2014) *Liquidity-Claim Production, Risk Management, and Bank Capital Structure: Why High Leverage is Optimal for Banks.* Available at SSRN at http://ssrn.com/abstract=2254998o http://dx.doi.org/10.2139/ssrn.2254998 (Accessed: 7 October 2015).

DeAngelo, H. and Stulz, R. (2013) *Why high leverage is optimal for banks.* Available at: http://fic.wharton.upenn.edu/fic/papers/13/13-20.pdf (Accessed: 1 December 2014).

DeFusco, R. a, Johnson, R.R. and Zorn, T.S. (1990) The Effect of Executive Stock Option Plans on Stockholders and Bondholders, *The Journal of Finance*, 45 (2), pp. 617–627.

Deloitte. (2011) *Improving Bank Board Governance: The Bank Board Members Guide to Risk Management Oversight.* Available at: http://deloitte.wsj.com/riskand compliance/files/2013/06/ImprovingBankBoardGovernance.pdf (Accessed: 14 January 2015).

Deloitte. (2013a) *Aligning risk and pursuit of shareholder value: risk transformation in financial institutions*. Available at: http://www2.deloitte.com/content/dam/Deloitte/global/Documents/Financial-Services/gx-fsi-us-grc-RiskTransformation-in-Financial-2013-10.pdf (Accessed: 14 January 2015).

Deloitte. (2013b) *The Culture of Banking: Under the Microscope*. Available at: http://www2.deloitte.com/content/dam/Deloitte/uk/Documents/financial-services/deloitte-uk-culture-in-banking.pdf (Accessed: 14 January 2015).

Deloitte. (2013c) *Global risk management survey: Setting the bar higher.* Available at: http://www2.deloitte.com/content/dam/Deloitte/global/Documents/Financial-Services/dttl-fsi-us-fsi-aers-global-risk-management-survey-8thed-072913.pdf (Accessed: 14 January 2015).

Deloitte. (2014a) *Risk appetite frameworks: How to spot the geniune article.* Available at: http://www2.deloitte.com/uk/en/pages/financial-services/articles/risk-appetite-frameworks.html (Accessed: 10 June 2015).

Deloitte. (2014b) *Stronger: OCC's Heightended Expectations. Enhancing Risk Management and Driving Growth.* Available at: http://www2.deloitte.com/content/dam/Deloitte/us/Documents/audit/us-aers-occ-heightened-expectations-11-26-02-12042014.pdf (Accessed: 11 January 2015).

Deloitte. (2014c) *Risk Intelligent Governance: Lessons from State of the Art Board Practices.* Available at: http://www2.deloitte.com/us/en/pages/risk/articles/risk-intelligent-governance-lessons-from-state-of-the-art-board-practices.html (Accessed: 11 January 2015).

Deloitte. (2014d) *Final look: a practical guide to the Federal Reserve's enhanced prudential standards for domestic banks.* Available at: http://www2.deloitte.com/content/dam/Deloitte/us/Documents/audit/us-aers-eps-foreign-02-12042014.pdf (Accessed: 11 January 2015).

Deloitte. (2014e) *Board Practices Report: Perspectives from the Boardroom.* Available at: http://www2.deloitte.com/us/en/pages/center-for-corporate-governance/articles/board-practices-report-perspectives-boardroom-governance.html (Accessed: 11 January 2015).

Deloitte. (2014f) *Exercising risk oversight: Five questions for boards to consider.* Available at: http://www2.deloitte.com/content/dam/Deloitte/global/Documents/Governance-Risk-Compliance/gx_grc_Deloitte%20Risk%20Angles-Exercising%20risk%20oversight.pdf (Accessed: 14 February 2015).

Deloitte. (2014g) *Six actions that boards can take towards improved risk governance.* Available at: http://deloitte.wsj.com/riskand compliance/2014/12/16/six-actions-boards-can-take-toward-improved-risk-governance-2/ (Accessed: 14 December 2014).

Deloitte. (2015a) *The role of bank board Risk Committees in company performance.* Corporate advertisement available at: http://deloitte.wsj.com/riskand compliance/2015/11/16/the-role-of-bank-board-risk-committees-in-company-performance/ (Accessed: 14 January 2015).

Deloitte. (2015b) *Bank board risk governance: Driving performance through enhanced risk oversight*. Availalble at: http://dupress.com/articles/us-banks-risk-oversight-practices/ (Accessed: 14 January 2015).

Deloitte. (2016a) *A look at board Risk Committee charters of large banks.* Available at: https://www2.deloitte.com/content/dam/Deloitte/lu/Documents/financial-services/Banking/lu_bank-board-risk-governance.pdf (Accessed: 1 September 2016).

Deloitte. (2016b) *Risk Committee Resource for Boards.* Available at: http://www2.deloitte.com/us/en/pages/risk/articles/risk-committee-resource-guide-for-boards.html (Accessed: 1 September 2016).

Demirgüc-Kunt, A., and Detragiache, E. (2002) *Does deposit insurance increase banking system stablility? An empirical investigation.* Available at: http://citeseerx.ist.psu.edu/viewdoc/download;jsessionid=AD608BC8A0B1E547F3C10F1EC8EFE0D1?doi=10.1.1.320.7662and rep=rep1and type=pdf (Accessed: 12 October 2015).

Demirgüc-Kunt, A., Detragiache, E., and Merrouche, O. (2010) *Bank Capital: Lessons from the Financial Crisis.* IMF Working Papers. WP/10/286. Available at https://www.imf.org/external/pubs/ft/wp/2010/wp10286.pdf (Accessed 1 March 2015).

Demirgüc-Kunt, A., and Huizinga, H. (2011) *Do we need big banks? Evidence on performance, strategy, and market discipline.* Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1774423 (Accessed: 2 October 2015).

Demirgüc-Kunt, A., and Huizinga, H. (2013) Are banks too big to fail to save? International evidence from equity prices and CDS spreads, *Journal of Banking & Finance*, 37(2013), pp. 875 - 894.

Demsetz, R., Saidenberg, M., and Stahan, P. (1997) Agency problems and risk-taking at banks. *The Federal Reserve Bank of New York Research.* Available at: https://www.newyorkfed.org/medialibrary/media/research/staff_reports/sr29.pdf (Accessed: 12 November 2015).

Deng, S., Elyasiani, E., and Jia, J. (2013) Institutional ownership, diversfication, and riskiness of BHCs, *The Financial Review,* 48(2013), pp. 383 – 415.

Deo, H., Irvine, H. and Abraham, A. (2007) *The legitimising power of regulation for Australian banks: an institutional approach.* Available at: http://ro.uow.edu.au/commpapers/331/ (Accessed: 21 August 2016).

Dermine, J. (2011) *Bank Corporate Governance, Beyond the Global Banking Crisis.* Available at: http://www.insead.edu/facultyresearch/research/doc.cfm?did=47338 (Accessed: 22 March 2015).

Dermine, J. (2013) *Bank Regulations after the Global Financial Crisis, Good Intentions and Unintended Evil.* Available at: http://faculty.insead.edu/jean-dermine/documents/RegulationsAfterCrisis2013-March.pdf (Accessed: 22 March 2015).

Devriese, J., Dewatripont, M., Heremans, D., and Nguyen, G. (2004), 'Corporate Governance, Regulation and Supervision of Banks. Available at https://core.ac.uk/download/pdf/6233919.pdf?repositoryId=153 (Accessed 12 September 2014).

DeVellis, R. (2003) *Scale Development: Theory and Applications,* Applied Social Science Methods, 26, California: Sage Publications.

Dewatripont, M. and Rochet, J., (2010) *Microeconomics of Banking*. (2nd ed). Cambridge: The MIT Press.

Dewatripont, M. and Freixas, X. (2012) *The Crisis Aftermath: New Regulatory Paradigms.* Available at: http://www.voxeu.org/epubs/cepr-reports/crisis-aftermath-new-regulatory-paradigms (Accessed: 29 April 2015).

DeYoung, R. and Rice, T. (2004) How do banks make money? *Economic Perspectives: Federal Reserve Bank of Chicago.* 4Q. pp. 34 – 51. Available at: https://www.chicagofed.org/publications/economic-perspectives/2004/4qtr2004-part3-deyoung-rice+and cd=2and hl=enand ct=clnkand gl=uk (Accessed: 12 July 2014).

DeYoung, R. (2012) A commentary on measuring systemic risk, *Journal of Financial Services Research*, 2012(42), pp. 109 – 114.

DeYoung, R., Peng, E.Y. and Yan, M. (2013) Executive Compensation and Business Policy Choices at U.S. Commercial Banks*, Journal of Financial and Quantiative Analysis,* 48 (1), pp. 165 - 196.

Diamond, D. and Rajan, R. (2009) The credit crisis: conjectures about causes and remedies. *NBER Working Paper Series.* Available at: www.nber.org/papers/w14739 (Accessed: 30 October 2014).

Dietrich, A. and Wanzenried, G. (2011) Determinants of bank profitability before and during the crisis: Evidence from Switzerland, *Journal of International Financial Markets, Institutions and Money*, 21 (3), pp. 307–327.

Dimaggio, P.J. and Powell, W. (1983) The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organisational Feilds, *American Sociological Review*, 48(2), pp. 147 - 160.

Dionne, G. (2013) Risk management, history, definition and critique, *Risk management and insurance review*, 16(2), pp. 147 – 166.

Dionne, G., and Triki, T. (2005) *Risk management and corporate governance: the importance of independence and financial knoweldge for the board and audit committee.* Available at: http://econpapers.repec.org/paper/lvllacicr/0515.htm (Accessed: 14 January 2015).

Dionne, G., and Triki, T. (2013) On risk management determinants: what really matters? *The European Journal of Finance,* 19(2), pp. 145 – 164.

Docherty, A. and Viort, F. (2014) Better Banking: Understanding and Addressing the Failures in Risk Management, Governance and Regulation. London: John Wiley and Sons Ltd.

Donaldson, L. and Davis, J.H. (1991) Stewardship Theory or Agency Theory: CEO Governance and Shareholder Returns, *Australian Journal of Management,* 16 (1), pp. 49–64.

Donaldson, T. and Preston, L. (1995) The Stakeholder Theory of the Corporation: Concepts, Evidence, and Implications, *Academy of Management Review,* 20(1), pp, 65 – 91.

Dodd-Frank (2010) *The Wall Street Reform and Consumer Protection Act of 2010.* Available at: https://www.sec.gov/about/laws/wallstreetreform-cpa.pdf (Accessed: 12 October 2015).

Dodd-Frank Act Stress Test (2016) Supervisory Stress Test Methodology and Results). *The Board of Governors of the Federal Reserve.* Available at: https://www.federalreserve.gov/newsevents/press/bcreg/20160623a.htm (Accessed: 17 June 2016).

Doidge, C., Karolyi, A., and Stulz, R. (2004) *Why do countries matter so much for corporate governance?* Available at: https://www.aeaweb.org/assa/2005/0107_1430_1501.pdf (Accessed: 27 January 2016).

Dowd, K. (2009) *Moral Hazard and the Financial Crisis. The Cato Journal.* Available at: http://object.cato.org/sites/cato.org/files/serials/files/cato-journal/2009/1/cj29n1-12.pdf (Accessed: 14 January 2015).

Dowd, K. (2016) *No Stress II. The flaws in the Bank of England Stress Testing Programme.* Available at: https://static1.squarespace.com/static/56eddde762cd9413e151ac92/t/579f53b66b8f5ba10895862b/1470059502224/No+Stress+II (Accessed: 16 August 2016).

Dowling, M. and Lucey, B. (2013) *From hubris to nemesis: Irish banks, bevavioural biases and the crisis.* Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2331185 (Accessed: 12 October 2015).

Duane, M., Schuermann, T., and Reynolds, P. (2013) *Stress Testing Bank Profitability.* Available at: http://fic.wharton.upenn.edu/fic/papers/13/13-30.pdf (Accesed 10 July 2015).

Duchin, R., Ozbas, O., and Sensoy, B. (2010) Costly external finance, corporate investment and the mortgage credit crisis, *Journal of Financial Economics,* 97(2010), pp. 418 – 435.

Duchin, R., and Sosyura, D. (2014) Safer ratios, risk portfolios: bank's response to government aid, *Journal of Financial Economics*, 113(2104), pp. 1 – 28.

Dupuis, C. (2015) Communicating risk appetite, *RMA Journal,* 98(1), pp. 52 – 55.

Dybvig, P.H. and Warachka, M. (2012) *Tobin's Q does not measure performance: Theory, empirics, and alternative measures.* Available at: http://ssrn.com/abstract=1562444 (Accessed: on 8 March 2015).

Eggleston, W., and Ware, D. (2009) Does your board need a Risk Committee? Available at: http://www.debevoise.com/~/media/files/insights/publications/2009/04/does%20your%20board%20need%20a%20risk%20committee/files/view%20article%20reprint/fileattachment/riskcommitteearticle.pdf (Accessed: 23 September 2014).

EBA. (2011) EBA Guidelines on Internal Governance. Available at: https://www.eba.europa.eu/documents/10180/103861/EBA-BS-2011-116-final-EBA-Guidelines-on-Internal-Governance-(2)_1.pdf (Accessed: on 20 June 2015).

EC. (2010) *Corporate Governance in Financial Institutions and Remuneration Policies.* Available at: http://ec.europa.eu/internal_market/company/docs/modern/com2010_284_en.pdf (Accessed: 14 January 2014).

ECB. (2005) *Risk Measurement and Systemic Risk*. Available at: https://www.ecb.europa.eu/pub/pdf/other/riskmeasurementand systemicrisk200704en.pdf (Accessed: 3 October 2014).

ECB. (2010a) *Beyond ROE: How to measure bank performance.* Available at: https://www.ecb.europa.eu/pub/pdf/other/beyondroehowtomeasurebankperformance201009en.pdf (Accessed: 14 January 2015).

ECB. (2010b) *Bank Risk During the Financial Crisis – Do Business Models Matter?* Available at: https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1394.pdf (Accessed: 20 September 2014).

ECB. (2016) *SSM supervisory statement on governance and risk appetite.* Available at: https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm_supervisory_statement_on_governance_and _risk_appetite_201606.en.pdf (Accessed: 18 September 2016).

Eckles, D., Hoyt, R., Miller, S., (2014) The Impact of Enterprise Risk Management on the Marginal Cost of Reducing Risk: Evidence from the Insurance Industry. *Journal of Banking & Finance*. 43: pp. 247–261

Edmans, A. and Liu, Q. (2011) Inside debt, *Review of Finance,* 15(1), pp. 75–102.

El-Faitouri, R. (2014) Board of Directors and Tobin's Q: Evidence from UK Firms, *Journal of Finance and Accounting,* 2(4), pp. 82 – 99.

Elghanayan, S. and Kaizad, C. (2010) Risk appetite setting: Just like dieting, good intentions won't be enough, *RMA Journal*, 92(10), pp. 30 – 36.

Ellis, L, Haldane, A., and Moshirian, F. (2014) Systemic risk, governance and global financial stability, *Journal of Banking & Finance* 45(2014), pp. 175 - 181.

Ellul, A. and Yerramilli, V. (2013) Stronger Risk Controls, Lower Risk: Evidence from U.S. Bank Holding Companies, *The Journal of Finance,* 68 (5), pp. 1757–1803.

Elyasiani, E. and Zhang, L. (2015) BHC performance, risk and 'busy' board of directors, *Journal of Banking & Finance,* 60(2015), pp. 239 – 251.

Enriques, L. and Zetzche, D. (2014) *Quack Corporate Governance, Round III? Bank Board Regulation Under the New European Capital Requirement Directive.* Available at: http://ssrn.com/ abstract=2412601 (Accessed: 4 January 2015).

Enterprise Risk Management (2004)*Integrated Framework.* Available at: http://www.coso.org/documents/coso_erm_executivesummary.pdf (Accessed: 20 July 2015).

ERM Initiative (2015) *Report on the Current State of Enterprise Risk Oversight.* Available at: https://www.aicpa.org/interestareas/businessindustryandgovernment/resources/erm/downloadabledocuments/aicpa_erm_research_study_2015.pdf (Accessed: 3 January 2016).

ERM Initiative (2016) *Report on the Current State of Enterprise Risk Oversight.* Available at: https://www.aicpa.org/interestareas/businessindustryandgovernment/resources/erm/downloadabledocuments/aicpa_erm_research_study_2016.pdf (Accessed: 30 August 2016).

Erkens, D., Hung, M. and Matos, P. (2012) Corporate governance in the 2007-08 financial crisis: Evidence from financial institutions worldwide, *Journal of Corporate Finance,* 18(2), pp. 389 -411.

Ernst & Young. (2012a) *Progress in financial services risk managemnet.* A survey of major financial institutions. Available at: http://www.ey.com/Publication/vwLUAssets/Banking_and_financial_services_risk_management_survey_2012/$FILE/Progress_in_financial_services_risk_management.pdf (Accesed 22 December 2014).

Ernst & Young. (2012b) *Bank governance leadership network: reforming bank culture – transforming values into action. Tapestry Networks.* Available at: http://www.ey.com/GL/en/Industries/Financial-Services/Banking---Capital-Markets/Tapestry-BGLN-Summit-2012---A-defining-moment-for-the-banking-industry (Accessed: 2 January 2015).

Ernst & Young. (2013a) *Remaking financial services: Risk Management five years after the crisis.* Available at: http://www.ey.com/Publication/vwLUAssets/Remaking_financial_services_-_risk_management_five_years_after_the_crisis_-_Complete/%24FILE/EY-Remaking_financial_services_risk_management_five_years_after_the_crisis.pdf (Accessed: 4 January 2015).

Ernst & Young. (2013b) *Corporate directors' views on US banking: news the industry can use*. Tapestry Networks. Available at: http://www.tapestrynetworks.com/issues/financial-services/upload/TN_Corporate_directors_views_on_US_banking-Sept13.pdf (Accessed: 3 May 2015).

Ernst & Young. (2014a) Ernst and Young LLP. The Future of Global Banking. *Bank Governance Leadership Network. Tapestry Networks*. Available at: www.tapestrynetworks.com/initatives.financial-services/bank-govenrance-leadership-network.cfrm (Accessed: 7 March 2015).

Ernst & Young. (2014b) *Shifting focus: Risk culture at the forefront of banking*. Available at: http://www.ey.com/gl/en/industries/financial-services/banking---capital-markets/ey-shifting-focus-risk-culture-at-the-forefront-of-banking (Accessed: 29 December 2014).

Ernst & Young. (2015a) *Risk Governance 2020. From satisfactory to effective and sustainable*. Available at: http://www.ey.com/GL/en/Services/Advisory/Advisory-for-Financial-Services/EY-Risk-Governance-2020 (Accessed: 2 October 2015).

Ernst & Young. (2015b) *Analyzing bank performance – linking ROE, ROA and RAROC: US commercial banks 1992 – 2014.* Available at: file:///Users/Downloads/8.+EY_GSFI_Journal_V3-I2_Analyzing_Bank_Performance.pdf (Accessed: 2 January 2016).

Ernst & Young. (2015c) *Risk appetite and risk responsibilities.* Available at: http://www.ey.com/Publication/vwLUAssets/ey-risk-governance-2020-risk-appetite-and -risk-responsibilities/$FILE/ey-risk-governance-2020-risk-appetite-and -risk-responsibilities.pdf (Accessed: 12 December 2015).

Ernst & Young. (2016) *Board Matters Quarterly.* Available at: http://www.ey.com/GL/en/Issues/Governance-and -reporting/EY-board-matters-quarterly-archives (Accessed: 20 July 2016).

Estrella, A., Park, S., and Pesitani, S. (2000) Capital ratios as predictors of bank failure, *FRBNY Economic Policy Review*, July 2000, pp. 33 – 52.

Fahlenbrach, R. and Stulz, R. (2011) Bank CEO incentives and the credit crisis, *Journal of Financial Economics*, 99 (1), pp. 11–26.

Fahlenbrach, R., Prilmeier, R. and Stulz, R. (2012) This time it is the same: Using bank performance in 1998 to explain bank performance during the recent financial crisis, *Journal of Finance,* LXVII(6), pp. 2139 – 2149.

Faleye, O., Hoitach, R., and Hoitach, U. (2011) The costs of intense board monitoring, *Journal of Financial Economics,* 101(2011), pp. 160 – 181.

Faleye, O. and Krishnan, K. (2014) *Risky Lending: Does Bank Corporate Governance Matter?* Available at: https://editorialexpress.com/cgi-bin/conference/download.cgi?paper_id=194and db_name=AFA2015 (Accessed: 22 August 2015).

Fama, E. (1980) Agency problems and theory of the firm, *Journal of Political Economy*, 8(2), pp. 288 – 307.

Fama, E. and Jensen, M. (1983) Seperatation of owership and control, *Journal of Law and Economics,* XXVI, pp. 1 – 30.

Fama, E. (1980) What's different about banks? *Journal of Monetary Economics,* 15(1), pp. 29 – 39.

Farook, S., Hassan, M., and Lanis, R. (2011) Determinants of Corporate Social Responsibility and Disclosure: The Case of Islamic Banks, *Journal of Islamic Accounting and Business Research,* 2(2), pp. 114-141

FCA. (2014) *The Failure of HBOS plc: A report by the Financial Conduct Authority and the Prudential Regulation Authority.* Available at: http://www.bankofengland .co.uk/pra/Documents/publications/reports/hbos.pdf (Accessed: 13 March 2015).

Federal Financial Analytics. (2015) *The Consequences of Systemic Regulation for US Regional Banks*. Available at: http://www.fedfin.com/~fedfin/images/stories/press_center/Press_Release_PR_080615.pdf (Accessed: 28 April 2016).

Federal Register. (2014a) *OCC guidelines establishing heightened standards for certain large insured national banks and federally insured savings associations*. 79(176). Available at: https://www.federalregister.gov/documents/2015/12/17/2015-31658/guidelines-establishing-stand ards-for-recovery-planning-by-certain-large-insured-national-banks (Accessed: 16 December 2015).

Federal Register. (2014b) *Enhanced Prudential Standards for BHCs and FBOs – Final Rule*. 79(59). Available at: https://www.gpo.gov/fdsys/pkg/FR-2014-03-27/pdf/2014-05699.pdf (Accessed: 16 December 2015).

Federal Reserve Bank of Atlanta. (2002) *The Director's Primer: A Guide to Management Oversight and Bank Regulation. 3rd edition.* Available at: https://www.frbatlanta.org/banking/publications.aspx (Accessed: 29 September 2014).

Federal Reserve Bank of St Louis. (2016) *BHC Data.* Available at: https://fred.stlouisfed.org/series/TLAACBW027SBOG (Accessed: 1 December 2016).

Federal Reserve System Board of Governors. (2012) Consolidated Supervision Framework for Large Financial Institutions. Available at:https://www.federalreserve.gov/bankinforeg/srletters/sr1217.htm (Accessed: 4 January 2016).

Federal Reserve System Board of Governors. (2013a) *Capital planning at large BHCs: Supervisory expectations and range of current practice.* Available at: http://www.federalreserve.gov/bankinforeg/bcreg20130819a1.pdf (Accessed: 14 September 2014).

Federal Reserve System Board of Governors. (2013b) *Commerical Bank Examination Manual.* Available at: https://www.federalreserve.gov/boarddocs/supmanual/cbem/cbem.pdf (Accessed: 3 February 2016).

Federal Reserve System Board of Governors. (2016) *Largest US BHCs.* Available at: http://www.federalreserve.gov/releases/lbr/current/ (Accessed: 27 January 2016).

Federal Reserve System Board of Governors. (2016) *Bank Holding Company Supervison Manual.* Available at: https://www.federalreserve.gov/boarddocs/supmanual/supervision_bhc.htm (Accessed: 2 April 2016).

Fernandes, N. and Fich, E. (2013) *Does financial experience help banks during the credit crisis?* Available at: ftp://ftp.cemfi.es/pdf/papers/wshop/WPM$60DE.pdf (Accessed: 12 September 2014).

Ferranrini, G. and Chiondini, F. (2010) *Regulating multi-national banks in Europe: An assessment of the new supervisory framework.* Available at: http://ssrn.com/abstract=1596890 (Accessed: 14 September 2014).

Ferreira, D. (2011) Board Diversity. *Corporate Governance: A Synthesis of Theory, Research, and Practice.* Available at: http://personal.lse.ac.uk/FERREIRD/Board%20Diversity%20version%201.pdf (Accessed: 9 March 2015).

Ferreira, D., Kirchmaier, T. and Metzger, D. (2012) *Boards of Banks.* Available at: http://ssrn.com/abstract=1620551 (Accessed: 4 January 2015).

Ferrero-Ferrero, I., Fernand ez-Izquierdo, M., and Munoz-Torres, M. (2012) The impact of the board of directors charactertistics on corporate performance and risk-taking before and during the global financial crisis. *Review of Managerial Science.* 6(3). pp. 207 – 226.

Ferri, G. and Pesic, V. (2016) Bank regulatory capital arbitrage via risk weighted asset dispersion, *Journal of Finanical Stability,* (2016), pp. 1 – 15.

Fich and Shivdasani (2006) Are busy board effective monitors? *The Journal of Finance,* LXI(2), pp. 689 - 724.

Filbeck, G. Preece, D. and Zhao, X. (2013) Top performing banks: The benefits to investors, *Journal of Economics* and Finance, 37 (4), pp. 560–583.

Fiegener, M., Nielsen, J., and Sisson, J. (1996) Tenure Characteristics of Outside Directors and Financial Performance: Results from the Banking Industry, *American Business Review,* 14(1), 89- 96

Financial Crisis Inquiry Report (2011) *The Final Report of the National Commission on the Causes and fhe Financial and Economic Crisis in the US*. Available at: http://www.gpo.gov/fdsys/pkg/GPO-FCIC/pdf/GPO-FCIC.pdf (Accessed: 16 August 2015).

Financier Worldwide. (2015) *The new corporate governance rules for signficant foreign banks operating in the USA.* Available at: http://www.gibsondunn.com/publications/Documents/Long-Shelton-Zyskowski-New-Corporate-Governance-Rules-for-Foreign-Banks-Financier-Worldwide-2015.pdf (Accessed: 30 December 2015).

Finkelstein, S., & D'Aveni, R. (1994) CEO duality as a double-edged sword: How boards of directors balance entrenchment avoidance and unity of command, *Academy of Management Journal,* 37, pp. 1079–1108.

Fiordelisi, F. and Molyneux, P. (2010) The determinants of shareholder value in European banking, *Journal of Banking & Finance,* 34(2010), pp. 1189 – 1200.

Fiordelisi, F., Marques-Ibanez, D., and Molyneux, P. (2010). Efficency and risk in European banking, *European Central Bank Working Paper Series,* 1211. pp . 1 – 39.

Fiordelisi, F., Raponi, J. and Rau, R. (2015) *Corporate culture and enforcement actions in banking.* Available at: file:///Users/Downloads/EnforcementActionsAndCorporateCultur_preview%20(3).pdf (Accessed: 21 October 2016).

FIS. (2016) Survey Paper – *Trends in Banking Book Risk Management 2015/2016.* Available at: https://www.fisglobal.com/Solutions/Institutional-and -Wholesale/Commercial-and -Investment-Banking/-/media/FISGlobal/Files/Whitepaper/Trends-in-Banking-Book-Risk-Management.pdf (Accessed: 4 April 2016).

FIRMA. (2014) *Working Through Risk Appetite*. Available at: http://www.thefirma.org/files/conference/2014/Smith.pdf (Accessed: 27 December 2014).

Fischer, E. (2015) *Evolving Governance Realiities for Financial Institutions: The Likely Impact of OCC's Heightened Expectations Guidelines on Bank Directors*. Available at: www.bu.edu/bucflp/.../2015/04/PRESENTATION-FOR-NC_2.3.2015 (Accessed: 20 December 2015).

Flannery, M. (1998) Using market information in prudential bank supervision: A review of the empirical evidence, *Journal of Money, Credit and Banking*, 30, pp. 273 – 305.

Flannery, M., Houston, J., and Partnoy, F. (2010) *Credit default swap spreads as viable substitutes for credit ratings.* Available at: http://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1170and context=penn_law_review (Accessed: 27 January 2016).

Fleischer, A., Hazard, G., and Klipper, M. (1988). *Board Games.* Boston: Little Brown and Co.

Fogel, K., Ma, L, and Morck, R. (2014) *Powerful Indpendent Directors.* Available at: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2377106 (Accessed: 30 September 2015).

Fogelberg, L. and Griffith, J.M. (2000) Journal of Financial and Strategic Decisions: Control and Bank Performance. *Journal of Financial and Strategic Decisions*. 13 (3). pp. 63–69.

Foos, D. (2012) *Equity and Debt Governance of Banks*. Available at: http://www.virtusinterpress.org/IMG/pdf/Helsinki_conference_paper_17.pdf (Accessed: 13 March 2015).

Forbes, D. and Miliken, F. (1999) Cognition and corporate governance: Understanding boards of directors as strategic decision making groups, *Academy of Management Review,* 24(3), pp. 489 - 505.

Forssbæck, J. (2009) *Essays on market discipline in commercial and central banking, University of Coppenhagen.* Available at: openarchive.cbs.dk/bitstream/hand le/10398/.../Jens_ Forssbæck.pdf? (Accessed: 13 March 2015).

Fortin, R., Goldberg, G. and Roth, G. (2010) Bank risk-taking at the onset of the current banking crisis,*The Financial Review*, 45(4), pp. 891 - 913.

Fox, C., Bugalla, J., and Narvaez, K. (2011) An evolving model for board risk governance, *Risk and Insurance Management Society*, Available at: https://www.rims.org/resources/ERM/Documents/RiskGovernance_web.pdf (Accessed: 13 September 2014).

Fox, C. (2012) Creating value with risk appetite and risk tolerance statements, *Financial executive*, November 2012, pp. 93 – 95.

FRC – Financial Reporting Council. (2014) *Guidance for Directors of Banks on Solvency and Liquidity Risk Management and the Going Concern Basis of Accounting.* Available at: https://www.frc.org.uk/Our-Work/Publications/Corporate-Governance/Guidance-for-Directors-of-Banks-on-Solvency-and -Li.pdf (Accessed: 14 January 2015).

Francis, B., Hasan, I., Koetter, M., and Wu, Q. (2012) Corporate boards and bank loan contracting, *The Journal of Financial Research,* XXXV(4), pp. 521 – 552.

Freeman, R. (1979) Stakeholder Theory of the Modern Corporation, *Perspectives in Business Ethics*, SIE(3), pp. 38 – 48.

Freeman R. (1984) *A Stakeholder Approach to Strategic Management.* Boston: Pitman.

Freeman, R. (1994) The politics of stakeholder theory, *Business Ethics Quarterly*, 4(4), pp. 409 – 421.

Freeman, R. and Reed, D. (1983) Stockholders and Stakeholders: A new Perspective on Corporate Governance, *California Management Review*, 25(3), pp. 88-106.

Freixas, X. and Rochet, J. (2008) *Microeconomics of Banking*, 2nd Edition. London: The MIT Press.

Freixas, X. (2010) Post crisis challenges to bank regulation, *Economic Policy,* April 2010, pp. 376 – 399.

FSB. (2013a) *Principles for an Effective Risk Appetite Framework. Consultative Document.* Available at: http://www.fsb.org/wp-content/uploads/r_131118.pdf (Accessed: 14 September 2014).

FSB. (2013b) *Thematic Review on Risk Governance.* Available at: http://www.financialstabilityboard.org/2013/02/r_130212/ (Accessed: 1 July 2015).

FT. (2015) *Bank chairmen lack the necessary knowledge.* Available at: http://www.ft.com/cms/s/0/a003b55e-70f5-11e5-9b9e-690fdae72044.html#axzz4JhetVRdK (Accessed: 29 December 2015).

Furlong, F.T. and Keeley, M.C. (1989) Capital regulation and bank risk-taking: A note, *Journal of Banking & Finance*, 13 (6), pp. 883–891.

G30 - The Group of Thirty. (2012) *Toward effective governance of financial institutions.* Available at: http://www.group30.org/images/PDF/TowardEffGov.pdf (Accessed: 5 June 2015).

G30 - The Group of Thirty. (2015) *Banking Conduct and Culture.* Available at: http://group30.org/rpt_67.shtml (Accessed: 12 October 2015).

Gail, L. and Palvia, A. (2013) Are regulatory management evaluations informative about bank accounting returns and risks*? Journal of Economics and Business,* 66(March-April), pp. 1 - 21.

Gao, Y., Liao, S., and Wang, X. (2013) *The Economic Impact of the Dodd-Frank Act upon SIFIs: Evidence from Market Reactions.* Available at: file:///Users//Downloads/SSRN-id1919630%20(1).pdf (Accessed: 10 August 2016).

Garcia-Meca, E., Garcia-Sanchez, I., and Martinez-Ferrero, J. (2014) Board diversity and its effects on bank performance: An international analyisis, *Journal of Banking & Finance,* 53(2015), pp. 202 – 214.

Garnier, M. (2008) Black holes in risk governance, *Journal of Risk Management in Financial Institutions,* 2(2), pp. 116 – 120.

Gatzert, N. and Martin, M. (2015) Determinants and value of ERM: Empirical evidence from the literature, *Risk Management and Insurance Review*, 18(1), pp. 29 – 53.

Gaughan, D. (2015) *Risk Governance and Culture Frameworks for Banks. AON Strategic Advisors and Transaction Solutions.* Available at: http://www.aon.com/risk-services/asats/attachments/Aon-BT-Risk-Governance-for-Banks-Whitepaper.pdf (Accessed: 2 February 2016).

Gaul, L., and Palvia, Al. (2012) Are regulatory management evaluations informative about bank accounting returns and risk? *Journal of Economics and Business,* 66(2013), pp. 1 – 21.

Gephart, R. (2004) Qualitative Research, *Academy of Management Journal,* 47(4), pp. 454-462.

Gibbons, D. (2013) Keeping your review groups on mission, *RMA Journal*, 12(15), pp. 1 - 11.

Gilson, R. (1996) Corporate Governance and Economic Efficiency: When do Institutions Matter? *Washington University Law Quarterly,* 74 (2), pp. 327–345.

Gippel, J., Smith, T., and Zhu, Y. (2015) Endogeneity in Accounting and Finance, ABACUS – *Journal of Accounting, Finance and Business Studies,* 51(2), pp. 143 – 155.

Giroud, X. and Mueller, H. (2010) Does corporate governance matter in competitive industries? *Journal of Financial Economics,* 95 (3), pp. 312–331.

Girling, P. (2013) *Operational Risk Management, A Complete Guide to a Successful Operational Risk Framework*. London: Wiley.

Global Corporate Governance Forum. (2013) *Risk Governance.Center for Finanical Inclusion*. Available at: http://www.centerforfinancialinclusion.org/publications-a-resources/browse-publications/512-governing-banks-mfi-edition-part1 (Accessed: 12 February 2014).

Goedhart, S. and Meltzer, S. (2013) Latest Developments in Risk Appetite Frameworks. Available at: http://www.cia-ica.ca/professional-development/meeting-archives/meeting-archives/2013/2013-annual-meeting-information/program/session-16-latest-developments-in-risks (accessed 30 June 2014).

Gompers, P., Ishii, J. and Metrick, A. (2003) Corporate Governance and Equity Prices, *Quarterly Journal of Economics*, 118(1), pp. 107 - 155.

Gontarek, W. (2016) Risk governance of financial institutions: the growing importance of risk appetite and culture, *Journal of Risk Management in Financial Institutions*, 9(2), pp. 120 – 129.

Gordon, L, and Loeb, M. and Tseng, C. (2009) Enterprise risk management and firm performance: A contengency perspective, *Journal of Accounting Public Policy,* 28(2009), pp. 301 – 327.

Goodhart, C., Hofmann, B. and Segoviano, M. (2004) Bank regulation and macroeconomic fluctuations, *Seoul Journal of Economics,*19(1), pp. 1-41.

Govindarajan, D. (2011) Corporate risk appetite: Ensuring board and senior management accountability for risk, *ICMA Centre Discussion Papers in Finance*. Available at: http://www.icmacentre.ac.uk/files/discussion-papers/DP2011-22.pdf (Accessed: 1 February 2015).

Grant Thornton. (2012) Risk appetite: A market study. Available at: http://www.grantthornton.co.uk/insights/risk-appetite-a-market-study/ (Accessed: 4 September 2014).

Grant Thornton. (2013) *Banking risk: Enhancing your ERM framework.* Available at: http://www.grantthornton.co.uk/globalassets/1.-member-firms/united-kingdom/pdf/publication/2013/banking-risk-enhancing-your-enterprise.pdf (Accessed: 5 September 2014).

Grant Thornton. (2014) *OCC's risk governance guidelines go beyond heightened expectations*. Available at: http://www.grantthornton.com/~/media/content-page-files/financial-services/pdfs/2015/OCC-Risk-Governance-Guidelines-Feb2015.ashx (Accessed: 13 September 2015).

Green, P. (2015) *Enterprise Risk Management: A Common Framework for the Entire Organization*. Waltham: Elsevier Inc.

Greenspan, A. (1996) *Remarks at the Financial Markets Conference of the Federal Reserve Bank of Atlanta*. Coral Gables, Florida. February 23rd 1996. https://fraser.stlouisfed.org/scribd/?item_id=8561and filepath=/docs/historical/greenspan/Greenspan_19960223.pdf (Accessed: 1 October 2016).

Greyfman, V. (2005) *Risk adjusted performance measures at bank holding companies with Section 20 subsidiaries.* Resarch Note, Research Department, Federal Reserve Bank of Philadelphia. Available at: file:///Users/Downloads/wp05-26.pdf (Accessed: 26 September 2014).

Greuning, H. and Bratanovic, S. (2003) *Analyzing and Managing Banking Risk: A Framework for Assessing Corporate Governance and Financial Risk*. Washington DC: IBRD Publication.

Gropp, R., and Köhler, M. (2010) Bank owners or bank managers: who is keen on risk? Evidence from the financial crisis. Center for European Economic Research. Available at: http://hdl.hand le.net/10419/30179 (Accessed: 4 January 2015).

Grosse, R. (2012) Bank regulation, governance and the crisis: a behavioural finance view, *Journal of Finanical Regulation and Compliance,* 20(1), pp. 4 – 25.

Grojean, M., Resick, M., Dickson, D. and Smith, D. (2004) Leaders, values, and organisational climate: Examinging leadership strategies for establishing an organisational climate regarding ethics, *Journal of Business Ethics,* 55(3), pp. 233 - 241.

Grove, H., Patelli, L., Victoravich, L. and Xu, P. (2011) Corporate Governance and Performance in the Wake of the Financial Crisis: Evidence from US Commercial Banks. *Corporate Governance: An International Review*. 19 (5). pp. 418–436.

Grove, H., and Cook, T. (2013) Lehman Brothers and Bear Stearns: Any Financial and Corporate Governance Differences? *Amity Global Business Review*, pp 113 – 130.

Guidara, A., Lai, V., Souraré, I. and Tchana, F. (2013) Bank's capital buffer, risk and performance in the Canadian banking system: Impact of business cycles and regulatory changes, *Journal of Banking & Finance*, 37, pp. 3373 – 3387.

Guiso, L., Sapienza, P., and Zingales, L. (2013) The value of corporate culture. *Chicago Booth Research Paper No. 13-80; Fama-Miller Working Paper.* Available at: SSRN:http://ssrn.com/abstract=2353486 or http://dx.doi.org/10.2139/ssrn.2353486 (Accessed: 10 October, 2015).

Gulamhussen, M., and Santa, S. (2015) Female directors in bank boardrooms and their influence on performance and risk-taking, *Global Finance Journal,* 28(2015), pp. 10 – 23.

Guo, R., Langston, V., and Hadley, L. (2001) Business Cycle, Corporate Governance, and Bank Performance, *Research in Business and Economics Journal,* pp. 1 – 11.

Gup, B. (eds.). (2007) *Corporate Governance in Banking: A Global Perspective.* Cheltenham: Edward Elgar.

Hagendorff, J., Collins, M. and Keasey, K. (2010) Board monitoring, and performance in the banking industry: Evidence from the market for corporate control, *Corporate Governance: An International Review,*18(5), pp. 381 – 395.

Hagendorff, J. and Vallascas, F. (2011) CEO Pay Incentives and Risk-taking: Evidence from Bank Acquisitions, *Journal of Corporate Finance*, 17(4), pp. 854 - 870.

Hagendorff, J. and Keasey, K. (2012) The value of board diversity in banking: Evidence from the market for corporate control, *The European Journal of Finance*, 18(1), pp. 41 – 58.

Hahn, P. and Lasfer, M. (2016) Impact of foreign directors on board meetings frequency. *International Review of Financial Analysis*, 40(2016), pp. 295 – 308.

Haldane, A. (2013) Control rights (and wrongs), *Economic Affairs,* 32(2), pp. 47 - 57.

Hamalainen, P. (2004) Mandatory Subordinated Debt and the Corporate Governance of Banks, *Corporate Governance: An International Review*, 12(1), pp. 93 – 106.

Hambrick, D. and Mason, P. (1984) Upper echelons: The organization as a reflection of its top managers, *Academy of Management Review,* 9, pp. 193 – 206.

Harrison, J. (1987) The strategic use of corporate board committees, *The California Management Review*, 30(1), pp. 109 – 125.

Harvard Law School Forum on Corporate Governance (2014) *Financial institutions corporate governance*. Available at: http://corpgov.law.harvard.edu/2014/01/21/key-trends-in-financial-institutions-ma-and -governance/ (Accessed: 1 September 2015).

Haspeslagh, P. (2010) Corporate governance and the current crisis, *Corporate Governance,* 10(4), pp. 375 – 378.

Hau, H. and Thum, M. (2009) *Subprime crisis and board (in) competence: private versus public banks in Germany*. Banks in Crisis. Available at: www.ssrn.com/abstract=1360698 (Accessed 3 January 2015).

Hayes, N. (2013) Governance for strengthened risk management, *RMA Journal*, 95(8), pp. 23 – 25.

Hays, F., De Lurgio, S. and Gilbert, A. (2009) Efficiency Ratios and Community Bank Performance, *Journal of Finance and Accountancy*, 1, pp. 1 – 15.

Hayward, M. and Hambrick, D. (1997) Explaining the premiums paid for large acquisitions: evidence of CEO hubris, *Adminstrative Science Quarterly*, 42(1), pp. 103 - 127.

Hedley May. (2011) *Rise of the new model CRO in the financial services sector.* Available at: http://www.hedleymay.com/Hedley_May_-_Risk_Upgrade.pdf (Accessed: 25 January 2016).

Heremans, D. (2007) *Corporate governance issues for banks. A financial stability perspective*. Available at: https://lirias.kuleuven.be/bitstream/123456789/120504/1 (Accessed: 3 September 2015).

Hermalin, B. and Weisbach, M. (1988) The determinants of board composition, *The Rand Journal of Economics*, 19, pp. 589 – 606.

Hermalin, B. and Weisbach, M. (2003) Boards Of Directors As An Endogenously Determined Institution: A Survey Of The Economic Literature, *Economic Policy Review,* 9(1), pp. 7-20.

Hillman, A. and Dalziel, T. (2003) Boards of Directors and Firm Performance: Integrating Agency and Resource Dependence Perspectives, *The Academy of Management Review,* 28(3), pp. 383-396.

Hillman, A., Withers, M., Collins, B. (2009) Resource Dependence Theory: A Review, *Journal of Management,* 36(6), pp. 1404 - 1427.

Himaj, S. (2014) Corproate governance in banks and its impact on risk and performance: Review of literature on the selected governance mechanisms, *Journal of Cental Banking Theory and Practice*, 2014(3), pp. 53 – 85.

Himmelberg, F., Hubbard, R. and Palia, D. (1999) Understand ing the determinants of managerial ownership and the link between ownership and performance, *Journal of Financial Economics,* 53(3), pp. 353 - 384.

Hines, C. and Peters, G. (2015) Voluntary risk management committee formation: Determinants and short-term outcomes, *Journal of Accounting and Public Policy*, 34(2015), pp. 267 – 291.

Hines, C., Masli, A, Mauldin, E., and Peters, G. (2015) Board Risk Committees and audit pricing, *Auditing: A Journal of Practice and Theory*, 34(4), pp. 59 -84.

Hirtle, B. (2015) Public Disclosure and Risk-Adjusted Performance at BHCs, FRBNY Staff Reports, 293, pp. 1 -37.

Ho, T., and Saunders, A., (1981). The determinants of bank interest margins: Theory and empirical evidence, *Journal of Financial and Quantitative Analysis*, 16 (4), pp. 581–600.

Holder-Webb, L., and Sharma, D. (2010) The effect of governance on credit decisions and perceptions of reporting reliability, *Behavioural Research in Accounting*, 22(1), pp. 1 – 20.

Holmquist, E. (2014) Why you need a Risk Committee, *RMA Journal*, 96, pp. 18 – 21.

Hölmstrom, B. (1979) Moral hazard and observability, *Bell Journal of Economics*, 10, pp. 74 – 91.

Hopt, K. (2013a) *Corporate governance of banks and other financial institutions after the financial crisis - regulation of light of empiry and theory.* Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2334874 (Accessed: 12 October 2015).

Hopt, K. (2013b) *Better Governance of Financial Institutions.* Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2212198 (Accessed: 28 December 2014).

Hoque, H. (2013) From the credit crisis to the sovereign debt crisis: Determinants of the share price performance of global banks, *International Review of Financial Analysis,* 30, pp. 334 – 350.

Howson, N. (2009) *When good corporate governance makes bad financial firms: the global crisis and the limits of private law. Michigan Law Review.* (108). Available at: http://ssrn.com/abstract=1511904 (Accessed: 4 November 2014).

Hoyt, R., and Liebenberg, A. (2011) The value of enterprise management, *Journal of Risk and Insurance*, 78(4), pp. 795 – 822.

Houston, J. and James, C. (1995) CEO Compensation and Bank Risk: Is compensation in banking structured to promote risk-taking, *Journal of Monetary Economics*, 36, pp. 405 – 431.

Hsiao, C. (2014) *Panel Data Analysis – Advantages and Challenges*. Available at: http://www.uio.no/studier/emner/sv/oekonomi/ECON5103/v10/undervisningsmateriale/PDAppl_14.pdf (Accessed: 29 February 2016).

Huang, P., Louwers, T., Moffit, N., and Zhang, Y. (2007) Ethical management: corporate governance and abnormal accurals, *Journal of Business Ethics*, 83(3), pp. 469 - 487.

Hughes, J. and Mester, L. (2012) *A primer on market discipline and governance of financial institutions for those in a state of shocked disbelief.* FRB Philadelphia Research. Available at: https://ideas.repec.org/p/fip/fedpwp/12-13.html (Accessed: 25 March 2015).

Hughes, J. and Mester, L. (2013a) *Who said large banks don't experience scale economies? Evidence from a risk-return driven cost function. FRB Philadelphia Research*. Available at: www.philadelphiafed.org/research-and -data/2013/wp13-13.pdf (Accessed: 24 March 2015).

Hughes, J. and Mester, L. (2013b) *Measuring performance of banks: Theory, practice, evidence, and some policy implications.* Available at: http://fic.wharton.upenn.edu/fic/papers/13/13-28.pdf (Accessed: 24 March 2015).

Hyde, P., Leibert, T., and Wackerbeck, P. (2009) *A comprehensive risk appetite framework for banks.* Booz and Co. Available at: http://www.strategyand .pwc.com/media/file/Risk_Appetite_Framework.pdf (Accessed: 21 March 2015).

Iannotta, G., Nocera, G. and Sironi, A. (2007) Ownership structure, risk and performance in the European banking industry, *Journal of Banking & Finance*, 31(7), pp. 2127 – 2149.

IFC. (2012) *Standards on Risk Governance in Financial Institutions,* Available at: http://www.ifc.org/wps/wcm/connect/ce387e804c9ef58697c4d7f81ee631cc/ECACR-RiskGovernanceStand ards.pdf?MOD=AJPERES (Accessed: 12 September 2014).

Ignatowski, M. and Korte, J. (2014) Wishful thinking or effective threat? Tightening bank resolution schemes and bank risk-taking, *Journal of Financial Stability*, 15(2014), pp. 264 – 281.

IIF. (2008) *Final Report of the IIF Committee on Market Best Practices: Principles of Conduct and Best Practice Recommendations*. Available at: https://www.iif.com/file/7102/download?token=zVgadpJM (Accessed: 13 June 2015).

IIF. (2011a) *Implementing Robust Risk Appetite Frameworks to Strengthen Financial Institutions.* Available at: file:///Users/ /Downloads/riskappetitereportfinal.single1.pdf (Accessed: on 2 June 2015).

IIF. (2011b) *The Cumulative Impact on the Global Economy of Changes in the Financial Regulatory Framework.* Available at: https://www.iif.com/file/7080/download?token=CwKXtHfb (Accessed: 15 August 2015).

Imbierowicz, B., and Rauch, C. (2014) The relationship between liquidity risk and credit risk in banks, *Journal of Banking & Finance,* 40(2014), pp. 242 – 256.

Imbierowicz, B. and Wahrenburg, M. (2013) Wealth transfer effects between stockholders and bondholders, *Quarterly Review of Economics and Finance*, 53(2013), pp. 23 – 43.

IMF. (2014) *Risk-taking by Banks: The role of governance and executive pay* (IMF). Available at: https://www.imf.org/external/pubs/ft/gfsr/2014/02/pdf/c3.pdf (Accessed: 3 January 2015).

IMF. (2015) *Detailed assessment of observance of the Basel core principles for effective banking supervision* Available at: https://www.imf.org/external/pubs/ft/scr/2014/cr14135.pdf (Accessed: 15 November 2015).

Ingley, C. and van der Walt, N. (2003) Board configuation: Building better boards, *The International Journal of Business in Society,* 3(4), pp. 5 – 17.

INSEAD. (2012) *Professor Jean Dermine on corporate governance of banks* [Video]. Available at: https://www.youtube.com/watch?v=c6WpVC9tCL8 (Accessed: 4 July 2015).

Iqbal, J., Strobl, S., and Vähämaa, S. (2015) *Corporate Governance and the Systemic Risk of Financial Institutions.* Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2485329 (Accessed: 28 September 2016).

Iselin, M. (2013) *Bank regulatory risk and the Dodd-Frank requirement to maintain a stand - alone board level Risk Committee.* Available at: https://fisher.osu.edu/~schroeder.9/AMIS900/Iselin.pdf (Accessed: 13 Septmber 2014).

Iselin, M. (2016) *Estimating the potential impact of requiring a stand -alone board level Risk Committee.*
Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2761556 (Accessed: 15 August 2016).

Ittner, C. and Keusch, T. (2015) *The Influence of Board of Directors's Risk Oversight on Risk Management Maturity and Firm Risk-taking.* Available at: https://www.insead.edu/facultyresearch/areas/accounting/events/documents/BoardRiskOversight_20150818.pdf (Accessed: on 12 October 2015).

Jackson, P. (eds.) (2014) *Risk culture and effective risk governance.* London: Incisive Media.

Janis, I. (1982). *Groupthink: Psycological studies of policy decisions and fiascoes.* 2nd ed. Boston: Houghton MIfflin.

Jacewitz, S. and Kupiec, P. (2012) Community Bank Efficiency and Economies of Scale. Available at: https://www.fdic.gov/regulations/resources/cbi/report/cbi-eff.pdf (Accessed 15 January 2015).

Jeitschko, T. and Jeung, S. (2005) Incentives for risk-taking in banking – A unified approach, *Journal of Banking & Finance*, 29(2005), pp. 759 – 777.

Jensen, M. (1993) The modern industrial revolution: Exit and failure of internal control systems, *Journal of Finance*, 48, pp. 831 – 880.

Jensen, M. and Meckling, H. (1976) Theory of the firm: Managerial behaviour, agency costs and ownership structure, *Journal of Financial Economics,* 3(4), pp. 305–360.

Jensen, M. and Murphy, K. (1990) Performance Pay and Top-Management Incentives, *Journal of Political Economy, 98* (2), p. 225.

Jiménez, G. and Lopez, J. and Saurina, J. (2007) *How does competition impact risk-taking? Federal Reserve Bank of San Francisco Working Paper Series.* 23. Avalable at: http://www.frbsf.org/publications/economics/papers/2007/wp07-23bk.pdf (Accessed: 4 January 2015).

Jizi, M., Salama, A., Dixon, R., and Stratling, R. (2014) Corporate governance and CSR disclosure: Evidence in the US banking sector, *Journal of Business Ethics,* 125(41), pp. 601 - 615.

Johansen, K., Laser, S., Neuberger, D., and Andreani, E. (2014) Inside or Outside Control of Banks? Evidence from the Composition of Supervisory Boards, *European Journal of Law and Economics*, 2(2014), pp. 1 – 28.

John, K., De Masi, S., and Paci, A. (2016) Corporate Governance in Banks, *Corporate Governance: An International Review,* 24(3), pp. 303 – 321.

John, K. and Senbet, L. (1989) Corporate governance and board effectiveness, *Journal of Banking & Finance*, 22(1998), pp. 371 – 403.

John, K. and Qian, Y. (2003) Incentive features in CEO compensation in the banking industry, *FRBNY Economic Policy Review,* April 2003, pp. 109 – 118.

John, K., Litov, L., and Yeung, B. (2008) Corporate governance and risk-taking, *Journal of Finance*, LXIII(4), pp. 1679 - 1728.

John, K., Mehran, H. and Qian, Y. (2010) Outside monitoring and CEO compensation in the banking industry, *Journal of Corporate Finance*, 16(4), pp. 383 - 399.

Johnson, K. (2013) Macroprudential regulation: A sustainable approach to regulating financial markets, *University of Illinios Law Review,* 3(3), pp. 881 - 918.

Johnston, V. (2013) The struggle for optimal financial regulation and governance, *Public Performance and Management Review,* 37(2), pp. 222 – 240.

Jokipii, T. and Milne, A. (2009) *Bank Capital Buffer and Risk Adjustment Decisions. Swiss* National Bank Working Paper Series. Available at: http://www.snb.ch/n/mmr/reference/working_paper_2009_09/source/working_paper_2009_09.n.pdf (Accessed: 3 January 2015).

Jokivuolle, E., and Keppo, J. (2014) Bankers' compensation: Sprint swimming in short bonus pools? *Bank of Finland Research Discussion Papers*, 2(2014), pp. 1 – 40.

Jokivuolle, E., Keppo, J. and Yuan, X. (2015*) Bonus Caps, Deferrals and Bankers' Risk-Taking.* Available at: www.ssrn.com/abstract=2346602 (Accessed: 25 April 2015).

Jolliffe, I. (2002) *Principal Component Analysis.* 2nd Edition. New York: Springer.

Jorion, P. and Zhang, G., (2007) Good and bad credit contagion: evidence from credit default swaps, *Journal of Banking & Finance,* 84, pp. 860 - 883.

Kanagaretnam, K. and Lobo, G. (2003) Managerial incentives for income smoothing through bank loan loss provisioning, *Review of Quantitative Finance and Accounting,* 5, pp. 1 – 29.

Kanagaretnam, K. Lobo, G. and Yang, D. (2005) Determinants of signalling by banks through loan loss provisions, *Journal of Business Research*, 58(2005), pp. 312 – 320.

Kashyap, A., Rajan, R. and Stein, J. (2008). *Re-thinking capital regulation.* Available at: http://scholar.harvard.edu/stein/publications/rethinking-capital-regulation (Accessed: 30 April 2015).

Kashyap, A. (2010) *Lessons from the Financial Crisis for Risk Management: A Paper Prepared for the Financial Crisis Inquiry Commission*. Available at: http://faculty.chicagobooth.edu/anil.kashyap/research/papers/lesson_for_fcic.pdf (Accessed: 13 September 2014).

Kasteil, K. (2014) Risk Governance: Banks Back to School. *The Harvard Law School Forum on Corporate Governance and Financial Regulation*. Available at: https://corpgov.law.harvard.edu/ (Accessed: 1 November 2014).

Kato, P. and Hagendorff, J. (2010) Distance to default, subordinated debt, and distress indicators in the banking industry, *Accounting and Finance*, 50(4), pp. 853–870.

Keele, L., and Kelly, N. (2005) *Dynamic models for dynamic theories: The inns and outs of lagged dependent variables.* Available at: https://www.nuffield.ox.ac.uk/politics/papers/2005/Keele%20Kelly%20LDV.pdf (Accessed: 14 September 2015).

Keeley, M. (1990) Deposit Insurance, Risk and Market Power, *The American Economic Review*, December 1990, pp. 1183 – 1200.

Keiler, S., and Eder, A. (2013) CDS spreads and systematic risk – a spatial econometric approach. *Deutsche Bundesbank Discussion Paper.* Available at: https://www.bundesbank.de/Redaktion/EN/Downloads/Publications/Discussion_Paper_1/2013/2013_01_28_dkp_01.pdf?__blob=publicationFile (Accessed: 14 September 2014).

Kerstien, J. and Kozberg, A. (2013) Using accounting proxies of proprietary FDIC ratings to predict bank failures and enforcement actions during the recent financial crisis. *Journal of Accounting, Auditing and Finance*. 28(2). pp. 128 – 151.

Keys, B., Mukherjee, T., Seru, A., and Vig, V. (2009) Financial regulation and securitization: Evidence from subprime loans, *Journal of Monetary Economics*, 56(5), pp. 700 – 720

Kiel, G. and Nicholson, G. (2005) Evaluating boards and directors, *Corporate Governance: An International Review,* 13(5), pp. 613 – 631.

Kim, B. (2002) Adaption of governance mechanisms to deregulation: A longitudinal study of the US banking industry, *Academy of Management Procedures,* 2002(D1), pp. 1 – 8.

King, T. and Wen, M. (2011) Shareholder governance, bondholder governance and managerial risk-taking, *Journal of Bankng and Finance,* 35(3), pp. 512 - 531.

Kirkpatrick, G. (2009) The Corporate Governance Lessons from the Financial Crisis, *OECD Journal Financial Market Trends*, 2009(1), pp. 61-87.

Klein, P., Shapiro, D. and Young, J. (2005) Corporate governance, family ownership and firm value: The Canadian evidence, *Corporate Governance,* 13 (6), pp. 769–784.

Kleinow, J., Nell, T., Rogler, S., and Horsch, A. (2014) The value of being systemically important: Event study on regulatory announcements for banks, *Applied Financial Economics,* 24(24), pp. 1585 – 1604.

Klomp, J. and de Haan, J. (2012) Banking risk and regulation: Does one size fit all? *Journal of Banking & Finance,* 36(2012), pp. 3192 – 3212.

Koehn, M. and Santomero, A. (1980) Regulation of Bank Capital and Portfolio Risk, *Journal of Finance,* 35(5), pp. 1285 - 1244.

Kolb, R. and Schwartz, D. (eds). (2009) *Corporate Boards: Managers of Risk, Sources of Risk.* Chichester: Wiley-Blackwell.

Koncz, L. (2015) Managing your portfolio lending limits to your advantage. 2015 RMA Annual Risk Management Conference. Available at: www.**rma**hq.org/WorkArea/DownloadAsset.aspx?id=16607 (Accessed: 23 December 2015)

KPMG. (2013) *Developing a strong risk appetite program: Challenges and solutions*. Available at: https://home.kpmg.com/xx/en/home/insights/2013/11/risk-appetite.html (Accessed: 1 December 2014).

KPMG. (2014a) Evolving Banking Regulation. EMA Edition. *Is the End in Sight.* Available at: http://www.kpmg.com/global/en/issuesand insights/articlespublications/evolving-banking-regulation/pages/default.aspx (Accessed: 21 February 2015).

KPMG. (2014b) *GRC Today: Insights in Governance, Risk and Compliance*. Available at: https://www.kpmg.com/ID/en/IssuesAnd Insights/ArticlesPublications/Documents/grc-today-oct-2015.pdf (Accessed: 15 August 2015).

Krainer, R. (1999) *Banking in a theory of the business cycle. A model and critique of the Basel Accord on risk based capital requirements for banks*. Available at: https://ideas.repec.org/p/por/fepwps/277.html (Accessed: 9 September 2015).

Krainer, J. and Lopez, J. (2008) Using securities market information for bank supervisory monitoring, *International Journal of Central Banking,* March 2008, pp. 125 – 164.

Krawcheck, S. (2012) Our ways to fix banks, *The Harvard Business Review*, June 2012, pp. 107 – 111.

Krishnan, J. and Lee, J. (2009) Audit committee financial expertise, litigation risk and corporate governance, *Auditing: A Journal of Practisce and Theory*, 28(1), pp. 241 – 261.

Kroll, M., Walters, B., and Wright, P. (2008) Board vigilance, director experience, and corporate outcomes, *Strategic Management Journal*, 29, pp. 363 – 382.

Kupeic, P. and Lee, Y. (2012) What factors explain differences in return on assets amoung community banks? *FDIC Publications.* Available at: https://www.fdic.gov/regulations/resources/cbi/report/cbi-roa.pdf (Accessed: 24 February 2015).

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R. (1996) Law and Finance, *NBER Working Paper Series*, 5661, pp. 1 – 80.

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., and Vishny, R. (2000) Investor protection and corporate governance, *Journal of Financial Economics,* 58(2000), pp. 3 – 27.

Laeven, L. (2002) Bank risk and deposit insurance,*The World Bank Economics Review,*16(1), pp. 109 - 137.

Laeven, L. (2013) What's special about banks? *Annual Review of Financial Economics,* 5(1), pp. 63 - 92.

Laeven, L. and Levine, R. (2009) Bank Governance, regulation and risk-taking. *Journal of Financial Economics.* 00(0000). Available at: https://www.bancaditalia.it/pubblicazioni/altri-atti-seminari/2009/Laeven_bank_risk_jfe_final.pdf (Accessed: 3 January 2015).

Laeven, L., Ratnovski, L., and Tong, H. (2014) *Bank Size and Systemic Risk*. IMF Research Department. Available at: https://www.imf.org/external/pubs/ft/sdn/2014/sdn1404.pdf (Accessed: 20 September 2015).

Lam, J. and Potter, S. (2012) In search of risk experts for bank boards, *RMA Journal,* 94(8), pp. 17 – 21.

Lam, J. (2014) *Enterprise Risk Management: From Incentives to Controls*. 2nd edn. London: Wiley.

Lam, J. (2015) *Implementing an Effective Risk Appetite*, Available at: https://www.imanet.org/-/.../8150b134bafd42aaaf5267bf49d6d2a3.ashx (Accessed 5 March 2016).

Landier, A., Sauvagnat, J., Sraer, D., and Thesmar, D. (2012) Bottom Up Corporate Governance, *Review of Finance,* 17, pp. 161 – 201.

Lang, W. and Jagtiani, J. (2010) The mortgage and financial crises: the role of credit risk management and coroprate governance, *Atlantic Economic Journal*, 38, pp. 295 - 316.

Larcker, D., Richardson, S., and Tuna, I. (2007) Corporate governance, accounting outcomes, and organizational performance, *The Accounting Review,* 82(4), pp. 963 – 1008.

Larcker, D. and Rusticus, T. (2009) On the use of instrumental variables in accounting research, *Journal of Accounting and Economics*, 49(2010), pp. 186 – 205.

Lasfer, M. (2006) The Interrelationship Between Managerial Ownership and Board Structure, *Journal of Business Finance & Accounting*, 33(7) and (8). pp. 1006 – 1033.

Lawrence, M. (2011) *Risk appetite – the key to the new risk paradigm.* Available at: www.apec.org/au/docs/11_con/HTRAB_040-043_Lawrence.pdf (Accessed: 15 September 2015).

Lechner, M. (2010) The Estimation of Causal Effects by Difference in Difference Methods, *Foundations and Trends in Econometrics*. 4(3). pp. 165 – 224.

Lehmann, A. and Hofmann, D. (2010) Lessons learned from the financial crisis for risk management: Contrasting developments in insurance and banking, *The International Association for the Study of Insurance Economics,* 2010(35), pp. 63 – 78.

Lei, H. and Gelly, B. (2016) US regional bank efficiency ratio deep dive. Bloomberg, Septmeber 17th, 2016.

Lepetit, L. and Strobel, F. (2010) Bank Insolvency risk and time-varying Z-score measures, *Journal of International Financial Markets, Institutions and Money*, 2013(25), pp. 73 – 87.

Leung, W., Song, W., Chen, J. (2016) *The impact of stakeholder orientation on bank risk-taking: Evidence from natural experiment.* Available at: http://www.efmaefm.org/0EFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2016-Switzerland /papers/EFMA2016_0018_fullpaper.pdf (Accessed: 1 September 2016).

Levine, R. (2004) *The Corporate Governance of Banks: A Concise Discussion of Concepts and Evidence.* Available at: https://openknowledge.worldbank.org/bitstream/handle/10986/14239/WPS3404.pdf?sequence=1 (Accessed: 3 January 2015).

Levine, R. (2012) The Governance of Financial Regulation: Reform Lessons from the Recent Crisis. *International Review of Finance.* 12 (1). pp. 39–56.

Leventis, S., Dimitropoulos, P., and Owusu-Ansah, S. (2013) Corporate governance and accounting conservatism: Evidence from the banking industry, *Corporate Governance: An International Review*, 21(3), pp. 264 – 286.

Lewellyn, K. and Muller-Kahle, M. (2012) CEO Power and Risk-taking: Evidence for the Subprime Industry, *Corporate Governance International Review*, 20(13), pp. 289 - 307.

Li, L. and Song, F. (2013) Do bank regulations affect board independence? A cross country analysis, *Journal of Banking & Finance*, 37(2013), 2714 – 2732.

Li, C. and Wearing, R. (2012) Risk management and non-executive directors in UK quoted banks and other finanical institutions, *International Journal of Disclosure and Governance*, 9(2), pp. 226 – 237.

Li, F. and Zou, Y. (2014) *The Impact of Credit Risk Management on Profitability of Commerical Banks: A Study of Europe.* Available at: https://www.diva-portal.org/smash/get/diva2:743402/FULLTEXT01.pdf (Accessed: 1 February 2016).

Lim, C., Woods, M., Humphrey, C. and Seow, J. (2016) The paradoxes of risk management in the banking industry. *The British Accounting Review*. 2016. pp. 1 – 16.

Linck, J., Netter, J. and Yang, T. (2008) The Determinants of Board Structure, *Journal of Financial Economics*, 87(2008), pp. 308 – 328.

Lingel, a and Sheedy, E. (2012) *The Influence of Risk Governance on Risk Outcomes - International Evidence.* Available at: :http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2482168 (Accessed: 28 February 2015).

Lipton, M, Neff, D., Brownstein, A., Rosenblum, S., Emmerich, A., Fain, S., and Cohen, D. (2012) Recent Developments: Risk Management and the Board of Directors. *Bank and Corporate Governance Law Reporter.* 47(6). pp. 784 – 789.

Lo, A. (2009) Regulatory reform in the wake of the finanical crisis of 2007 – 2008. MIT Open Access Articles, *Journal of Financial Economic Policy*, 1(1), pp. 4-43.

Love, I. (2011) Corporate Governance Around the World: What We Know and What We Don't, *World Bank Research Observer,* 26(1), pp. 42 – 70.

Lui, A. (2014) Protecting whistle blowers in the UK financial industry, *Journal of Disclosure and Compliance*, 11(3), pp. 195 - 210.

Luttrell, D., Atkinson, T., and Rosenblum, H. (2013) Assessing the costs and consequences of the 2007 – 2009 financial crisis and its aftermath. *Economic Letter: Federal Reserve Bank of Dallas*. Available at: http://www.dallasfed.org/research/eclett/2013/el1307.cfm (Accessed: 30 August 2015).

Maati, J. and Maati-Sauvez, C. (2012a) Corporate Governance of Banks and Risk Management by Stockholders, *Bankers, Markets and Investors,* No 120 (September - October), pp. 58–62.

Maati, J. and Maati-Sauvez, C. (2012b) Regulatory Governance Mechanisms in Banks, *Bankers, Markets and Investors,* No. 119 (August), pp, 43–59,

Macey, J, and O'Hara, M, (2003) The Corporate Governance of Banks, *FRBNY Economic Policy Review,* (April), pp. 91–107.

Macey, J. and O'Hara, M. (2016) Bank Corporate Governance: A Proposal for the Post-Crisis World, *FRBNY Economic Policy Review,* August, pp. 85 – 105.

Madison, G., Gregory, C. Friesen, C. and Horner, N. (2015) International Banking Requlators Propose Revised Corporate Governance Principles: Reinforce Board Responsbilites for Risk Oversight and Governance Culture, *Journal of Taxation and Regulation of Financial Institutions,* 28(4), pp 51 - 55.

Magalhaes, R., Urtaga, M. and Tribo, J. (2010) *Bank's ownership structure, risk and performance*. Available at: http://e-archivo.uc3m.es/bitstream/handle/10016/14234/banks_tribo_2010.pdf?sequence=1 (Accessed: 30 December 2014).

Magee, S., Sheedy, E., and Wright, S. (2010) *Governance of financial institutions: a cross country evaluation of national codes following Basel 2010*. Available at: http://www.istein.org/e-library/browse-by-sources/item/15443-governance-of-financial-institutions-a-cross-country-evaluation-of-national-codes-following-basel-2010.html (Accessed: 30 December 2014).

Magee, S., Schilling, C., and Sheedy, E. (2014) *The effect of risk governance in the insurance sector during the financial crisis: Empirical evidence from an international sample*. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2482168 (Accessed: 22 December 2014).

Magnan, M. and Markarian, G. (2011) Accounting, Governance and the Crisis: Is Risk the Missing Link? *European Accounting Review*, 20(2), pp. 215 – 231.

Mallin, C., Mullineux, A., and Wihlborg, C. (2005) The Financial Sector and Corporate Governance: The UK Case, *Corporate Governance: An International Review*, pp.13(4), 532 – 541.

Mamatzakis, E., and Bermpei, T. (2015) The Effect of Corporate Governance on the Performance of US Investment Banks. *NYU Salomon Center Publication.* Available at: http://sro.sussex.ac.uk/56250/ (Accessed: 1 September 2016).

Mamun, A., Hassan, M, and Maroney, N. (2005) The wealth and risk effects of the Gramm Leach Bliley Act (GLBA) on the US Banking Industry, *Journal of Business, Finance and Accounting,* 32, pp. 351 – 386.

Markowitz, H. (1952) Portfolio Selection, *The Journal of Finance,* 7(1), pp. 77-91.

MAS – The Monetary Authority of Singapore. (2013) *Guidelines on corporate governance - Singapore.* Available at: http://www.mas.gov.sg/~/media/resource/legislation_guidelines/banks/guidelines/Corporate%20Governance%20Guidelines_2013.pdf (Accessed: 13 September 2013).

McConnell, P. (2012a) The governance of strategic risks in systemically important banks, *Journal of Risk Management in Financial Institutions*, 5(2), pp. 128 - 142.

McConnell, P. (2012b) *Strategic Risk Management: Disclosure by Systemically Important Banks*. Available at: http://www.capco.com/uploads/articlefiles/345/file_0_1420623001.pdf (Accessed: 12 October 2015).

McConnell, P. (2013a) Strategic Risk: The beanstalk syndrome, *Journal of Risk Management in Financial Institutions,* 6(3), pp. 289 - 252.

McConnell, P. (2013b) Improving risk governance – A proposal on board decision-making, *Journal of Risk and Governance*, 2(3), pp. 173 – 198.

McConnell, P. (2016) Strategic risk management: The failure of HBOS and its regulators, *Journal of Risk Management in Financial Institutions*, 9(2), pp. 147 – 162.

McCormack, J., and Weiker, J. (2010) Rethinking Strength of Incentives of Executives of Financial Institutions, *Journal of Applied Corporate Finance*, 22(3), pp. 65 – 89.

McCormick, E. (2013) Feeling better about managing risk, *Bank Director*, 2nd Quarter, pp. 2013.

McCormick, E. (2014) Handling risk in the modern age, *Bank Director,* 2nd Quarter, pp. 28 – 35.

McCormick, R. and Minto, A. (2014) *Governance of Banks in an Era of Regulatory Change and Declining Public Confidence, Law and Economics Yearly Review.* In Association with Queen Mary University of London. 3(1). pp. 8 – 25. Available at: http://ssrn.com/abstract=2497321 (Accessed: 25 November 2015).

McKinsey and Co. (2009) *Capital ratios and financial distress: lessons from the crisis.* Available at: file:///Users/ /Downloads/15_Capital_ratios_and _financial_distress%20(2).pdf (Accessed: 14 April 2015).

McKinsey and Co. (2010a) *A Board Perspective on ERM.* Available at: file:///Users//Downloads/18_A_Board_perspective_on_enterprise_risk_management%20(2).pdf (Accessed: 3 April 2015).

McKinsey and Co. (2010b) *A better way to measure bank risk.* Available at: http://www.mckinsey.com/industries/financial-services/our-insights/a-better-way-to-measure-bank-risk (Accesed 3 April 2015).

McKinsey and Co. (2011) Mastering ICAAP. *McKinsey Working Papers*. Available at: file:///Users/ Downloads/27_WP_RISK_Mastering_ICAAP%20(2).pdf (Accessible 4 September 2014).

McKinsey and Co. (2013a) ERM: *Shaping the risk revolution.* Available atL www:///Users/Downloads/ERM---Shaping-the-Risk-Revolution.pdf (Accessed: 14 May 2015).

McKinsey and Co. (2013b) *Getting to ERM: A roadmap for banks and other financial institutions*. Available at: www:///Users/ Downloads/Getting%20to%20ERM%20(1).pdf (Accessed: 14 May 2015).

McKinsey and Co. (2014) Setting up an impactful risk appetite. IIF CRO Roundtable. Available at: https://www.iif.com/file/4460/download?token=AxsV7Vgj (Accessed: 10 June 2015).

McKinsey and Co. (2015a) *Debt and (not much) de-leveraging.* Available at: http://www.mckinsey.com/insights/economic_studies/debt_and _not_much_deleveraging (Accessed: 3 April 2015).

McKinsey and Co. (2015b) *The future of bank risk management.* Available at: http://www.mckinsey.com/business-functions/risk/our-insights/the-future-of-bank-risk-management (Accessed: 15 August 2016).

McKinsey and Co. (2016) *How Europe's banks can adapt to the new risk based supervisory playbook*. Available at: http://www.mckinsey.com/business?functions/risk/our?insights/srep?how?europes?banks?can?adapt?to?the?new?risk?based?supervisory?playbook (Accessed: 4 August 2016).

McLaughlin, S. (2008) How to strengthen your credit review function, *RMA Journal*, 90(8), pp. 42 – 44.

McNulty, J. and Akhighbe, A. (2015) *Corporate culture, financial stability and bank litigation.* Available at: https://www.newyorkfed.org/medialibrary/media/research/conference/2015/econ_culture/McNulty_CorporateCultureand FinancialStability.pdf (Accessed: 22 December 2015).

McNulty, T., Zattoni, A., and Douglas, T. (2013) Developing Corporate Governance Research Through Qualitative Methods: A Review of Previous Studies, *Corporate Governance: An International Review*, 21(2), pp. 183 – 198.

McNulty, T., Florackis, C. and Ormrod, P. (2013) Boards of Directors and Financial Risk during the Credit Crisis, *Corporate Governance: An International Review*, 21 (1), pp. 58–78.

McShane, M., Nair, A., and Rustambekov, E. (2011) Does ERM increase firm value? *Journal of Accounting and Finance,* 26(4), pp. 641 – 658.

Mehran, H. and Mollineaux, L. (2012) *Corporate Governance of Financial Institutions. Federal Reserve Bank of New York Staff Reports.* Available at: www.newyorkfed.org/research/staff_reports/sr539.pdf (Accessed: 2 March 2015).

Mehran, H., Morrison, A. and Shapiro, J. (2011) *Corporate Governance and Banks: What Have We Learned from the Financial Crisis? NY Federal Board Reports.* Available at: http://www.newyorkfed.org/research/staff_reports/sr502.pdf (Accessed: 4 January 2015).

Mehran, H., Morrison, A., and Shapiro, J. (2015) *The impact of corporate governance in financial institutions*. Available at: file:///U:/Personal/The%20impact%20of%20corporate%20governance%20in%20financial%20institutions%20%20%20VOX,%20CEPR%E2%80%99s%20Policy%20Portal.html (Accessed: 2 January 2016).

Merle, J. (2013) An examination of the relationship between board characteristics and capital adequacy risk-taking at BHCs, *Academy of Banking Journal Studies,* 12(2), pp. 3 – 11.

Merton, R. (1977) An analytic derivation of the cost of deposit insurance and loan guarantees, *Journal of Banking & Finance,* 1 (1), pp. 3–11.

Messai, A. and Jouini, F. (2012) Predicting banking distress in European countries, *Journal of Economic and Social Studies,* 3(1), pp. 61 – 82.

Mikels, J. and Reed, A. (2009) Monetary losses do not loom large in later life: Age differences in the framing effect, Journal of Gerontology: *Psychological Sciences*, 64B(4), pp. 457–460.

Miller, K.D. (1992) A framework for integrated risk management in international business, *Journal of International Busines Studies,* 23 (2), pp. 311–331.

Mikes, A. (2010) *Becoming the Lamp Bearer: The Emerging Role of the CRO.* In Enterprise Risk Management. Fraser, J. and Simkins, B (eds). London: Wiley.

Mikes, A. (2008) CROs at crunch time: Compliance champions or business partners? *Journal of Risk Management in Financial Institutions*, 2(1), pp. 7 – 25.

Mikes, A. (2008) Risk management and calculative cultures, *Management Accounting Research*, 20(2009), pp. 18 – 40.

Mikes, A. (2014) *The Triumph of the Humble CRO. Harvard Business School Working Paper 14(114).* pp. 1 – 23. Available at: http://www.hbs.edu/faculty/Publication%20Files/14-114_60866b77-6b5c-4fd3-9ce1-e2ab8d5da654.pdf (Accessed: 10 January 2015).

Milne, A. (2013) Distance to default and the financial crisis, *Journal of Financial Stability*, 12(2014), pp. 26 – 36.

Minton, B., Taillard, J. and Williamson, R. (2014) Do Independence and Financial Expertise of the Board Matter for Risk-taking and Performance? *Journal of Financial and Quantitative Analysis,* 49(2), pp. 1-66.

Mishkin, F. (1999) Financial consolidation: Dangers and Opportunities. *Journal of Banking & Finance,* 23, pp. 675 – 691.

Mitnick, B. (1982) Regulation and the theory of agency, *Review of Policy Research,* 1, pp. 442 – 453.

Mollah, S. and Liljeblom, E. (2016) Governance and bank charactertistics in the credit and sovereign debt crises – the impact of CEO Power, *Journal of Financial Stability*, 27(2016), pp. 59 – 73.

Mongiardino, A. and Plath, C. (2010) Risk governance at large banks : Have any lessons been learned ? *Journal of Risk Management in Financial Institutions,* 3 (2), pp. 116 – 123.

Moody's. (2005) Don't bet on strong governance: Observations on corporate governance in US banks, New York: Moody's Special Comment Series.

Moody's. (2008a). *Corporate Governance of Banks: A Credit Rating Agency's Approach*. Available at: http://www.ebrd.com/downloads/legal/corporate/moody.pdf (Accessed: 10 January 2015).

Moody's. (2008b) *Corporate Governance in the Credit Crisis. Key Considerations for Investors.* Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1309707 (Accessed: 2 March 2015).

Moody's. (2011) *Banking account and ratio definitions.* Available at: https://www.moodys.com/sites/products/ProductAttachments/Banking%20Account%20and%20Ratio%20Definitions.pdf (Accessed: 13 September 2013).

Moody's (2015) Revising the playbook: Using a risk appetite framework to align strategy and risk. Available at: http://www.moodysanalytics.com/Insight-Summary/Publications/Risk-Perspectives/2015/Risk-Management-The-Decade-Ahead/2015-04-12-Using-a-Risk-Appetite-Framework-to-Align-Strategy-Risk-summary (accessed 10 May 2016).

Moody's (2017) *Zions' Credit Positive Executive Pay Cut Allows Bank to Meet its Efficiency Target.* Moody's Credit Outlook: Credit Implications of Current Events, 30 January 2017, p. 1 - 32.

Morck, R., Shleifer, A. and Vishny, R. (1988) Management Ownership and Market Valuation, *Journal of Financial Economics,* 20(January - March), pp. 293–315.

Morrison, A.D. (2012) *Meta-contracts, corporate governance, and bank regulation.* Available at: http://denning.law.ox.ac.uk/news/events_files/Morrison_9_May.pdf (Accessed: 5 March 2015).

Moxey, P. and Berendt, A. (2008) Corporate governance and the credit crunch. *ACCA Discussion Paper*. Available at: http://www.accaglobal.com/content/dam/acca/global/PDF-technical/corporate-governance/cg_cc.pdf (Accessed: 5 September 2014).

Moxey, P. and Berendt, A. (2014) Creating value through governance – towards a new accountability: a consultation. *ACCA Discussion Paper.* Available at: file:///Users/Downloads/tech-tp-cvtg.pdf (Accessed: 13 September 2015).

Mülbert, P. (2010) *Corporate Governance of Banks after the Financial Crisis - Theory, Evidence, Reforms*. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1448118 (Accessed: 4 January 2015).

Mülbert, P. and Citlau, R. (2011) *The Uncertain Role of Bank's Corproate Governance in Systemic Risk Regulation.* Available at: http://ssrn.com/abstract=1885866 (Accessed: 4 January 2015).

Mullineux, A. (2006) The corporate governance of banks, *Journal of Financial Regulation and Compliance*, 14(4), pp. 375 – 382.

Mullineux, A. (2008) British banking regulation and supervision: Between a rock and a hard place, *International Economics and Economic Policy,* 2008(4), pp. 363 – 370.

Mullineux, A. (2009) The regulation of British retail banking utilities, *Journal of Financial Regulation and Compliance*, 17(4), pp. 453 – 466.

Mullineux, A. (2011) The public duties and social responsibilities of big British banks, *International Advances in Economic Research*, 2011(17), pp. 436 – 450.

Mullineux, A. (2013) Restoring the Bank Lending Channel of Monetary Transmission, *Brussels Economic Review,* 56(3/4), pp. 225 – 239.

Mullineux, A. (2014) Banking for the Public Good, *International Review of Financial Analysis*, 36(2014), pp. 87 – 94.

Mullineux, A. (2015) *Have we made banking good? Panel discussion.* Available at: http://eprints.bournemouth.ac.uk/21680/3/Have%2520we%2520made%2520banking%2520good-Final.docx.pdf (Accessed: 15 August 2016).

Mulrow, C. (1994) Systematic Reviews: Rationale for systematic reviews, *British Management Journal*, 3(309), pp. 597 - 609.

Murphy, M. (2011) Assuring Responsible Risk Management in Banking: The corporate governance dimenision, *Delaware Journal of Corporate Law*, 36, pp. 121 - 164.

Nagel, S. and Purnanand am, A. (2015) *Bank risk dynamics and distance to default*. Available at: https://bfi.uchicago.edu/sites/default/files/research/Nagel_BankCreditRisk.pdf (Accessed: 30 December 2015).

Nestor. (2009a) *Bank Boards and the Financial Crisis. A corporate governance study of the 25 largest banks*. Available at: http://www.nestoradvisors.com/publications (Accessed: 11 November 2014).

Nestor. (2009b) *A comparitive case study of six US investment banks.* Available at: http://www.nestoradvisors.com/publications (Accessed: 11 November 2014).

Nestor. (2010) *Bank Boards after the Flood. The Changing Governance of the 25 Largest European Banks*. Available at: http://www.nestoradvisors.com/publications (Accessed: 11 November 2014).

Nestor. (2011) *A comparitive analysis of the boards of the largest US and European banks*. Available at: http://www.nestoradvisors.com/publications (Accessed: 11 November 2014).

Nestor Advisors Ltd. (2015) *A report on the Corporate Governance of Europe's top 25 Banks.* Available upon request by the author. Available at: http://www.nestoradvisors.com/publications (Accessed: 5 September 2016).

Nguyen, T. (2013) The disciplinary effect of subordinated debt on bank risk-taking, *Journal of Empirical Finance,* 23(Sept), pp. 117 - 141.

Nguyen, D., Hagendorff, J., and Eshraghi, A. (2015a). *Can bank boards prevent misconduct?* Available at: http://www.efmaefm.org/0EFMAMEETINGS/EFMA%20ANNUAL%20MEETINGS/2015-Amsterdam/papers/EFMA2015_0102_fullpaper.pdf (Accessed: 30 December 2015).

Nguyen, D., Hagendorff, J., and Eshraghi, A. (2015b) Which executive characteristics create value in banking? Evidence from appointment announcements, *Corporate Governance: An International Review,* 23(2), pp. 112 – 128.

Nocco, B and Stulz, R. (2006) ERM: Theory and practice, *Journal of Applied Corporate Finance,* 18(4), pp. 9 – 20.

North American CRO Council. (2015) *Risk Appetite: Survey Results.* Available at: http://www.crocouncil.org/publications.html (Accessed: 2 February 2016).

OCC. (1988) *Bank Failure: An Evaluation of the Factors Contributing to the Failure of National Banks*. Available at https://www.occ.gov/publications-by-type/other-publications-reports (Accessed: 1 October 2015).

OCC. (2010) *The Director's Book.The Role of the National Bank Director.* Available at: https://www.occ.gov/publications/publications-by-type/other-publications-reports/the-directors-book.pdf (Accessed: 12 October 2015).

OCC. (2014) *Office of Comptroller of the Currency.12 CFR Reports parts 30 and 170.* Available at: http://www.occ.gov/news-issuances/news-releases/2014/nr-occ-2014-117a.pdf (Accessed: 12 October 2015).

OECD. (1999) Corporate Governance: Effects on Firm Performance and Economic Growth. *OECD Publications*. Available at: http://www.ssrn.com/abstract=218490 (Accessed: 1 March 2015).

OECD. (2009a) *Corporate governance and the financial crisis: key findings and main messages*. Available at: http://www.oecd.org/corporate/ca/corporategovernanceprinciples/43056196.pdf (Accessed: 14 September 2015).

OECD. (2009b) *Corporate Governance Lessons from the Financial Crisis. OECD Publications.* Available at: http://www.oecd.org/finance/financial-markets/42229620.pdf (Accessed: 12 October 2015).

OECD. (2014) *Risk management and corporate governance.* Available at: http://www.oecd.org/daf/ca/risk-management-corporate-governance.pdf (Accessed: 13 January 2015).

OECD. (2015) *OECD Principles of Corporate Governance.* Available at: http://www.oecd.org/corporate/principles-corporate-governance.htm (Accessed: 13 January 2016).

Oliver, M. (2015) Risk Management Burden Grows for Directors*, The National Law Journal*, 37(39), pp. 32 - 67.

O'Sullivan, K. (2015) Risk Culture is at the Forefront of Bank's Agenda, *Banking Ireland ,* Spring, pp. 3- 5.

O'Sullivan, K. and Kinsella, S. (2011) An institutional architechture for meta-risk regulation in Irish banking: Lessons learned from Anglo Irish Bank's Minsky Minsky moment, *Journal of Banking Regulation*, 12(4), pp. 342 - 355.

Oldfield, G.and Santomero, A. (1997) Risk Management in Financial Institutions, *Sloan Management Review*, 39(1), pp. 33–47.

Oliver Wyman. (2013a) *Defining your risk appetite. The importance of taking a qualitative and quantitative approach*. Available at: https://www.google.co.uk/#q=Oliver+Wyman.+(2013)+Defining+your+risk+appetite.+The+importance+of+taking+a+qualitative+and+quantitative+approach (Accessed: 3 September 2014).

Oliver Wyman and IACPM. (2013) *Perspectives on the Evolving Role of Enterprise Wide Stress Testing.* Available at: http://www.iacpm.org/dotAsset/55142.pdf (Accessed: 5 May 2016).

OSFI. (2013) *Canadian bank regulator: Sound Business and Financial Practices.* Available at: www.Osfi.bsif.gc.ca (Accessed: 3 September 2013).

Packin, N. (2013) *It's (not) all about the money: Using behavioural economics to improve regulation of risk management in financial institutions.* Available at: http://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1433and context=jbl (Accessed: 3 January 2015).

Pagach, D. and Warr, R. (2011) The Characterstics of Firms that have CROs, *The Journal of Risk and Insurance*, 78(1), pp. 185 – 211.

Palmer, P., and O'Connell, D. (2009) Regression Analysis for Prediction: Understanding the Process, *Cardiopulmonary Physical Therapy Journal*, 20(3), pp. 23 – 26.

Palvia, A. Vähämaa, E., and Vähämaa, S. (2014) Are female CEOs and Chairwomen more conservative and risk averse? Evidence from the banking industry during crisis, *Journal of Business Ethics,* 3(131), pp. 577–594

Pande, S., and Ansari, V. (2014) A theoretical framework for corporate governance, *Indian Journal of Corporate Governance,* 7(January – June), pp. 56 – 72.

Park, S. and Peristiani, S. (2007) Are bank shareholders enemies of regulators or a potential source of market discipline? Journal of Banking & Finance, 31(2007), pp. 2493 – 2515.

Pathan, S. (2009) Strong boards, CEO Power and bank risk-taking, *Journal of Banking & Finance*, 33(7), pp. 1340-1350.

Pathan, S. and Skully, M. (2010) Endogenously structured boards of directors in banks, *Journal of Banking & Finance,* 34(2010), pp. 1590 – 1606.

Pathan, S. and Faff, R. (2013) Does board structure in banks really affect their performance? *Journal of Banking & Finance*, 37(2013), pp. 1573 – 1589.

PBS. (2016) *Could Trump weaken financial regulation in Dodd-Frank law*? Available at: http://www.pbs.org/newshour/rundown/trump-experts-made-predictions-dodd-frank-laws-fiscal-oversight/ (Accessed: 20 November 2016).

Pedhazur, E. (1997) *Multiple regression in behavioural research. (*3rd edn.) Fort Worth: Harcourt Brace.

Peng, M. (2004) Outside directors and firm performance during institutional transitions, *Strategic Management Journal,* 25 (5), pp. 453–471.

Peni, E. and Vähämaa, S. (2012) Did good corporate governance improvide bank performance during the financial crisis? *Journal of Financial Services Research,* 41, pp. 19 - 35.

Peni, E., Smith, S., and Vähämma, S. (2013) Bank corproate governance and real estate lending during the financial crisis, *Journal of Real Estate Research,* 35(3), pp. 313- 343.

Pfeffer, J. and Salancik, G. (1978) *The External Control of Organizations: A Resource Dependence Perspective*, New York: Harper and Row.

Pi, L. and Timme, S. (1993) Corporate control and bank efficiency, *Journal of Banking & Finance*, 17(2-3), pp. 515–530.

Pirson, M. and Turnbull, S. (2011) Corporate governance, risk management, and the financial crisis: An information processing view, *Corporate Governance: An International Review,* 19(5), pp. 459 – 470.

PNC. (2015) *PNC RMA Risk Management Association Annual Risk Management Conference. Managing Your Portfolio Lending Limits to Your Advantage.* Available at: http://www.rmahq.org/acp15/?gmssopc=1 (Accessed: 1 August 2016).

Polo, A. (2007) *Corporate Governance of Banks: The Current State of Debate*. Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=958796 (Accessed: 28 December 2014).

Ponce, J. and Rennert, M. (2014) Systemic banks and the lender of last resort, *Journal of Banking & Finance*, 50(2015), pp. 286 – 297.

Power, M. (2011) Managing the wrong risks of the wrong entities, *Risk and Regulation*, 22, pp. 14 – 15.

Pozen, R. (2010) The big idea: The case fo professional boards, *Harvard Business Review*, 88(12), pp. 50 – 59.

Prager, J. (2013) The Financial Crisis of 2007/2008: Misaligned Incentives, Bank Mismanagement, and Troubling Policy Implications, *Economics, Management and Financial Markets*, 8(2), pp. 11 – 56.

Protiviti. (2011) *Board Perspectives: Risk Oversight. Formulating an Initial Risk Appetite Statement.* Available at: https://www.protiviti.com/US-en/insights/board-perspective-risk-oversight?field_protiviti_publish_date_value%5Bvalue%5D=and page=6and Print=True (Accessed: 13 December 2014).

Protiviti. (2012) Defining Risk Appetite. Integrating Corporate Performance Management and Risk Management. Available at: http://www.coso.org/documents/coso_erm_executivesummary.pdf (Accessed: 5 January 2015).

Protiviti. (2014) *OCC Finalises its Heightened Standards for Large Financial Institutions.* Available at: https://www.protiviti.com/en-US/Documents/Regulatory-Reports/General-Business/Financial-Services-Flash-Report-OCC-Guidelines-Large-Banks-Updated-091514-Protiviti.pdf (Accessed: 13 December 2014).

PWC. (2014a) *Board oversight of risk: Defining risk appetite in plain English.* Available at: http://www.pwc.com/us/en/corporate-governance/publications/risk-appetite-erm.jhtml (Accessed: 29 April 2015).

PWC. (2014b) Risk Appetite Frameworks – Insights into Evolving Global Practices. *A joint PWC/IACPM Paper*. Available at: http://www.pwc.com/us/en/financial-services/regulatory-services/publications/risk-appetite-frameworks.html (Accessed: 1 May 2015).

PWC. (2016) *A Closer Look: Board Governance: Higher Expectations but better practices?* Available at: http://www.pwc.com/us/en/financial-services/regulatory-services/publications/board-risk-governance-jan-2016.html (Accessed: 1 February 2016).

Pugliese, A., Minichilli, A., Zattoni, A. (2014) Integrating Agency and Resource Dependency Theory: Firm Profitability, Industry Regulation, and Board Task Performance, *Journal of Business Research*, 67(2014), pp. 1189 - 1200.

Pyle, D. (1997) *Bank Risk Management: Theory. Berkeley Conference on risk management and regulation in banking.* Available at: http://www.haas.berkeley.edu/groups/finance/WP/rpf272.pdf (Accessed: 12 March 2015).

Raghavan, R. (2003) *Risk management in banks. Chartered Accountant.* Available at http://www.icai.org/resource_file/11490p841- 851.pdf (Accessed: 14 September 2014).

Raghavan, K. (2007) A survey of corporate governance and overlapping regulations in banking, *International Journal of Disclosure and Governance*, 4(3), pp. 181 – 194.

Rajhi, M. and Hmadi, W. (2011) Examining the determinants of risk-taking in European banks, *Journal of Business Studies Quarterly,* 3(1), pp. 98 – 111.

Rajan, R. (2005) Has financial development made the world riskier? *National Bureau of Economic Research,* 11(728), pp. 313 – 369.

Randhawa, D. (2010) *Risk governance at financial institutions: Life after the subprime crisis.* Available at: https://www.nseindia.com/research/content/CG_8.pdf (Accessed: 4 December 2014).

Randolph, J. (2009) A guide to writing the dissertation literature review, *Practical assessment, research and evaluation,*14(13), pp. 1 – 13.

Rasiah, D. (2010) Review of literature and theories on determinants of commercial bank profitability, *Journal of Performance Management,* 23(1), pp. 23 – 49.

Rediker, K. and Seth, A. (1995) Boards of directors and substitution effects of alternative governance mechanims, *Strategic Management Journal,*16, pp. 85 – 99.

Renders, A. and Gaeremynck, A. (2006) *Corproate governance and performance: Controlling for sample selection bias and endogeneity.* Available at: https://www.researchgate.net/publication/241076304_Corporate_Governance_and_Performance_Controlling_for_Sample_Selection_Bias_and_Endogeneity (Accessed: 30 December 2014).

Rhee, S. and Shin, G. (2003). *Relation between banking monitoring and firm value creation: A survey.* Available at: http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.545.3433&rep=rep1&type=pdf (Accessed: 20 October 2014).

RiskMinds Risk Managers' Survey. (2009) The causes and implications of the 2008 banking crisis. *Conducted by Moore, Carter and Associates and the Cranfield School of Management.* Available at: http://www.moorecarter.co.uk/RiskMinds%202009%20Risk%20Managers'%20Survey%20Report.19March2010.pdf (Accessed: 4 September 2014).

RMA. (2013) *A Framework for Setting Risk Appetite.* Available at: file:///Users//Downloads/Framework_Setting_Risk_Appetite_whitepaper%20(1).pdf (Accessed: 30 December 2014).

RMI . (2014) *Risk Appetite: The Interpolation of Risk and Strategy. A Contribution to the Central Bank of Ireland Discussion*. Available at: https://www.centralbank.ie/regulation/poldocs/dispapers/Documents/Risk%20Management%20International%20-%20Response%20to%20Risk%20Appetite%20Discussion%20Paper.pdf (Accessed: 20 December 2015).

Roberts, M. and Whited, T. (2012) *Endogeneity in Empirical Corporate Finance*. Available at: https://www.researchgate.net/publication/228172037_Endogeneity_in_Empirical_Corporate_Finance (Accessed: 2 January 2015).

Robson, C. (2002). *Real world research: A resource for the social scientist and practitioner researchers.* 2nd edition. Oxford: Blackwell.

Rodriguez, E. and Edwards, J. (2012) Transferring knowledge of risk management to the board of directors and executives, *Journal of Risk Management in Financial Institutions,* 5(2), pp. 162 – 180.

Roengpitya, R., Tarashev, N., and Tsatsaronis, K. (2014) Bank Business Models, *BIS Quarterly Review*, December 2014, pp. 55 – 68.

Roman, R. (2015) *Three Essays in Banking: Corprorate Governance, Internationalization and Government Bailouts.* Available at: http://scholarcommons.sc.edu/etd/3104 (Accessed: 27 January 2016).

Rose, P. (2010) Regulating risk by strenghtening corporate governance. *Public Law and Legal Theory Working Paper no. 130. Ohio State University*. Available at: http://papers.ssrn.com/sol3/Jeljour_results.cfm?form_name=Pip_jrland journal_id=485101and Network=noand SortOrder=numHitsand stype=descand lim=false (Accessed: 3 January 2015).

Ross, S. (1973) The Economic Theory of Agency: The Principal's Problem, *Decision Making Under Uncertainty*, Vol 63(2), pp. 134 - 139.

Ross, A. and Crossan, K. (2012) A review of the influence of corproate governance on the banking crisis in the UK and Germany, *International Journal of Business in Society*, 12(2), pp. 215 - 225.

Rost, K. and Osterloh, M. (2010) Opening the Black Box of Upper Echelons: Driver of Poor Information Processing during the Financial Crisis, *Corporate Governance: An International Review,* 18(3), pp. 212 – 233.

Ryan, B., Scapens, R. and Theobold, M. (2002). *Research methods and methodology in finance and accounting.* London: Thompson.

Ryan, H,, Wang, L,, and Wiggins, R. (2008) *CEO Tenure and Board of Director Monitoring.* Available at: http://e-research.en.blogs.ie.edu/files/2008/12/board-monitoring-and -ceo-tenure_oct_12_2008.pdf (Accessed: 3 December 2015).

Standard and Poors Corporation. (2010) *Refined methodology for assessing an insurers' risk appetite*. Available at: http://www.macs.hw.ac.uk/~and rewc/erm2/reading/SandP_Evaluating_Risk_Appetite_supplement.pdf (Accessed: 4 January 2015).

Sabato, G. (2009) Financial Crisis: Where did Risk Management Fail? *International Review of Applied Financial Issues and Economics*, 2(2), pp, 316 – 327.

Sackman, S. (2011) Culture and performance in: Ashkanasy, NM, C. Wilderom and M. Petersen (eds.). *The Handbook of Organisational Culture and Climate.* London: Sage.

Sahlman, W. (2009) Management and the financial crisis: We have met the enemy and he is us, *Harvard Business School Working Paper,* 10(033), pp. 1 -35.

Sahut, J. and Boulerne, S. (2010) Flaws in Banking Governance, *International Journal of Business*, 15(3), pp. 319 - 335.

Santos, J. (2001) Bank Capital Regulation in Contemporary Banking Theory: A Review of the Literature. *NYU Salomon Center - Financial Institutions and Instruments.* V(2). Available at: http://www.bis.org/publ/work90.pdf (Accessed: 4 January 2015). pp. 41 – 84.

Sanya, S., and Wolfe, S. (2011) *Ownership structure, revenue diversification and insolvency risk in European banks,* Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1787476 (Accessed: 19 January 2015.

Sarra, J. (2012) Prudental, prgamatic, and prescient, reform of bank resolution schemes, *International Insolvency Review,* 21(17:66), pp. 155 - 185.

Saunders, A., Strock, E. and Travlos, N. (1990) Ownership Structure, Deregulation and Bank Risk-taking, *The Journal of Finance,* 65 (2), pp. 643–654.

Saunders, M., Lewis, P., and Thornhill, A. (2007), Research Methods for Business Students, 3rd ed., Essex: Prentice Hall, Pearson.

Schroders. (2015) *Banks: A new approach to risk? Governance, culture and risk in a revamped banking industry.* Available at: http://www.schroders.com/en/SysGlobalAssets/digital/insights/pdfs/banks-a-new-approach-to-risk.pdf (Accessed: 14 January 2016).

Schultz, E., Tan, D., and Walsh, K. (2010) Engogeneity and the corporate governance – performance relation, Australian Journal of Management, 35(2), pp. 145 – 163.

Scott, W. (1987) The adolecence of institutional theory, *Adminstrative Science Quarterly*, 32(4), pp. 493 – 511.

Sepe, S. (2013) Regulating Risk and Governance in Banks: A Contrarian Perspective. *The University of Arizona Discussion Paper No. 13-14.* Available at: http://law.emory.edu/elj/_documents/volumes/62/2/articles/sepe.pdf (Accessed: 4 January 2015).

Segerstrom, J. (2008) Consent of the Governed: Prerequisite for Good Governance, *Bank Accounting and Finance*, February - March, pp. 27 - 39.

Shang, K. and Chen, Z. (2012) *Risk Appetite: Linkage with Strategic Planning*. Available at: http://actuaries.asn.au/microsites/actuaries-managing-risk/knowledge (Accessed: 29 April 2015).

Sheedy, E. and Griffin, B. (2014) *Empirical analysis of risk culture in financial institutions: An Interim Report. Macquarie University Risk Culture Project.* Available at: http://www.lse.ac.uk/accounting/CARR/events/Sheedy-Risk-Culture-Paper-Nov-14.pdf (Accessed: 6 January 2016).

Sheedy, E. and Griffin, B. (2016) *Risk governance, structures, culture and behaviour in banks: A view from the inside.* Available at: http://www.cifr.edu.au/assets/document/Risk%20Culture.pdf (Accessed: 30 June 2016).

Sheedy, E., Griffin, B. and Barbour, J. (2015) A Framework and Measure for Examining Risk Climate in Financial Institutions, *Journal of Business Psychology,* Available at: http://link.springer.com/article/10.1007/s10869-015-9424-7 (Accessed: 6 January 2016).

Shehzad, C., de Haan, J., and Scholtens, B. (2010) The impact of bank ownership concentration on impaired loans and capital adequacy, *Journal of Banking & Finance*, 34(2010), pp. 399 – 408.

Shleifer, A. and Vishny, R. (1997) A Survey of Corporate Governance, *Journal of Finance*, 52 (2), pp. 737 – 783.

Sierra, G. Talmor, E. and Wallace, J. (2006) An examination of multiple governance forces within bank holding companies, *Journal of Financial Services Research*, 29 (2), pp. 105–123.

Simkins, B. and Ramirez, S. (2008) ERM and Corproate Governance, *Loyola University Chicago Law Journal*, 39(3-6), pp. 571 – 594.

Simpson, W., and Gleason, A. (1999) Board structure, ownership, and financial distress in banking firms, *International Review of Economics and Finance*, 8(1999), pp. 281 – 292.

Singh, N. (2013) Global Financial Crisis: Corporate Governance Failures and Lessons Learned, *Journal of Finance, Accounting and Management*, 4(1), pp. 21 – 34.

Skeel, D. (1999). The market revolution in bank and insurance firm governance: Its logic and limits. *Washington University Law Quarterly*. 7(2). Summer 1999. pp. 433 – 459. Available at: http://ls.wustl.edu/WULQ/index.html (Accessed: 14 January 2015).

Skeel, D. (2011) Making sense of the new financial deal. *Penn Law: Legal Scholarship Repository*. Available at: http://scholarship.law.upenn.edu/cgi/viewcontent.cgi?article=1364and context=faculty_scholarship (Accessed: 2 August 2016).

Smith, M. (2014). *Working through Risk Appetite: The 28th National Risk Management Training Conference. Fiduciary and Investment Risk Mangaement Association*. Available at: http://www.thefirma.org/files/conference/2014/Smith.pdf (Accessed 23 April 2016).

Smith, C. and Stulz, R. (1985) The Determinants of Firm's Hedging Policies, *Journal of Financial and Quantitative Analysis,* 20(4), pp. 391 – 404.

Soceity of Actuaries. (2010) *ERM Symposium. A Practical Guide to Creating a Leading Practice Risk Appetite Statement.* Available at: https://www.soa.org/Professional-Development/Presentations-Archive/2010/2010-ERM-Symposium-(Chicago,-IL).aspx (Accessed: 11 September 2014).

Spong, K. and Sullivan, R (1999) *The outlook for the US banking industry: What does the experience of the 1980s and 1990s tell us? Federal Reserve Bank of Kansas City.* Available at: www.kc.frb.org/publications (Accessed: 13 September 2014).

Spong, K. and Sullivan, R. (2007) Corporate governance and bank performance. *Federal Reserve Bank of Kansas City.* Available at: https://scholar.google.co.uk/citations?view_op=view_citationand hl=enand user=Y2HDLbgAAAAJand citation_for_view=Y2HDLbgAAAAJ:LkGwnXOMwfcC (Accessed: 14 January 2015).

Srivastav, A., Armitage, S. and Hagendorff, H. (2014) CEO inside debt holdings and risk-shifting: Evidence from payout policies, *Journal of Banking & Finance,* 47(2014), pp. 41 – 53.

Srivastav, A., and Hagendorff, J. (2016) Corporate governance and bank risk-taking, *Corporate Governance: An International Review,* 24(3), pp. 334 – 345.

SSG. (2008) Observations on risk management practices during the recent market turbulence. Available at: https://www.sec.gov/news/press/2008/report030608.pdf (Accessed: 15 January 2015).

SSG. (2009) Risk Management Lessons from the Global Banking Crisis of 2008. Available at: https://www.sec.gov/news/press/2009/report102109.pdf (Accessed: 15 January 2015).

SSG. (2010) *Observations on Developments in Risk Appetite Frameworks and IT Infrastructure.* Available at: http://www.newyorkfed.org/newsevents/news//2010/101223.html (Accessed: 20 June 2015).

St Claire, L., Silber, L., Royer, R., Wong, J. and Bond, C. (2016) Braving the Financial Crisis: An Empirical Analysis of the Effect of Female Board Directors on BHC Performance. *The US Office of the Comptroller of the Currency*. Available at: https://www.occ.gov/publications/publications-by-type/occ-working-papers/2016-2013/wp2016-1.pdf (Accessed: 10 September 2016).

St Louis Fed. (2016) *Economic Research of the Federal Reserve Bank of St Louis. Weighted Average Maturity of all Commerical and Industrial Loans, All Commercial Banks*. Available at: https://fred.stlouisfed.org/series/EDANQ (Accessed: 10 September 2016).

Staikouras, P., Staikouras, C., and Agoraki, M. (2007) The effect of board size and composition on European bank performance, *European Journal of Law and Economics,* (2007)23, pp. 1 – 27.

Stefanelli, V. and Cotugno, M. (2011) *An Emprical Analysis on Board Monitoring Role and Loan Portfolio Quality Measurement in Banks. Munich Personal RePEC Archive.* Available at: http://mpra.ub.muechen.de/19766 (Accessed 10 September 2014).

Stulz, R. (2008) Risk Management Failures: What are they and when do they happen? *Journal of Applied Corporate Finance,* 20(4), pp. 58 – 67.

Stulz, R. (2015) Risk-Taking and Risk Management by Banks, *Journal of Applied Corporate Finance*, 27(1), pp. 8 – 16.

Sullivan and Cromwell LLP. (2014) *Heightened risk governance standards for banks and bank board directors.* Available at: https://www.sullcrom.com/Heightened_Risk_Governance_Standards_for_Banks_and_Bank_Boards_of_Directors (Accessed 13 December 2015).

Sun, J. and Liu, G. (2014) Audit committees and oversight of bank risk-taking, *Journal of Banking & Finance,* 40(2014), pp. 376 - 387.

Sun, W., Stewart, J., and Pollard, D. (eds.) (2011) Corporate Governance and the Global Financial Crisis. International Perspectives. Cambridge: Cambridge University Press.

Switzer, L. and Sahut, J. (2015) *Bank credit risk and corporate governance*. Avalable at: https://www.lautorite.qc.ca/files/pdf/fonds-education-saine-gouvernance/promo-gouvernance/Bankcreditriskcorporategovernance.pdf (Accessed: 12 October 2015).

Switzer, L. and Wang, J. (2013) Default Risk Estimation, Bank Credit Risk, and Corporate Governance, *Financial Markets, Institutions and Instruments*, 22(2), pp. 91 -112.

Tanda, A. (2015a) The role of regulatory presssure in banks' capital and risk decisions, *International Journal of Euro-Mediterranean Studies*, 8(1), pp. 1 – 23.

Tanda, A. (2015b) Corporate governance and bank regulation: The impact on capital ratios, *International Journal of Disclosure and Governance,* pp. 1 – 27.

Tanda, A. (2015c) The Effects of Bank Regulation on the Relationship between Capital and Risk, *Comparitive Economic Studies,* 2015, pp. 1 – 24.

Tao, N. and Hutchinson, M. (2013) Corporate governance and risk management: The role of risk management and compensation committees, *Journal of Contemporary Accounting and Finance,* 9(2013), pp. 83 – 99.

Tarraf, H. (2011) The role of corporate governance in the events leading up to the global financial crisis: Analysis of aggressive risk-taking, *Global Journal of Business Research,* 5(4), pp. 93 – 105.

Tarullo, D. (2014a) *Memo by Federal Reserve Board Governor Tarullo to implement the enhanced prudential standards of the Dodd Frank Act.* Available at: https://www.federalreserve.gov/aboutthefed/boardmeetings/memo_20140218.pdf (Accessed: 10 January 2015).

Tarullo, D. (2014b) Corporate governance and bank regulation, *The Corporate Board,* November/December 2014, pp. 1 – 5.

Tetlock, P. (2007) Giving content to investor sentiment: The role of the media in the stock market, *The Journal of Finance,* 62(3), pp. 1139 – 1168.

Tichapondwa, S. (2013) *Preparing your dissertation at a distance: A research guide*. Vancouver: VUSSC. Available at: http://www.sadc.int/files/3713/7821/2867/Dissertation_PDF.pdf (Accessed: 4 June 2016).

Thatcher, S., Jehn, K., and Zanutto, E. (2003) Cracks in diversity research: the effects of diversity faultlines on conflict and performance,*Group Decision and Negotitation,* 12(3), pp. 217 - 241.

Tirole, J. (2013) Re-thinking macro-policy II: First steps and early lessons. IMF Publications. Available at: https://www.imf.org/external/np/seminars/eng/2013/macro2/pdf/jt.pdf (Accessed: 1 September 2015).

Tirole, J. (2006) *The Theory of Corporate Finance*, Princeton NJ: Princeton University Press.

Tomasic, R. (2010) Corporate governance failure: The role of internal and external gatekeepers in UK banks and financial institutions, *Corporate Governance – International Journal for Enhanced Board Performance,* 8(11), pp. 8 – 27.

Tonveranachi, M. (2013) De-globalising bank regulation, *PSL Quarterly Review,* 66 (November), pp. 371–385.

Torres-Reyna, O. (2007) *Panel Data Analysis: Fixed and Random Effects using Stata.* Available at: https://www.princeton.edu/~otorres/Panel101.pdf (Accessed: 10 September 2014).

Towers Watson. (2013) Another bite at the apple. Risk appetite revisited. Available at: file:///Users/Downloads/Risk-appetite-revisited-Towers-Watson%20(1).pdf (Accessed: 29 December 2014).

Tranfield, D., Denyer, D. and Smart, P. (2003) Towards a methodology for developing evidence-informed management knowledge by means of systematic review, *British Journal of Management*, 14(3), pp. 207-222.

Trepp (2011) *US Banking Sector Outlook. Happy Days are Gone Again.* Available at: http://cdn2.hubspot.net/hub/157783/file-18123653-pdf/docs/trepp_2012_us_banking_sector_outlook.pdf (Accessed: 4 September 2014).

Trudell, C. (2014) Internal audit's role in the risk assessment process at Key Corp, *Journal of Risk Management in Financial Institutions*, 7(4), pp. 370 - 374.

Tung, F. (2010) *Pay for Banker Performance: Structuring Executive Compensation for Risk Regulation.* Available at: http://www.bu.edu/law/faculty/scholarship/workingpapers/2010.htm (Accessed: 10 September 2014).

Tung, F. and Wang, X. (2012) Bank CEOs, Inside Debt Compensation, and the Global Financial Crisis, *Boston University School of Law Working Paper,* 11(49), pp. 11 - 29.

Turley, S. and Zaman, M. (2007) Audit Committee Effectiveness: Informal Processes and Behavioural Effects Behavioural Effects, *Accounting, Auditing and Accountability Journal,* 20 (5), pp. 1–31.

United Nations. (2010) *Corporate Governance in the Wake of the Financial Crisis.* Available at: http://www.unctad-docs.org/files/CG-in-Wake-of-Fin-Crisis-Full-Report.pdf (Accessed: 12 October 2015).

US Senate. (2013) *JP Morgan Chase Whale Trades: A Case History of Derivatives Risks and Abuses.* Available at: http://www.hsgac.senate.gov/subcommittees/investigations/hearings/chase-whale-trades-a-case-history-of-derivatives-risks-and -abuses (Accessed: 20 November 2014).

Upadhyay, A., Bhargava, R., and Faircloth, S. (2014) Board structure and the role of monitoring committees, *Journal of Business Research,* 67(2014), pp. 1486 – 1492.

Vafeas, N. (1999) Board meeting frequency and firm performance, board dynamics and the influence of professional background, gender and ethic diversity of directors, *Journal of Financial Economics,* 53, pp. 113 – 142.

Vafeas, N. (2003) Length of board tenure and outside director independence, *Journal of Business Finance and Accounting,* 30(7-8), pp. 1043 – 1064.

Vallascas, F., and Hagendorff, J. (2013) CEO Bonus Compensation and Bank Default Risk: Evidence from the US and Europe. *NYU Salomon Center: Financial Institutions and Instruments. Wiley Periodicals Inc.* Available at: http://www.stern.nyu.edu/experience-stern/about/departments-centers-initiatives/centers-of-research/salomon-center-for-the-study-of-financial-institutions/center-overview/publications/journals-affiliated-with-nyu-stern-0 (Accessed: 14 September 2014).

van der Elst, C. (2015) *Corporate Governance and Banks : How justified is the match?* Available at: http://ssrn.com/abstract=2562072 (Accessed: 12 March 2015).

van der Stede, W. (2011) Management accounting research in the wake of the crisis: Some reflections. *European Accounting Review*. 20(4). pp. 605 – 623.

van Dijk, M. (2013) *The Social Costs of Financial Crisis*. Available at: http://static1.squarespace.com/static/531afe04e4b0b17f973f5962/t/531b78cfe4b0c205411e3e6a/1394309327547/The+social+costs+of+financial+crises+-+Mathijs+van+Dijk+-+SSRN+13June2013.pdf (Accessed: 15 August 2015).

van der Elst, C. (2015) *Corporate Governance and Banks : How justified is the match?* Available at: http://ssrn.com/abstract=2562072 (Accessed: 12 March 2015).

van Ees, H., Van der Laan, G. and Postma, T. (2008) Effective board behaviour in the Netherlands, *European Management Journal,* 17(3), pp. 84 - 93.

van Ees, H., Gabrielsson, J., and Huse, M. (2009) Toward a behavioural theory of boards and corporate governance, *Corporate Governance: An International Review,* 17(3), pp. 307 – 329.

van Oordt, M., and Zhao, L. (2014) Systemic Risk and Bank Size. *Dutch National Bank Working Paper Series*. 442. pp. 1 – 36. Available at: https://www.dnb.nl/binaries/Working%20Paper%20442_tcm46-313480.pdf (Accessed: 22 January 2015).

Victoravich, L., Xu, P., and Gan, H. (2012) Institutional ownership and executive compensation, *Managerial Finance,* 39(1), pp. 28 - 46.

Vyas, D. (2010) The Timeliness of Accounting Write-Downs of US Financial Institutionsl during the Financial Crisis of 2007-2008, *Journal of Accounting Research*, 49(3), pp. 823 – 860.

Wachtell, Lipton, Rosen and Katz. (2012) *Bank and Corporate Governance Law Report.* Available at: http://www.directorscenter.com/risk-management-and -the-board-of-directors-wachtell-lipton-rosen-katz-article/ (Accessed: 5 May 2015).

Wachtell, Lipton, Rosen and Katz. (2014) *Financial Institutions Developments. Key Trends in Financial Institutions Mand A and Governance.* Available at: https://corpgov.law.harvard.edu/2014/01/21/key-trends-in-financial-institutions-ma-and -governance/ (Accessed: 5 May 2015).

Wahlen, J. (1994) The nature of information in commercial bank loan loss disclosures, *The Accounting Review,* pp. 455 – 478.

Walker, D. (2009) *A review of corporate governance in UK banks.* Available at: http://webarchive.nationalarchives.gov.uk/+/http:/www.hm-treasury.gov.uk/d/walker_review_261109.pdf (Accessed: 3 January 2015).

Walker, G. (2012) Market and regulatory balance, *Journal of Banking Regulation*, 13(1), pp. 1 – 3.

Walter, I. (2013) The value of reputational capital and risk in banking and finance, *International Journal of Banking, Accounting, and Finance*, 5(1/2), pp. 205 – 219.

Walter, I. (2014) Reputational risk in banking and finance: An issue of invidual responsilbility, *Journal of Risk Management in Financial Institutions*, 7(3), pp. 299 - 305.

Wang, T. and Hsu, C. (2013) Board composition and operatonal risk events of financial insitutions, *Journal of Banking & Finance,* 37(6), pp. 2042 - 2051.

Wang, W., Lu, W., and Lin, Y. (2012) Does corporate governance play an important role in BHC performance? Evidence from the US*, Economic Modellling, 29(2012),* pp. 751 – 760.

Webb, E. (2007) Trends in Federal Reserve Basel II A-IRB Bank Governance, *Journal of Financial Regulation and Compliance, 1*5(3), pp. 250 - 161.

Wehinger, G. (2012) Banking in a challenging environment: Business models, ethics, and approaches towards risks, *OECD Journal*, 2012(2), pp. 79 - 88

Wehinger, G. (2014) SMEs and the credit crunch: Current financing difficulties , policy measures and a review of literature, *OECD Journal: Financial Market Trends*, 13(2), pp. 1–34.

Wertheim, P., Neill, J. and Clements, C. (2016) Director Tenure and Leadership Effectiveness over Internal Controls*, Journal of Leadership, Accountability and Ethics,* 13(2), pp. 61 – 73.

Willesson, M. (2014) *Risk and efficiency in European banking – Does corporate governance matter*? Available at: http://convegni.unicatt.it/meetings_Willesson.pdf (Accessed: 5 January 2015).

Willis. (2015) *Risk appetite statement: Make or break?* Available at: https://www.willis.com/subsites/australia/Documents/Publications/services/BusinessRisk/W0477AU_Thought_Leadership_Article_Risk_Appetite_Statement_web.pdf (Accessed: on 2 January 2016).

Wilson, J., Casu, B., Girardone, C., and Molyneux, P. (2010) Emerging Themes in Banking: Recent Literature and Directors for Future Research, *British Accounting Review,* 42(3), pp. 153 - 169.

Wintoki, J., Linck, J., and Netter, J. (2009) Endogeneity and the dynamics of internal corporate governance, *Journal of Financial Economics,* 105(3), pp. 581 – 606.

Wittenberg, A. (2013) Defining your risk appetite: a quantitiatve and qualitative approach, *NACD Directorship*, January/February, pp. 68 – 70.

Woods, M., and Humphrey, C., and Lim, C. (2011) *In search of explanations of risk management failures.* Available at: http://www.apira2013.org/proceedings/pdfs/K255.pdf (Accessed: 29 January 2015).

Wooldridge, J. (2001) *Econometric Analysis of Cross Section and Panel Data.* Cambridge: The MIT Press.

Worthy, D., Gorlick, M. Pacheco, J. Schnyer, D., and Maddox, W. (2011) With age comes wisdom: Decision making in older and younge adults, *Psychology Science*, 22, pp. 1375 – 1380.

Wymeersch Eddy (2012) *Risk if Financial Institutions - is it managed?* Available at: http:// ssrn.com/abstract=1988926 (Accessed: on 4 January 2015).

Xu, T., Grove, H. and Schaberl, P. (2013) Corporate governance: A risk management approach, *Corporate Ownership and Control,* 10(2), pp. 104 – 114.

Yale, G., Grove, H., and Clouse, M. (2012) Risk management lessons learned: Countrywide Report, *Corporate Ownership and Control*, 11(1), pp. 33 – 46.

Yeh, Y., Chung, H., and Liu, C. (2011) Committee Independence and Financial Institution Performance during the 2007-08 Credit Crunch: Evidence from a Multi-country Study, *Corporate Governance: An International Review,* 19(5), pp. 437 - 458.

Yermack, D. (1994) *Do Corporations Award CEO Stock Options Efficently.* NYU Working Paper Series, 1994. Available at: http://w4.stern.nyu.edu/finance/docs/WP/1994/pdf/wpa94054.pdf (Accessed: on 11 March 2015).

Yermack, D. (1996) Higher market valuation of companies with a smaller board of directors, *Journal of Financial Economics,* 40, pp. 185 – 212.

Yoost, D. (2013) Board oversight of model risk is a challenging imperative, *RMA Journal*, November, pp. 20 - 29.

Yoost, D. (2014) Board oversight of the risk appetite framework, *RMA Journal*, May, pp. 44 - 51.

Yoost, D. (2015) Board overisght of risk and capital for banks using advanced systems, *RMA Journal*, March, pp. 72 - 79.

Yu, K. (2013) Integrating your bank's approach to risk appetite, stress testing and capital planning, *RMA Journal,* 95(1), pp. 42 – 47

Yukl, G, (2009) Leadership in organisations. 7th edn. Englewood Cliffs NJ: Prentice Hall.

Zagorchev, A., and Gao, L. (2015) Corporate governance and performance of financial institutions, *Journal of Economics and Business,* 82(2015), pp. 17 – 41.

Zattoni, A., and Cuomo, F. (2010) How Independent, Competent, and Incentivised should NEDs be? An Empirical Investigation of Good Governance Codes, *British Journal of Management,* 21(1), pp. 63 - 79.

Zattoni, A., Douglas, T. and Judge, W. (2013) Developing Corporate Governance Theory through Qualitative Research, *Corporate Governance: An International Review, 2*1(3), pp. 119-122.

Zattoni, A. and Van Ees, H. (2012) How to contribute to the development of a global understanding of corporate governance? Reflections from submitted and published articles in CGIR, *Corporate Governance: An International Review*, 20(1), pp. 106 - 118.

Zhang, H. (2015) *Instructions and Guide for Credit Rating.* Available at: https://data.bloomberglp.com/bat/sites/3/Paul-Laux-Lab-6.pdf (Accessed: 3 January 2015).

Zhang, Z., Lu, X., and Xie, L. (2014) Determinants of financial distress in US large BHCs, *Contemporary Economic Policy,* 34(2), pp. 250 – 267.

Zhou, X. (2001) Understanding determinants of managerial ownership and the link between ownership and performance, *Journal of Financial Economics*, 25, pp. 2015 – 2040.

APPENDICES

Appendix 1: List of BHCs

(in size order as of 2014, the year of the final passage of the Federal Register)

#	BHC Name	#	BHC Name	#	BHC Name
1	JP MORGAN CHASE & CO	47	TEXAS CAPITAL BANCSHARES	94	FIRST FNCL BSHRS
2	BANK OF AMERICA CORP	48	PACWEST BANCORP	95	First Bank
3	WELLS FARGO & CO	49	UMB FINANCIAL CORP	96	RENASANT CORP
4	CITIGROUP INC	50	PRIVATEBANCORP INC	97	FIRST MERCHANTS CORP
5	US BANCORP INC	51	IBERIA BANCORP	98	TOWNEBANK
6	PNC FINANCIAL SERVICES INC	52	F N B CORP	99	OPUS BK
7	BANK OF NEW YORK MELLON	53	BANK OF HAWAII CORP	100	EAGLE BANCORP, INC
8	STATE STREET CORP	54	ASTORIA FINANCIAL CORP	101	TALMER BANCORP INC.
9	CAPITAL ONE FINANCIAL CORP	55	WASHINGTON FED INC	102	UNITED BANKSHARES INC/WV
10	SUNTRUST BANKS INC	56	MB FINANCIAL INC/MD	103	STIFEL FNCL CORP
11	BB&T CORP	57	RAYMOND JAMES FNCL	104	FLUSHING FC
12	AMERICAN EXPRESS CORP	58	BANCORPSOUTH INC	105	WESTAMERICA BANC CORP
13	FIFTH THIRD CORP	59	FLAGSTAR BANCORP INC	106	NATIONAL BK HOLDS CORP
14	GOLDMAN SACHS GROUP INC	60	TRUSTMARK CORP	107	S & T BANCORP INC
15	MORGAN STANLEY	61	CATHAY GENERAL BANCORP	108	BANNER CORP
16	REGIONS FINANCIAL CORP	62	OLD NATIONAL BANCORP	109	CENTRAL PACIFIC FINANCIAL
17	NORTHERN TRUST CORP	63	WESTERN ALLIANCE BANC	110	BANCORP
18	ALLY FINANCIAL CORP	64	INTL BANCSHARES CORP	111	1ST SOURCE CORP
19	M&T BANK CORP	65	CAPITOL FEDERAL FINANCIAL	112	SIMMONS FIRST NAT CORP
20	KEYCORP	66	FULTON FINANCIAL CORP	113	TRUSTCO BANK CORP/NY
21	DISCOVER FINANCIAL SERVICES	67	NATIONAL PENN BANCSHARE	114	WILSHIRE BANCORP INC.
22	COMERICA INC	68	PROVIDENT FINANCIAL SVSC	115	SANDY SPRING BANCORP INC.
23	HUNTINGTON BANCSHARES	69	COLUMBIA BANKING SYSTEM	116	SERVISFIRST BANCSHARES
24	FIRST REPUBLIC BANK	70	FIRST INTERSTATE BANCSYS	117	NEW YORK CMNTY BANCORP
25	FIRST NIAGARA FINANCIAL GRP	71	GLACIER BANCORP, INC.	118	YADKIN FINANCIAL CORP
26	SVB FINANCIAL GROUP	72	NBT BANCORP INC	119	BNC BANCORP
27	PEOPLES UNITED FINANCIAL INC	73	STERLING BANCORP	120	AMERIS BANCORP
28	CITY NATIONAL CORP	74	UNITED COMMUNITY BANKS	121	HANMI FIN CORP
29	KEYCORP	75	COMMUNITY BANK SYSTEM	122	GREAT SOUTHERN BANCORP
30	BOK FINANCIAL CORP	76	CHEMICAL FINANCIAL CORP	123	FIRST NBC BHC
31	EAST WEST BANCORP	77	HOME BANCSHARES, INC.	124	REPUBLIC BANCORP
32	SIGNATURE BANK	78	CVB FINANCIAL CORP	125	TRICO BANCSHARES
33	CULLEN/FROST BANKERS INC	79	UNION BANKSHARES CORP	126	CENTERSTATE BANKS INC.
34	SYNOVUS FINANCIAL CORP	80	BBCN BANCORP INC	127	FIRST BUSEY CORP
35	ASSOCIATED BANC-CORP	81	PARK NATIONAL CORP	128	CENTURY BANCORP INC
36	FIRST HORIZON NATIONAL CORP	82	FIRST FINANCIAL BANCORP	129	COMMUNITY TR BANCORP INC
37	FIRSTMERIT CORP	83	CUSTOMERS BC	130	LAKELAND BANCORP INC
38	UMPQUA HOLDINGS CORP	84	CAPITAL BK FNCL CORP	131	WASHINGTON TR BC INC
39	PROSPERITY BANCSHARES INC	85	INDEPENDENT BANK Corp	132	HERITAGE FC
40	CIT GROUP	86	POPULAR INC	133	CARDINAL FC
41	HANCOCK HOLDING CO	87	BOSTON PRIVATE FINL	134	FIDELITY SOUTHERN CORP
42	TCF FINANCIAL CORP	88	BANCFIRST CORP	135	WINTRUST FINANCIAL CORP
43	BANKUNITED INC	89	BERKSHIRE HILLS BANCORP	136	DIME COMMUNITY BANCS
44	ZIONS BANCORPORATION	90	LEGACYTEXAS FNCL GRP	137	MAINSOURCE FNCL GRP
45	VALLEY NATIONAL BANCORP	91	FIRST COMMONWLTH FINL	138	COBIZ FNCL INC
46	SUSQUEHANNA BANCSHARES	92	PINNACLE FNCL PTNR	139	BRYN MAWR BK CORP
		93	BANC OF CALIFORNIA INC.	140	BANK MUTUAL CORP

Source: Author, based on US Federal Reserve data (http://www.federalreserve.gov/releases/lbr/current/)[86]

[86] This website reports both BHCs and IHCs, the latter of which are wholly owned by non-domestic banks domiciled elsewhere in the world. This study focuses on BHCs only.

Appendix 2: Extended Variable Definitions

No.	Name	Period	Type	Comments – headline or secondary variable.
1.	Actual Net Loan Losses	2012 – 2015	Dependent variable – performance	Following Hines and Peters (2015), actual level of net loan losses (charge-offs after recoveries) reported by Bloomberg. Stulz (2015) identifies negative net present value that destroys value as standalone bank risks. Actual net loan losses of banks can be viewed as the ultimate bad risk.
2.	BHC Assets	2012 – 2015	Explanatory variable	Following Aebi, Sabato and Schmid (2012), Battaglia and Gallo (2015), Pathan (2009), Peni and Vahämaa (2012), Zagorchev and Gao (2015), total assets in USD and reported by US Federal Reserve (https://www.federalreserve.gov/releases/lbr).
3.	Board Size	2012 – 2015	Explanatory variable	The number of board members following Aebi, Sabato and Schmid (2012) and Pathan (2009); small boards or less restrictive boards who may be powerful are associated with greater risk-taking, while strong CEO is associated with less risk-taking; collected via BoardEx.
4.	BOD Attendance Percentage	2012 – 2015	Explanatory variable	Defined as the percentage of directors in attendance for a board meeting, via Bloomberg. High meeting attendance by directors can enhance performance of the firm, as observed in Chou, Chung and Yin (2013).
5.	BOD Meeting Number	2012 – 2015	Explanatory variable	Number of board meetings held per year by the BHC, via Bloomberg, following Vafeas (1999) and de Andres and Vallelado (2008).
6.	Busyness of an executive or director	2012 – 2015	Explanatory variable	Aebi, Sabato and Schmid (2012), Fich and Shivdasani (2006), Sun and Liu (2013), Elyasiani and Zhang (2015), Nguyen, Hagendorff and Eshraghi (2015), Cooper and Uzum (2012); measured as total number of board positions held via BoardEx.
7.	CEO Duality	2012 – 2015	Explanatory variable	Dummy of one (or zero) depending whether CEO holds both positions at year-end. Follows Aebi, Sabato and Schmid (2012), Coles et al. (2008), Weir, Laing and McKnight (2002), Pathan (2009), Zagorchev and Gao (2015), Pi and Timme (1993), Chen, Lin and Yi (2008), Byrd et al. (2012) in a banking context; collected via BoardEx.
8.	CEO Educational Background	2012 – 2015	Explanatory variable	Hand collected via BoardEx data coding a one (or zero) value of advanced business or law degree or similar qualifications following Güner, Malmendier and Tate (2008) and IMF (2014).
9.	CEO Shares	2012 – 2015	Explanatory variable	Coles et al. (2008), Faleye, Hoitash and Hoitash (2011), and others find either no or a complex U-shaped relationship between ownership and share holdings; measured in USD collected from Bloomberg.
10.	CEO Tenure	2012 – 2015	Explanatory variable	Follows other leading corporate governance research for CEOs (Belghitar and Clark, 2012; Tung and Wang, 2012) as a proxy for strong CEO via CEO tenure; see also Ellul and Yerramilli (2013) and Pathan (2009); uses BoardEx data.
11.	CEO Board Years	2012 – 2015	Explanatory variable used for index construction	Measures the number of years a CEO has been on the board of directors as a proxy for CEO Power, collected from BoardEx; Hermalin and Weisbach (1988) argue that CEO Power increases over time, while the power of the board potentially declines, leading to lower monitoring effectiveness in an agency theory context.
12.	CEO Power	2012 – 2015	Explanatory Variable	An independent variable created with principal component analysis comprised of seven other CEO variables, namely CEO age (measured in years), CEO years on the board of directors (measured in years), CEO tenure (measured as number of years at the BHC in any capacity), CEO busyness (measured by the number of board seats held), CEO Duality (a dummy variable if the CEO also is chairman), CEO education, and CEO annual compensation. Data collected from BoardEx except for CEO total annual compensation (Bloomberg and Morningside).

13.	CRO Centrality	2012 to 2015	Additional Control Variable	Measured as the ratio of CRO compensation to CEO total compensation as a proxy of CRO power and influence versus other risk-taking incentives, following Ellul and Yerramilli (2013), Keys et al. (2009), and Bebchuk, Cremers and Peyer (2007).
14.	CRO Tenure	2012 - 2015	Additional Control Variable	Following Belghitar and Clark (2012) who employ CEO Tenure as an explanatory variable, CRO experience levels are proxied by measuring the number of years within a BHC. This data is collected from Bloomberg.
15.	Deposits to Assets	2012 – 2015	Explanatory variable	Deposits/Assets is a control variable collected from Bloomberg, following Ellul & Yerramilli (2013). Typically banks with greater deposit financing (as opposed to money market funding) is less risky (also see Aebi, Sabato & Schmid, 2012).
16.	Executive Age (CEO or CRO)	2012 – 2015	Explanatory variable	Following Faleye, Hoitash and Hoitash (2011), Hagendorff, Collins and Keasey (2010) and Nguyen, Hagendorff and Eshraghi (2014), the age of the CEO (and CRO) is collected and measured as a continuous variable from BoardEx. Used in index construction for CEO Power or as a control variable for CRO.
18.	Efficiency Ratio	2012 – 2015	Dependent variable – performance	BHC non-interest costs divided by revenue, collected from Bloomberg. Practitioners consider this the per cent of a dollar required to produce one dollar of bank revenue, so lower values show greater levels of efficiency. Hand collected from Bloomberg and following Pi & Timme (1993) and more recently for US banks by Jacewtiz and Kupiec (2012).
19.	HPRs	2012 – 2015	Dependent variable – performance	Annual total equity returns assuming dividends are re-investored in shares. Aebi, Sabato and Schmid (2012), Peni and Vahämaa, (2012), Battaglia and Gallo (2015), Fahlenbrach and Stulz (2011), Beltratti and Stulz (2010) all use this outcome variable to measure the equity markets' reaction to investment proposition; collected via Bloomberg data as annual returns.
20.	Institutional Shareholdings	2012 – 2015	Additional Control	Following Aebi, Sabato and Schmid (2012), Erkens et al. (2010), and Beltratti & Stulz (2011). Suggests greater institutional ownership may related to greater monitoring, Laeven & Levine (2009); Switzer & Wang (2013) where risk-taking varies positively with comparative power of shareholders. Collected via Bloomberg data as the percentage institutional shareholder listed on the current of share register.
21.	International Activity	2012 – 2015	Explanatory variable	Used in risk-related estimations; measured as the percentage of gross income originating from BHC non-domestic activities, collected from Bloomberg; Berger et al. (2015) empirically find that US banks with greater international exposure are riskier across a series of econometric tests and samples.
22.	NPLs/Total Loans	2012 – 2015	Dependent variable – risk	Following Berger et. al. (2012), Ellul and Yerramilli (2013), Zagorchev and Gao (2015); collected via Bloomberg as non-performing loans as percentage of total loans.
23.	Net Interest Income / Average Assets (NII)	2012 – 2015	Dependent variable – performance	The net of BHC interest income and investment income less interest expenses divided by total assets, as reported in Bloomberg.
24.	NIM (Net Interest Margin)	2012 – 2015	Dependent variable – performance	Following Fernandes and Fich (2013), Minton, Taillard and Williamson (2014), Gulamhussen and Santa, (2015); considers the difference between the BHC asset spread and BHC liability spread, a measure of pricing discipline and performance measure, hand collected from Bloomberg.
25.	Non-Insider Percentage on Board of Directors	2012 – 2015	Explanatory variable	Yermack (1996) and Fernandes and Fish (2013) find high levels of director expertise related to better performance; Barakat and Hussainey (2011) find higher proportion of independent directors results in better disclosure quality, while Zagorchev and Gao (2015) and Minton, Taillard and Williamson (2014) find independence relates to lower risk and income smoothing; reported as a percentage of total directors, via BoardEx.
26.	Operating Income	2012 – 2015	Dependent variable – performance	Earnings before taxes but after expenses such as credit losses, collected from Bloomberg.

27.	Operating Margin	2012 – 2015	Dependent variable – performance	Also known as operating income margin, this is BHCs' operating income divided by total revenue, collected from Bloomberg.
28.	Other Operating Income	2012 - 2015	Dependent variable – performance	Operating income, which is non-recurring and not from the difference of net interest income and expense, collected from Bloomberg.
29.	Risk Appetite	2012 – 2015	Independent variable (predictor)	Conceptual research identifies the importance of risk (Yoost, 2014; Stulz, 2015; Gontarek, 2016); hand-collected via annual reports and 10K reports as board approved and articulated risk appetite statements for that fiscal year. Assigning a one (or zero) dummy if adopted by the BHC at the board level and expressly approved by the board of directors.
30.	Risk Committee – Risk Appetite	2012 – 2015	Independent variable (predictor)	Also measures the articulation of the Risk Appetite levels and types but observed in a more strict sense by observing its use only from BHC Risk Committee charter statements. Hand picked from Risk Committee documents available on BHC websites and assigning a one (or zero) dummy if adopted by the BHC.
31.	Risk Committee Member Busyness	2012 – 2015	Additional control variable	The number of other board positions are collected and measured as a continuous variable from BoardEx for all Risk Committee members. Busy directors can be associated with worse performance as monitoring quality declines as these governance actors become distracted, following Mehran, Morrison and Shapiro (2011) and Cooper and Uzun (2012).
32.	Risk Committee Chairman - Gender	2012 – 2015	Additional control variable	Female representation on banks' boards of directors may be associated with better performance or different risk-taking levels (Adams and Ferreira, 2009; Adams and Ragunathan, 2013; Palvia, Vähämaa and Vähämaa, 2014). Newly-emerging research on US BHCs reveals that BHCs with more female directors performed better during the crisis (St Claire et al., 2016). The gender of the Risk Committee chairman is observed via BoardEx and validated via Linkedin if not apparent, with a dummy of 1 if female otherwise 0.
33.	Risk Management Committee Financial Expertise	2012 – 2015	Independent variable (predictor)	Measures the financial expertise level percentage for all Risk Committee members for that year, relying on definitions by Minton, Taillard and Williamson (2014) and Güner, Malmendier and Tate (2008); all Risk Committee member data collected from BoardEx; dummy variable value of one indicates the Risk Committee member is a former bank executive, or holds an executive position in a non-bank financial institution or a financial position in a non-financial institution (such as treasurer), has an academic degree in finance or economics, or works in other areas of finance (fund manager etc.).
34.	Risk Committee Chairman Expertise	2012 – 2015	Independent variable (predictor)	Follows the same financial definition as for the Risk Committee financial expertise levels above but the dummy variable has a value of one if the Risk Committee chairman meets this definition, and zero otherwise.
35.	ROA	2012 – 2015	Dependent variable – performance	ECB (2010a), Ellul and Yerramilli (2013), Aebi, Sabato and Schmid (2012), Peni and Vahämaa (2012), Battaglia and Gallo (2015); collected via Bloomberg.
36.	Tail Risk	2012 – 2015	Dependent variable – risk	Following Ellul and Yerramilli (2013) and other risk governance research, Tail Risk is defined as the negative of the average return on the BHC stock over the 5% worst return days; daily stock returns collected from Bloomberg.
37.	TCE/RWA	2012 – 2015	Dependent variable – risk	Tangible common equity/risk weighted assets. McKinsey (2010), Das and Sy (2012) and Moody's (2015) identify this as a key capital measure for banks; collected from Bloomberg.
38.	Tier 1 Capital Ratio	2012 – 2015	Dependent variable – risk	Used by ECB (2010a), Ellul and Yerramilli (2013) and Iselin (2016) to measure regulatory capital levels, measured as a percentage of risk-weighted assets from Bloomberg data; Tier 1 is the core equity capital (equity from common stock, cumulative preferred stock) and disclosed reserves relative to risk-weighted assets.

39.	Total Interest Income	2012 – 2015	Dependent variable – risk	Revenues generated from interest-bearing assets per annum, collected from Bloomberg. Used to delve deeper into underling BHC performance trends underneath NIM.
40.	Total Interest Expense	2012 – 2015	Dependent variable – risk	Expenses generated from interest-bearing expenses per annum, collected from Bloomberg. Used to delve deeper into underling BHC performance trends underneath NIM.

Source: The author's own analysis

Appendix 3: Risk Appetite Statement Step Plan

No.	Role in Risk Appetite Arrangements	CEO	CRO	Board of Directors or Risk Committee
1.	Establish a risk appetite framework consistent with bank strategy or mergers and acquisitions, earnings profile, liquidity and capital plans, incentives, culture and regulatory requirements (	✔	✔	✔
2.	Ensure that the importance of Risk Appetite arrangements are effectively communicated across the firm to and provide the necessary resources to implement and monitor these processes within the firm	✔		
3.	Ensure the risk appetite statements can be used to drive the risk appetite framework, including the series risk limits for credit risk, market risk, and operational risk.		✔	
4.	Translate the risk appetite statements into a set of triggers, reporting tools and monitoring mechanisms for the board		✔	
5.	Provide for the cascading of the risk appetite statement to the business units and upward reporting limit breaches to management	✔		
6.	Provide for the cascading of the risk appetite statement to the board of directors and relevant committees, including the Risk Committee.		✔	
7.	Identify and review Risk Appetite metrics for new and emerging business risks such as cyber risks, fraud and reputational or conduct risks.		✔	
8.	Consider subsidiary and jurisdictional issues vis-à-vis Risk Appetite processes including risk and regulatory differences.	✔	✔	
9.	Procure the approval by the board of directors of the risk appetite statement and related framework, including risk limits.	✔	✔	
10.	Oversee implementation of an appropriate risk governance framework and (with senior management) develop and articulate the firm's risk appetite statement and related framework.			✔
11.	Examine risk capacity, Risk Appetite and the effectiveness of the buffer between these two metrics. Seek to ensure that the Risk Appetite promotes a strong risk culture in the business, a key responsibility of the board.			✔
12.	Ensure and oversee management's implementation of the risk appetite statement and overall risk governance framework, monitor the bank's adherence to the risk appetite statement.			✔
13.	Oversee the design and management's implementation of the firm's compensation system and ensure its alignment with desired risk culture and risk appetite statement.			✔
14	Interface with the regulator on risk appetite statements, including their establishment and mechanisms of reporting to regulatory officials and other parties if needed. Also note the board shall take into account the legitimate interests of depositors, shareholders, and other stakeholders.	✔	✔	✔

Source: The Author, inspired by Basel (2015a), Yoost (2014), Ernst & Young (2015c), Jackson (2014) and Gontarek (2016)

Appendix 4: Sample Statement of Principal Risk Types (Excerpts)

Scotia Bank 2014

Risk Type	Governing Documentation	Application to Risk Appetite
Credit Risk	- Credit Risk Policy - Credit Risk Appetite - Allowance Policy for NPLs - Underwriting Policy	Quantitative limits/tolerance: Single customer limits Country risk limits Industry concentration limits
Market Risk	Market and Structural Risk Policy	Quantitative limits/tolerances, including VaR limits, debt instrument exposures, interest rate and FX exposures
Liquidity and Funding Risks	Liquidity Risk and Collateral Management Policy	Quantitative limits/tolerances including levels of unencumbered collateral, limits to control each cashflow over a specific time period, diversification by funding source
Operational Risks	- Operational Risk Management Policy - Model Risk Management Policy - Compliance Policy	Identification and measurement and mitigation over operational risk, expressed as an aggregate loss event, single limit and benchmarking
Reputational Risk	Reputational Risk Policy	Low tolerance for reputational, legal or taxation risk
Environmental Risk	Environmental Risk Policy	Consistency with Equator Principles by financing projects for which borrowers can demonstrate willingness to comply with processes to ensure the project will be financed in a socially responsible manner
Strategic Risk	Strategy Report to the Board of Directors	Considers links between the risk appetite statement and enterprise strategy, and business-line strategies and includes measuring progress against plans, implementation and limits
Insurance Risk	Insurance Risk Policy	Maintain minimal exposure to insurance risks on a selective basis and seek to achieve stable and sustainable earnings with diversifiable limits by geography and product line

Source: http://media.scotiabank.com/AR/2014/files/1814/1774/4832/Risk_Management.pdf (accessed 14 October 2016)

Appendix 5: Sample Risk Appetite Statement[87] (Excerpts)

PNC's Enterprise Risk Appetite Statement, 15 December 2015[88]

ENTERPRISE RISK APPETITE STATEMENT COMPONENTS	ENTERPRISE RISK APPETITE METRICS
1. Achieve our business objectives and protect our brand by accepting risks that are understood, quantifiable, and analysed through all phases of the economic cycle	Five credit risk metrics Four operational risk metrics Four market risk metrics One model risk metric One compliance risk metric
2. Earn trust and loyalty from all stakeholders including employees, customers, communities and shareholders	Six operational risk metrics Two reputational risk metrics
3. Reward individual and team performance by taking into account risk discipline and performance measurement	All metrics measured through Human Resources, including performance evaluation and compensation
4. Practice disciplined capital and liquidity management so that the firm can operate effectively through all economic cycle	Twenty-one liquidity metrics Twenty capital metrics Two credit risk metrics Two market risk metrics

Source: Koncz (2015)

[87] The Risk Committee of the full board follows a Risk Committee charter, which indicates it shall annually review and recommend to the full board the articulation, and approval of the firm's Risk Appetite and approve any amendments of Risk Appetite (see item 4 of Appendix 7).
[88] PNC is a major US BHC and mandatory adopter of Risk Appetite arrangements given is size.

Appendix 6: Example Risk Appetite Dashboard (Excerpts)

As might be used by a Risk Committee to actively monitor BHC risks

Type of Risk	Measure	Baseline/Normal	Stress Scenario
Capital Ratios	Tier 1 capital	XX bps	XX bps
Capital Ratios	Total Capital Ratio	XX bps	XX bps
Capital Ratios	Leverage Ratio	XX bps	XX bps
Profitability	Monthly Net Income	$XX millions	$XX millions
Profitability	Efficiency Ratio	XX%	XX%
Profitability	Trailing 12-month Net Income	$XX millions	$XX millions
Profitability	Return on Assets	XX bps	XX bps
Profitability	Net Interest Income and NIM measures	XX bps	XX bps
Credit Risk	Actual Loan Losses	$XX millions	$YY millions
Credit Risk	Provisions (forward over two quarters) as a percentage of Tier 1 Capital	XX bps	XX bps
Credit Risk	Non-Agency MBS Securities	XX bps	XX bps
Credit Risk	International Exposures	XX bps	YY bps
Profit Rate Risk	Change in one-year earnings for a specified loss stress scenario	XX bps	XX bps
Operational Risk	Material exceptions to policies and limits	X times	Y times
Reputational Risk	Retention of High Potential Key Managers	X%	Y%
Reputational Risk	% of Customer Satisfaction	X%	Y%
Market Risk	Change in one-year earnings given a 300bps (or 500bps) parallel shift in the yield curve	$XX millions	$XX millions

Key	No Breach	Close to Breach	Breach

Inspired by: McKinsey (2014), Lam (2015)

Appendix 7: Sample Risk Committee Charter (Excerpts)

Wells Fargo and Co. Risk Committee Charter, 15 December 2015

PURPOSE:

The purpose of the Risk Committee is to provide oversight of the Company's enterprise-wide risk management framework and corporate risk function, including strategies, policies, procedures, processes, and systems, established by management to identify, assess, measure, monitor, and manage the major risks facing the Company. The Committee shall assist the Board of Directors and its other committees that oversee specific risk-related issues and serve as a resource to management by overseeing risk across the entire Company and across all risk types, and by enhancing management's and the Board's understanding of the Company's overall Risk Appetite and enterprise-wide risk management activities and effectiveness.

MEMBERSHIP AND MEETINGS:

The Committee consists of a minimum of six members and meets at least quarterly. The members of the Committee shall each have been determined by the Board to be independent under the rules of the New York Stock Exchange. The Committee's membership shall meet all independence, expertise and experience requirements imposed by any applicable regulatory authority.

The Committee shall meet periodically in separate executive sessions with the Chief Risk Officer (CRO) and other members of management as it determines appropriate. The CRO is expected to communicate with the Chair on any significant risk issues that arise between committee meetings, including any issues raised by management's Enterprise Risk Management Committee.

AUTHORITY AND RESPONSIBILITIES:

1. Risk management framework. The Committee shall approve and periodically review the Company's risk management framework, which outlines the Company's overarching approach to risk management and the policy, practices, and governance structures used by management to execute its risk management program and corporate risk strategy, including those related to the following:
   - Maintaining a strong risk culture and the independence and structure of corporate risk
   - Defining risk roles and responsibilities across the Company's three lines of defence
   - Establishing protocols and processes for issue escalation and reporting
   - Facilitating an appropriate credible challenge of business decisions
   - Providing for the recruitment, development, retention, compensation and succession of risk talent, as well as enterprise-wide risk incentive based compensation practices that are consistent with the safety and soundness of the Company and do not encourage excessive risk-taking

2. Oversight of the Corporate Risk Function. The Committee shall oversee and receive reports of the Company's enterprise-wide risk management framework and Corporate Risk function. The CRO together with the Corporate Risk Function, shall report functionally to the Committee and administratively to the CEO. The Committee shall initiate and approve the appointment and replacement of the CRO, evaluate the CRO, and approve his or her base compensation, adjustments and incentive compensation.

3. Risk Coverage Statement and Risk Profile. The Committee shall approve the types of key risks facing the Company including credit risk, financial crimes risk, information security risk, interest rate risk, liquidity risks, market risk, model risk, operational risk, regulatory compliance risk, reputation risk, strategic risk and technology risk. The Committee review the Company's enterprise-wide risk profile as well as alignment of the risk profile within the Company's strategic plan, goals, objectives and risk appetite.

4. Risk appetite. The Committee shall annually review and recommend to the Board the articulation and establishment of the Company's risk appetite, and shall approve any amendments of risk appetite. The Committee shall receive reports from management and other Board Committees regarding the adherence to risk limits and established risk appetite.

5. Risk Frameworks and Policies. The Committee shall approve and periodically review the functional framework and oversight policies established by management for the key risk types identified in this Company's risk coverage statement.

6. Liquidity and Funding Risks; Capital Adequacy. The Committee shall oversee the Company's liquidity and funding risks, and shall annually review and approve the Company's liquidity management strategies, policies and procedures. The Committee shall discuss periodically the Company's capital adequacy and planning activities in relation to the Company's risk profile.

7. Acquisitions and Strategic Initiatives. The Committee shall receive reports prepared by the Company's Corporate Development Department pursuant to the Board's Acquisition Policy, and shall make such inquiry of management regarding risks that may be associated with the Company's acquisition activities or other new business activities as it may deem appropriate.

8. Emerging Risks. The Committee shall receive regular reports from the CRO and others regarding emerging risks, including model risk.

9. Assessment of Risk Program. The Committee shall review and receive regular reports from the CRO and others regarding the effectiveness of the Company's enterprise-wide risk management program, including corrective actions taken by management to address risk issues.

10. Other Authority, Self-Evaluation, and Charter Review.
    - The Committee may obtain advice and assistance from internal and external legal, accounting and other advisors at the Company's expense without prior permission of the Board or management.
    - The Committee shall review and assess the adequacy of this Charter annually and recommend amendments to this Charter at any time for approval to the Board.
    - The Committee shall annually review its own performance.

Source: https://www08.wellsfargomedia.com/assets/pdf/about/corporate/risk-committee-charter.pdf (accessed 14 October 2016)

Appendix 8: PCA Results for CEO Power

CEO Power Index

These results are produced by creating an index called CEO Power employing PCA with 541 observations and seven components. The input variables are CEO Age, CEO Board of Director Years, CEO Tenure, CEO Busyness, CEO Duality, CEO Education and CEO Total Compensation, as defined in Appendix 2.[89]

Panel I

Component	Eigenvalue	Difference	Proportion	Cumulative
PC 1	2.44833	1.13883	0.3498	0.3498[90]
PC 2	1.3095	0.346178	01871	0.5368
PC 3	0.963321	0.147596	0.1376	0.6744
PC 4	0.815726	0.156525	0.1165	0.7910
PC 5	0.6592	0.0303322	0.0942	0.8852
PC 6	0.628868	0.453808	0.0898	0.9750
PC 7	0.17506	.	0.0250	1.0000

Panel II (eigenvectors)[91]

	Components							
Variable	PC 1	PC 2	PC 3	PC 4	PC 5	PC 6	PC 7	Not Explained
CEO Age	0.4128	-0.0931	-0.0171	-0.4796	0.7043	0.2966	-0.0811	0
CEO BOD Yrs.	0.5614	-0.1355	0.2709	-0.0028	-0.2473	-0.0263	0.7289	0
CEO Tenure	0.5468	-0.0745	0.1819	0.0005	-0.4622	0.1457	-0.6539	0
CEO Busyness	0.3267	-0.0274	-0.4129	0.7918	0.2755	0.1384	-0.0018	0
CEO Duality	0.3270	0.4801	-0.2352	-0.1375	0.0834	-0.7588	-0.0747	0
CEO Education	-0.0305	0.4810	0.7590	0.3167	0.2921	0.0373	-0.0675	0
CEO Comp.	0.0308	0.7105	-0.3024	-0.1543	-0.2468	0.5420	0.1560	0

Notes: PCA facilitates the construction of the risk governance index (RGI) without using arbitrary weightings of each variable, following Tetlock (2007), Ellul and Yerramilli (2013) and others. This method facilitates the formation of a new variable, CEO Power, made up of combinations of the seven CEO-related variables (Lingel and Sheedy, 2015). The newly formed variables, called principal components, are by construction orthogonally related, and the linear combination that explains the maximum variation in the initial variables is called the first principal component. The first eigenvector defines the relevant weightings for each risk governance variable in the first principal component (Lingel and Sheedy, 2012). The index resulting from the use of PCA is used to reduce the number of variables used in subsequent regression analysis, a key aim in this exercise (Magee, Schilling and Sheedy, 2014).

[89] For example, Hagendorff, Collins and Keasey (2010) measure and employ CEO Duality, CEO Age, CEO Tenure and expertise in their study of monitoring variables, while Hagendorff and Vallascas (2011) find a link between CEO pay measures and risk-taking incentives embedded in executive compensation plans.

[90] The first principal component explains the variation in the model and justifies its use in subsequent regressions. This factor varies in the risk governance literature, with 36% of the variation explained by Lingel & Sheedy (2012), up to nearly 90% by Ellul and on Yerramilli (2013).

[91] The weighting assigned to each index component is determined by the eigenvector for each principal component.

Appendix 9

Table 22. Model 13: Mitigating omitted variables – performance measures[92]

Variable[93]	Model 13a (ROA)	Model 13b (NIM)	Model 13c (Eff. Ratio)	Model 13d (HPRs)
Risk Appetite	0.401** (2.20)	0.895*** (3.38)	-8.217 (-1.74)	-12.20* (-1.81)
CRO Age	0.00722 (0.23)	-0.0345 (-0.77)	0.223 (0.28)	0.196 (0.17)
BHC Assets	-.0000017 (-0.87)	-.000007** (-2.48)	.000058* (1.13)	.000153** (2.09)
BOD Meeting Number	0.00518 (0.29)	0.0185 (0.71)	0.199 (0.42)	-0.353 (-0.53)
BOD Meeting Attendance	0.0248** (2.11)	-0.00312 (-0.18)	0.106 (0.34)	0.875* (1.84)
BOD Non-insider	-1.634 (-0.83)	-3.993 (-1.40)	-2.394 (-0.04)	47.86 (0.66)
Board Size	0.0372 (0.92)	0.0239 (0.41)	-1.131 (-0.97)	1.149 (0.77)
TLTA	-0.0461*** (-2.66)	-0.0508** (-2.02)	1.194** (2.57)	-0.385 (-0.60)
Deposits / Assets	0.0406 (1.98)	0.0422 (1.42)	-0.689 (-1.27)	0.163 (0.21)
CEO Shares	-4.50e-09 (-1.41)	-1.79e-09 (-0.39)	3.15e-08 (0.37)	-.0000001** (-2.37)
Institutional Shares	0.00828 (1.39)	0.00805 (0.93)	-0.0951 (-0.56)	0.0449 (0.15)
RC Member Busy	-0.0807* (-1.93)	-0.0225 (-0.37)	0.945 (0.86)	-0.118 (-0.07)
CRO Centrality	-0.427 (-1.23)	-1.204** (-2.39)	9.495 (1.02)	-3.505 (-0.27)
CRO Tenure	0.0127 (0.69)	0.00302 (0.11)	-0.0415 (-0.09)	0.245 (0.36)
RC Chair Gender	0.216 (1.13)	0.301 (1.09)	-9.557* (-1.80)	-2.691 (-0.38)
Observations	183	183	176	181
R^2	0.3111	0.3082	0.2508	0.7064
AIC	60	197	1196	1364
BIC	118	255	1253	1422
Year Dummies	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes

*Notes: Table 12 Models 13a to 13d reports fixed effects (FE) estimations with Risk Appetite observed in BHC annual reports the key explanatory variable, for an extended set of control variables. The dependent performance variable is labeled underneath the Model number. Significant findings are denoted with *, ** and *** for 10%, 5% and 1% levels respectively with coefficient values reported (and t values reported in parentheses).*

[92] No evidence for multicollinearity was identified after running a VIF test for the independent and control variables.
[93] Risk Committee Exists did not produce reported results due to collinearity, so is not reported.

Appendix 10

Table 23. Model 14: Mitigating omitted variables – risk measures[94]

Variable[95]	Model 14a (NPLs)	Model 14b (Loan Loss)	Model 14c (Tier 1)	Model 14d (Tail Risk)
Risk Appetite	0.135 (0.81)	-882.0*** (-4.60)	-0.288 (-0.36)	-0.735 (-0.29)
CRO Age	0.00855 (0.32)	1.577 (0.05)	0.152 (1.13)	-0.109 (-0.26)
BHC Assets	-.0000009 (-0.48)	-0.0166*** (-7.62)	-.0000004 (-0.05)	.000030 (1.06)
BOD Meeting Number	0.00456 (0.29)	-14.14 (-0.73)	0.0619 (0.78)	-0.155 (-0.63)
BOD Meeting Attendance	0.000886 (0.08)	3.698 (0.30)	0.130** (2.53)	-0.0857 (-0.53)
BOD Non-insider	-0.611 (-0.36)	-1448.2 (-0.65)	7.572 (0.88)	18.66 (0.69)
Board Size	0.0364 (1.01)	-26.06 (-0.55)	-0.0142 (-0.08)	-0.111 (-0.20)
TLTA	0.0173 (1.06)	12.25 (0.65)	-0.298*** (-3.93)	-0.306 (-1.28)
Deposits / Assets	0.00838 (0.43)	20.30 (0.89)	-0.101 (-1.09)	-0.443 (-1.53)
CEO Shares	6.25e-09 (1.58)	-.00000065 (-0.19)	-1.35e-08 (-0.97)	-.0000003*** (-7.00)
International Activities	3.863 (0.70)	24459.3*** (4.71)	5.677 (0.26)	45.50 (0.67)
Institutional Shares	-0.00867* (-1.66)	-2.351 (-0.34)	-.0819*** (-3.14)	0.150 (1.84)
RC Member Busy	0.0467 (1.14)	3.546 (0.08)	0.232 (1.27)	-1.432** (-2.50)
CRO Centrality	-0.209 (-0.64)	525.8 (1.37)	-0.245 (-0.16)	-1.190 (-0.25)
CRO Tenure	-0.00186 (-0.12)	7.976 (0.41)	0.129 (1.60)	-0.114 (-0.45)
RC Chair Gender	0.0468 (0.25)	-333.4 (-1.53)	-0.446 (-0.53)	-1.799 (-0.68)
Observations	173	175	182	182
R^2	0.3111	0.7912	0.4618	0.7353
AIC	2	2484	596	1014
BIC	62	2544	656	1075
Year Dummies	Yes	Yes	Yes	Yes
Fixed Effects	Yes	Yes	Yes	Yes

*Notes: Table 12 Models 13a to 13d reports fixed effects (FE) estimations with Risk Appetite observed in BHC annual reports the key explanatory variable. The dependent performance variable is labeled underneath the Model number. Significant findings are denoted with *, ** and *** for 10%, 5% and 1% levels respectively with coefficient values reported (and t values reported in parentheses).*

[94] No evidence for multicollinearity was identified after running a VIF test for the independent and control variables.
[95] Risk Committee Exists did not produce reported results due to collinearity, so is not reported.

Appendix 11: Curriculum Vitae

Walter Gontarek is the Chief Executive Officer of Channel Capital Advisors LLP (Channel) a London-based, FCA-authorised and regulated credit investment management firm. He co-founded Channel ten years ago and was directly involved in establishing its corporate governance structures. Channel launched and managed Channel Capital Plc, a credit products platform which carefully acquired an investment-grade credit portfolio of $12 billion, before selling this business in a corporate disposal to a major US-based fund management firm in 2013. Since then, Channel has successfully launched a working capital vehicle to provide financing opportunities for small to medium-sized European corporates using its trade receivables financing platform, Channel Finance S.A.

Walt was previously Managing Director and Head of Global Credit Products at the Royal Bank of Canada, Managing Director of the Toronto-Dominion Bank in its Global Credit Products unit, a vice-president and director in capital markets at CIBC Wood Gundy in New York and London, a consultant to the Government of Poland on its banking privatisation programme, president of the retail-banking subsidiary at Loyola Capital, and a loan officer at Maryland National Bank for consumer and small business loans.

He holds a BBA in Finance from Loyola University in Maryland, an MBA in Finance from the Stern School of Business at New York University, a certificate in International Management from ISA at the HEC Graduate School of Management in Jouy-en-Josas in France, and attended The Rock Corporate Governance Program at Stanford Law School in Palo Alto in 2013. Walter has published conceptual bank corporate governance research entitled “Risk governance in financial institutions: The growing importance of Risk Appetite and Culture” in *The Journal of Risk Management in Financial Institutions* in 2016*,* which was based largely on his literature review at Cranfield School of Management.

Walt is Chairman of the Advisory Board of Cloud 9 Group, a fintech company providing order to cash working capital solutions and an independent director of Frontclear Management NV (a provider of guarantees in frontier markets backed by leading development banking firms), and was named as a financial expert at the 2012 launch of PRIME Finance, a financial tribunal in the Hague backed by Dutch authorities to assist judicial systems in resolving financial disputes in emerging markets. He presented to this forum at the Peace Palace in Den Haag in January 2017 in order to raise the awareness of emerging credit market gaps in frontier markets and trade finance.

Walt’s twitter’s address is *@WalterGontarek*, his corporate governance research website is www.corporategovernanceadvisory.com, and his blogsite dedicated to banking corporate governance is www.future-governance.blogspot.co.uk. He is also an academic member of the European Corporate Governance Institute (ECGI) and a member of the International Corporate Governance Society (ICGS). Walt was awarded the Cranfield School of Management’s Alan Harrison Award in October 2015.

Walt resides in Sevenoaks, Kent, UK with his wife and three daughters.