

Risk Governance at Board Level of European Banks

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List of Abbreviations

ABS	Asset-backed Security
AGM	Annual General Meeting
AR1	First Order Autocorrelation
AR2	Second Order Autocorrelation
ARM	Adjustable-Rate Mortgage
Avg.	Average
BandH	Buy and Hold Return
BCBS	Basel Committee on Banking Supervision
bn	Billion
BIS	Bank for International Settlements
BPB	Bundeszentrale für politische Bildung
CAR	Cumulative Abnormal Return
CDO	Credit Default Obligation
CDS	Credit Default Swap
CEE	Central and Eastern Europe
CEO	Chief Executive Officer
CFO	Chief Financial Officer
CFR	Code of Federal Regulations
CGQ	Corporate Governance Quotient
Ch	Chair
Com	Committee
CRD IV	Capital Requirements Directive

LIST OF ABBREVIATIONS

CRO	Chief Risk Officer
CRR	Capital Requirements Regulation
DFA	Dodd-Frank Wall Street Reform and Consumer Protection Act
EA	Euro Area
EBA	European Banking Authority
EC	European Commission
ECB	European Central Bank
EU28	28 Member States of the European Union
ecoDA	European Confederation of Directors Associations
e.g.	exempli gratia
EMIR	European Market Infrastructure Regulation
EONIA	Euro Overnight Index Average
etc.	et cetera
EU	European Union
EURIBOR	European Interbank Offer Rate
FCA	Financial Conduct Authority
FDIC	Federal Deposit Insurance Corporation
FED	Federal Reserve Bank
FINMA	Swiss Financial Market Supervisory Agency
Freddie Mac	Federal Home Loan Mortgage Corporation
FSA	Financial Services Authority
FSB	Financial Stability Board
FX	Foreign Exchange

LIST OF ABBREVIATIONS

G30	Group of Thirty
GDP	Gross Domestic Product
GM	General Meeting
GMM	General Method of Moments
GIPS	Greece, Italy, Portugal and Spain
G-SIB	Global Systemically Important Banks
IAIS	International Association of Insurance Supervisors
IMF	International Monetary Fund
Indep.	Independent
IOSCO	International Organization of Securities Commissions
IPO	Initial Public Offerings
IRGC	International Risk Governance Council
IT	Information Technology
JV	Joint Venture
L.	Lag
LIBOR	London Interbank Offered Rate
LLP	Loan Loss Provision
LSDV	Least Squared Dummy Variable
LtD	Loan to Deposit
M&A	Mergers & Acquisitions
Maj	Majority
Mem	Member
Meet Freq	Meeting Frequency

LIST OF ABBREVIATIONS

MIS	Management Information Systems
MSCI	Financial Services Company
NBFI	Non-Bank Financial Institution
No.	Number
OECD	Organisation for Economic Co-Operation and Development
OLS	Ordinary Least Squared
Oper.	Operational
OTC	over-the-counter
Qual	Qualification
R&D	Research and Development
RAF	Risk Appetite Framework
RAS	Risk Appetite Statement
RC	Risk Committee
RDT	Resource Dependence Theory
Rep	Reputational
ROA	Return on Assets
ROE	Return on Equity
RQ	Research Question
RWA	Risk-Weighted Assets
SD	Standard Deviation
SE	Societa Europea
SIFI	Systemically Important Financial Institution
SNB	Suisse National Bank

LIST OF ABBREVIATIONS

SOX	Sarbanes Oxley Act
SPV	Special Purpose Vehicles
TARP	Troubled Asset Relief Program
TR	Thomson Reuters Eikon
TMT	Top Management Team
UK	United Kingdom
USA	United States of America
vs.	Versus
WEO	World Economic Outlook
WGI	World Governance Indicator
Z-scores	Default Probability Measure

Abstract

Proper Corporate Governance and specifically Risk Governance of banks at board level is key for a sound and robust banking sector, which based on the important function of banks as intermediaries is also relevant for the overall economy. According to supranational institutions as well as regulators weaknesses of these governance arrangements have supported the development and the size of the impact of the Financial Crisis in 2008. Therefore, regulatory changes with regard to this topic have been implemented in Europe.

This study investigates the influence of Risk Governance at board level executed via the risk committee on the robustness of European banks through the economic cycle. Based on existing theories on Corporate Governance with focus on bank specifics, the current academic discussion, the regulatory environment as well as the opinion of experts an integrated framework of Risk Governance for banks, including the responsibilities and tasks of the Board of Directors, is developed.

Using manually collected data of 157 European banks (EU28 and Switzerland) on 21 Risk Governance variables, relevant to board structures, processes and tools, a panel data analysis is performed for time period from 1999 to 2015 including. The presented dissertation is hence covering the three main financial crises of recent European history, i.e. the Dot.com Crisis, the Financial Crisis and the Eurozone Crisis. Based on this, the influence of the variables on the robustness of European banks, in form of 6 risk and performance variables, after controlling for bank and country specifics, is assessed. By applying Fixed and Random Effects estimators, multiple evidence for the influence of the variables on the robustness of banks is found. However, after using a dynamic systems GMM estimator and controlling, therefore, for further sources of endogeneity, evidence for the effectiveness of these measures and its influence on robustness of banks through the cycle is limited.

The study finds that the dual-hatting of the risk committee and other committees, the annual review of the risk policies by the risk committee as well as the implementation of a Risk Appetite Framework have negative influence on the risk profile of a bank through the cycle. The Code of Conduct, however, is a statistically significant positive driver of the risk profile and the performance of banks through the cycle.

Zusammenfassung

Ordnungsgemäße Corporate Governance und insbesondere Risk Governance von Banken sind entscheidend für einen soliden und robusten Bankensektor und basierend auf der Funktion von Banken als Intermediär auch für die Gesamtwirtschaft. Nach Angaben von supranationalen Institutionen und Aufsichtsbehörden haben Schwächen in Bezug auf die Governance die Entwicklung und das Ausmaß der Finanzkrise im Jahr 2008 unterstützt. Konsequenterweise wurden daraufhin in Europa regulatorische Änderungen in Bezug auf dieses Thema implementiert. Diese Studie untersucht den Einfluss der Risk Governance auf Aufsichtsorgans-Ebene auf die Robustheit europäischer Banken durch den Konjunkturzyklus. Basierend auf bestehenden Theorien zur Corporate Governance, mit Fokus auf Bankspezifika, der aktuellen akademischen Diskussion, dem regulatorischen Umfeld sowie der Meinung von Experten wird ein integrierter Rahmen zur Risikosteuerung für Banken, einschließlich der Verantwortlichkeiten und Aufgaben des Aufsichtsorgans, entwickelt.

Unter Verwendung von von-Hand gesammelten Daten von 157 europäischen Banken (EU28 und Schweiz) zu 21 Variablen der Risk Governance wird eine Paneldatenanalyse für den Zeitraum 1999 bis einschließlich 2015 durchgeführt. Basierend darauf wird der Einfluss der Variablen auf die Robustheit der europäischen Banken, in Form von sechs Risiko- und Performancevariablen nach Kontrolle von Bank- und Länderspezifika bewertet. Nach Anwendung von Schätzern für feste und zufällige Effekte werden vielfältige Belege für den Einfluss der Variablen auf die Robustheit der Banken gefunden. Allerdings zeigt die spätere Verwendung eines dynamischen System-GMM-Schätzers, welcher weitere Quellen der Endogenität berücksichtigt, dass deren Einfluss auf die Robustheit der Banken über den Konjunkturzyklus hinweg begrenzt ist. Die Studie stellt fest, dass der gleichzeitige Vorsitz des Risikoausschusses und eines anderen Ausschusses, die jährliche Überprüfung der Risikoprozesse sowie die Implementierung eines Risikoappetit-Rahmens das Risikoprofil einer Bank negativ beeinflussen. Die Implementierung eines Verhaltenskodexes zeigt sich dagegen als statistisch signifikanter positiver Treiber des Risikoprofils und der Leistung von Banken über den Konjunkturzyklus hinweg.

1 Introduction

1.1 Research Problem

The Report of the High-Level Group on Financial Supervision (de Larosière, 2009) suggests that the main causes for the crisis, which started in early 2007, can be found at firm as well as country level. Main causes are interrelated to each other, e.g. weaknesses in regulatory policy-making and loose monetary politics as well as breakdowns of risk management and Corporate Governance in financial institutions. This ecosystem allowed for excessive risk-taking of financial institutions, which fostered and contributed to the severity of the crisis in 2008.

Muelbert (2010, p. 5) states that:

“Banks Corporate Governance was one of the most important failures in the present crisis...”

And adds,

“Risk management focused (...) on measuring instead of identifying risks, the riskiness of structured products such as CDOs, ABS and others was not fully realised, areas of concentration were not properly identified below top management level, risk testing were performed using past events instead of identifying new risks...”

According to the Basel Committee on Banking Supervision (2015, p.3):

“...effective Corporate Governance is critical to the proper functioning of the banking sector and the economy as a whole. Banks perform a crucial role in the economy by intermediating funds from savers and depositors to activities that support enterprise and help drive economic growth. Banks’ safety and soundness are key to financial stability, and the manner in which they conduct their business, therefore, is central to economic health. Governance weaknesses at banks that play a significant role in the financial system can result in the transmission of problems across the banking sector and the economy as a whole”.

Therefore, it is of utmost importance to identify, assess and solve the weaknesses in Corporate Governance to prevent negative impacts, such as the various support measures of governments and supranational institutions for the banking system

around the globe in 2008. These measures came at high cost and had to be carried by taxpayers rather than shareholders, in most cases (Muelbert, 2010).

Looking at the root causes of the financial crisis, one has to, in following Francis, Hasan and Wu (2012, p.40) state that "... although weak corporate boards may not be the direct trigger of the current crisis, corporate board practices could affect the extent to which firms are vulnerable to the financial crisis."

Furthermore, several authors were able to prove that Corporate Governance for banks is different from the Corporate Governance of non-financial corporations (Mehran, Morrison & Sharpio, 2011). The causes for this are its unique characteristics according to some researchers (Becht, Bolton & Röell, 2011). Banks are special with regard to complexity, volatility as well as opaqueness. These characteristics make it harder to govern banks and cause the need for effective risk management practices.

Based on the observation that not Corporate Governance in general, but weak Risk Governance (FSB, 2013b) hampered an effective and adequate risk management of financial institutions, regulators around the globe started to introduce measures to enhance banks Risk Governance e.g. the Financial Stability Board (FSB, 2013b), Basel Committee on Banking Supervision (BCBS, 2015), European Banking Authority (EBA, 2017) and Eidgenössische Finanzmarktaufsicht in Switzerland (FINMA, 2016). The International Risk Governance Council (IRGC, 2019) states that "...Risk Governance applies the principles of good governance to the identification, assessment, management and communication of risks". A focal point of the proposals made by the regulators named above is the Board of Directors and especially the risk committee as well as its tasks. The so-called Risk Governance Framework complements this focal point. It consists of structures as well as tools that shall be implemented by the board.

Research to determine how Corporate Governance and especially Risk Governance can prevent further breakdowns of banks is important if one considers the negative aspects on societies and economies shown before. Based on the impact as well as the current developments around the Risk Governance of banks,

it makes sense from an academic perspective to further assess the topic and especially its drivers. Consequently, this study aims to further analyse the concept of Risk Governance and to test if the proposals made by the regulators are showing promising results. This could support the assumption that by introducing the proposed structures and tools further widespread breakdowns of banks can be prevented.

1.2 Research Gap

The literature research, as well as the analysis of regulatory proposals performed by the author and detailed in Chapter 4.2 of this study, have shown that several proposals or requirements of regulators and supranational institutions, as well as the hypothesis that Corporate Governance for banks differs from that of non-financials, were tested by academics based on the global financial crisis from 2008. Early studies, assessed during the literature research, focussed on overall board governance and compensation practices. In recent years, however Risk Governance has been put into the spotlight of academic research.

From the author's point of view, the studies on compensation as well as overall board governance found evidence that Corporate Governance did not generally fail. Managers were aligned with shareholder interests and boards acted in favour of shareholders. Ultimately this led to higher risks as detailed in Chapter 3.2 of the study, as preferred by shareholders to gain higher profits on their investments. Even more, research (Aebi, Sabato & Schmid, 2012; Battaglia & Gallo, 2015) shows that standard Corporate Governance mechanisms have no significant influence on risk or performance measures of financial institutions during times of financial stress. Early proposals of regulators (Walker, 2009) to strengthen the Corporate Governance of banks by introducing more qualified and independent directors, have failed as these proposals did not result in better risk or performance outcomes and hence a more robust banking system, according to the findings of empirical papers. According to the researched empirical studies, this is due to the fact that Corporate Governance of banks is different. Applying common Corporate Governance models to banks might lead to unwanted risky and expensive outcomes.

As stated before, research just recently started to take Risk Governance measures as such into account (Fernandes, Farinha, Martins & Mateus, 2018). This should address the before mentioned mismatch between intended and actual outcome. These studies consider recent proposals by supranational institutions (FSB, 2013b; BCBS, 2015) , which are supposed to improve Risk Governance practices. The studies find that practices, based on a governance index (e.g. Ellul & Yerramilli, 2013) or specific tools such as a Chief Risk Officer (CRO) being present at board-level or a dedicated risk committee at board level (e.g. Battaglia & Gallo, 2015), have a positive impact on the risk profile or performance of financial institutions during those times. However, the studies do not focus on dedicated tools of Risk Governance as proposed by regulators, especially not the standards set recently by FINMA (2016) and EBA (2017). For example, the introduction of a Risk Appetite Statement (RAS) or specific tasks a risk committee should perform are not tested within the studies.

Country-wise the focus of the Risk Governance studies is clearly on the US-banking system. Only a low number of cross-country studies have been carried out. Europe is, especially from a cross country perspective, under-researched in these terms (Fernandes et al., 2018). This is surprising as the Eurozone crisis would have easily allowed for the testing of the hypotheses grounded on the proposals and requirements of the regulators. Furthermore, most of the studies focused on the financial crisis of 2008 as well as the period shortly before and after that crisis. Longitudinal studies are scarce, based on the author's literature research, especially in the field of Risk Governance.

Moreover, most of the studies did rely solely on empirical testing of hypotheses derived from regulatory proposals or requirements. Enrichment of this view by gathering information from practitioners or experts, who could provide valuable insight on Risk Governance themes, has not been conducted so far to the author's knowledge.

Summing it up, the requirements set by regulators (FINMA, 2016; EBA, 2017) and recommendations made by supranational institutions (FSB, 2013b; BCBS, 2015) regarding risk management practices and tools at board level carried out by

a risk committee, understood as Risk Governance, are until now not covered by academic research from a European cross-country and longitudinal perspective.

This study aims to fill this research gap by performing a European cross-country study on Risk Governance tools and mechanism at board level by applying a panel data analysis that covers the last three relevant financial crises, i.e. Dotcom Crisis, the Financial Crisis and the Eurozone Crisis. Furthermore, the perspective of practitioners will be considered. This will allow for enriching the hypotheses being tested. The term European banks is defined in this context as banks that are headquartered and regulated in the EU28 and Switzerland, which means that they might generate profits in other countries as well.

1.3 Research Questions

Based on the research gap described before, the author developed an overarching research question for the study. The research question is motivated by the impression that in order to efficiently and effectively manage a financial institution in a complex and fast-developing environment, a strong, independent and qualified risk management at board level in the form of a Risk Governance framework is essential. This is particularly important as banks play a special role in an economy and their breakdown can have significant adverse impacts on societies as could be observed during the global financial crisis in 2008 as well as during the latest Eurozone crisis. On top of that, the complexity and opaqueness of a financial institution and easiness to shift their risk increases the challenge for boards to effectively supervise them (Acharya et al., 2009). Furthermore, the measurement, setting and communication of risk objectives in a simple and understandable manner across a banking organisation is extremely difficult.

Based on the above-seen research puzzle and the described current status of the academic discourse, the central research question (RQ) for this research project is:

“How does Risk Governance at board level, performed by the Risk Committee, influence the robustness of European Banks through the economic cycle?”

This question will be answered by applying three further sub-questions, which will analyse the research topic from different angles. Those sub-questions are:

RQ1: What are the major obstacles and challenges as well as best practices in terms of Risk Governance at board level from an expert's point of view?

RQ2: How does a good Risk Governance, as defined by regulatory bodies, performed by a Risk Committee influence the robustness of European banks in terms of market and accounting measures through the economic cycle?

RQ3: What are the main drivers of a good Risk Governance performed by a Risk Committee of European banks?

The hypotheses derived from the research questions and the methodology to tests these will be discussed in-depth in the relevant Chapter 5 of this study.

1.4 Relevance to Theory and Practice

The contribution of this dissertation project is twofold: It will add value to academic research and have practical implications, both on bank and country level.

From an academic perspective, the project will contribute to the existing research string evolving around Corporate Governance of banks in three ways. First, it focuses on European banks, which are currently under-researched in the prevailing academic research on bank governance. Hence, theories tested in the United States of America (USA) context can be tested in a European set up for consistency and validity. Second, the project focuses specifically on Risk Governance mechanisms with respect to the risk committee at board level, its impact on the performance as well as the risk profile of a bank through the cycle. This has not been examined in this level of detail, based on the literature review of the author. Additionally, the author covers a longer period of time, containing three crises, which further adds value as a test for consistency and validity. Third, a mixed-method approach will be applied. Hence, the focus will not only be on quantitative data, but on qualitative data as well. Practitioners themselves are being consulted and might provide further insights to the social processes behind the numbers.

To achieve this the study applies Fixed and Random effects estimation techniques, which are popular in Corporate Governance research. More robust techniques such as a dynamic systems General Methods of Moments (GMM) estimator are also being applied to allow for a better controlling of endogeneity.

Thereby, the study adds further value to the existing string of research around endogeneity issues within Corporate Governance research (Wintoki, Linck & Netter, 2009; Love, 2010; Schultz, Tan, & Walsh, 2010).

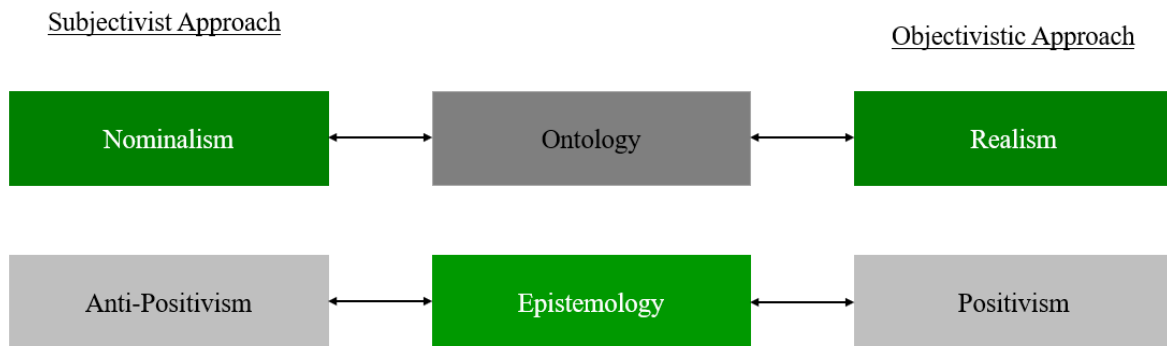
The practical implications of the study are twofold. Firstly, most regulators perceive Corporate Governance of banks as one of the most important drivers of their robustness. Results of this study can add value to this hypothesis by testing and validating the proposals made by regulators, academia as well as experts. This might have implications on the future rule-setting not only on a country-, but on bank-level as well.

Furthermore, it might be possible to establish a guide of best practice for Risk Governance at boards of banks. This is especially important as regulators in scope are applying the proportionality principle (FINMA, 2016; EBA, 2017). The proportionality principle allows for prioritisation of single rules, especially for smaller banks.

1.5 Scientific Approach

In order to find the right research setting and methods, the author first needs to determine his philosophical approach to science. A useful guide to do this is being provided by Burrell and Morgan (1979), who developed a concept of sociological paradigms or in other words, explained the nature of the social sciences. Philosophical categories relevant in the context of this dissertation, which need to be determined, are the ontology as well as the epistemology as shown in the picture beneath.

Figure 1: Scientific Approach



Source: Burrell and Morgan (1979, p. 3).

Ontology is of Greek origin and translates into “the study of being”. Many philosophers have broadly applied it over the last centuries. However, in the context of Corporate Governance and the broader field of management science, the relevant question is, whether the research subject is external, meaning it can be observed by the researcher, or whether it is internal, meaning it is being created by the researcher’s consciousness (Burrell & Morgan, 1979). If one assumes the latter, it is called nominalism and if one assumes the former, it is called realism.

The other category that needs to be determined is epistemology. It is of Greek origin as well and means “the study of knowledge”. The key question in answering the philosophical approach is, what is knowledge and how can it be discovered (Burrell & Morgan, 1979)? If one follows the assumption that knowledge is real, material and transferable, it is called positivism and if a researcher assumes that knowledge is of an intangible and transcendence nature, it is called anti-positivism.

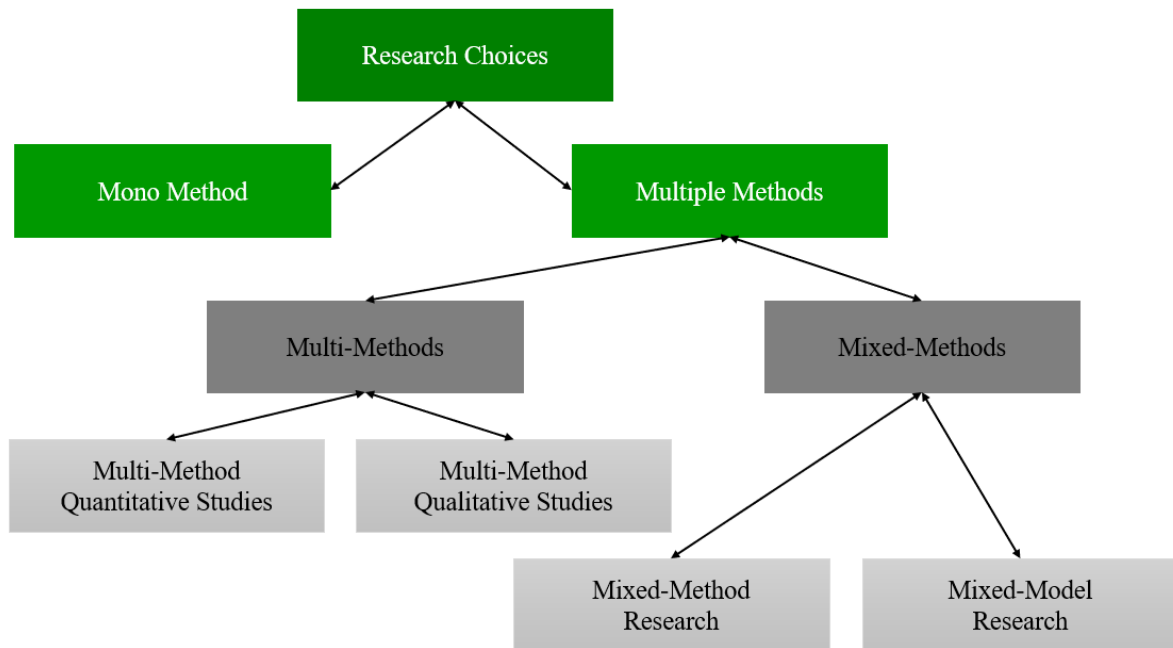
Furthermore, the figure above shows two high-level categories called the subjectivist and the objectivistic approach. The subjectivist approach is linked to nominalism on an ontological level and to anti-positivism on an epistemological level. Research conducted in this category often tries to find out why things are happening and builds a new theory rather than testing an existing one (Gontarek, 2016). An example for this approach of research is the grounded theory developed by Glaser and Strauss (1967), which tries to build a theory based on data collection of social processes and develops hypotheses based on these. The objectivistic approach is linked to realism at the ontological level and positivism at the epistemological level. Research following this stream of philosophy tests an existing theory based on data sampling and deduces hypotheses based on the existing theory (Gontarek, 2016). If needed, the theory is adjusted based on the outcome of the tests that are conducted by the researcher.

Studies that cover Risk Governance or on a broader level bank Corporate Governance mainly take an objectivistic approach to test existing theory based on large samples of governance as well as performance or risk measures (Fernandes et al., 2018). However, this purely quantitative approach has its limitations, as it does not fully account for social processes that are part of the Corporate Governance of banks (Nikulina, 2012). Johnson and Onwuegbuzie (2004) state that purists often defend the two paradigms of the two approaches as being two incompatible poles. Nevertheless, Saunders, Lewis and Thornhill (2005) argue that in a more complex and dynamic world this extreme view is not appropriate and advocate for using a pragmatic approach, which is able to combine the two extremes. It is therefore assumed that both the observable facts and the subjective meanings can add value to answering a research question, leading to a mixed-method approach being applied (Saunders et al., 2005). Nikulina (2012) further argues that if one wants to add value to business practice as well as rigour in academic research a mixed-method approach could be the right choice. In following this line of argumentation and contrary to the mainstream of research in the field of Risk Governance the author of this study will apply a mixed-method approach to answer the research question in scope.

1.6 Research Design

After clarifying the scientific approach or better said philosophical stance the author will define the general plan on how to answer the research questions and to decide on the relevant research design (Saunders et al., 2005). To build the research design, it is important to first decide on the purpose of the study, which can be exploratory, descriptive or explanatory according to Saunders et al. (2005). As the author wants to assess the causal relationship between Risk Governance measures and the risk or performance of a bank, the purpose is clearly of explanatory nature. Quantitative or qualitative data could be used to assess the research problem and to answer the research question.

Figure 2: Research Design



Source: Saunders, Lewis, Thornhill (2005, p. 152).

The figure above shows the decision tree for determining a research method. It combines data-collection as well as analysis techniques. According to Saunders et al. (2005), a proper way to differentiate between the techniques is the use of numeric and non-numeric data for collection and analysis. On the left-hand side, the mono method is shown. It is understood as a situation where research is either purely numeric or non-numeric in nature and uses only one data collection technique. On the right-hand side, the multiple methods section is shown. It

combines different techniques and approaches and the multi-methods stream explains the use of different data-collection techniques used in one study. In both cases the data-collection is limited to either purely numeric (quantitative) or non-numeric (qualitative) techniques. In contrast, the mixed-methods approach combines the two approaches, either at data collection or analysis level. In mixed-method research, the two are used either at the same time or in sequential order (Johnson & Onwuegbuzie, 2004). Mixed-model research combines the two techniques as well but goes one level further and analyses numeric data with non-numeric techniques or the other way around.

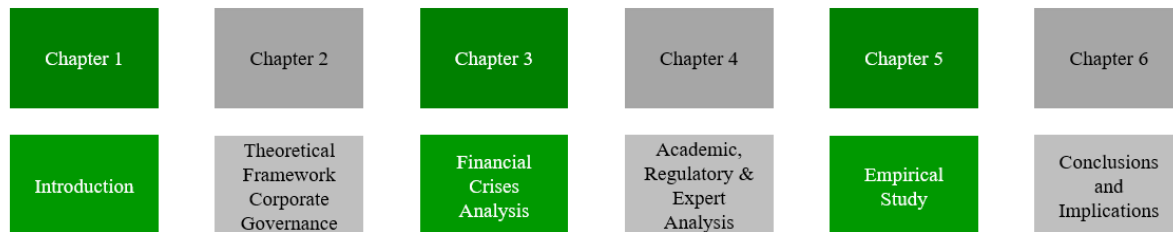
The author decided to use a mixed-method research approach as applying a one-dimensional research design might add more value, according to Johnson and Onwuegbuzie (2004). However, the approach will be sequential, and the quantitative approach will be dominating the qualitative approach. Therefore, the author will use semi-structured interviews (non-numeric) with practitioners to further facilitate the derivation of the hypotheses being tested in a quantitative way, but also to gain a better understanding of social processes or real-life problems. Neither of these can be observed in research being conducted so far.

A mixed-methods approach does not only bring advantages but comes with disadvantages as well. The first and foremost is connected to time. As two sorts of data sampling techniques are being used, it is very time-consuming for a researcher to conduct both types of data collection. Additionally, sometimes qualitative data e.g. in form of interviews might be harder to gather than quantitative data e.g. financials (Johnson & Onwuegbuzie, 2004). Furthermore, it is also more challenging for the researcher as he must understand and properly apply the different techniques of academic research. However, according to Saunders et al. (2005) and Johnson and Onwuegbuzie (2004), it is worth the effort, as the results can strengthen the results of the overall study and add practical relevance. The specific limitations and biases linked to the single research techniques in the study will be explained in more detail in Chapter 4.3. and 5.3.

1.7 Structural Approach

In order to achieve the research objectives, the author structured the dissertation project into six chapters as shown below.

Figure 3: Structural Approach



Source: Own development.

Chapter 1 is the introduction of the study and sets the stage by describing the research problem and the connected research questions. It also outlines the research gap and describes the relevance of closing the gap for theory as well as practice. Lastly, the chapter explains the conceptualisation of the research being conducted by the author as well as the scientific and structural approach explained in this paragraph.

Chapter 2 discusses the theoretical framework of the study. The chapter contains an in-depth analysis of Corporate Governance theories, which aids in deciding, which of these being the main framework for this study. Furthermore, the question of whether Corporate Governance for banks is different from that of corporates will be answered and relevant conclusions regarding the governance setup will be drawn. In a third step, the concept of Risk Governance for banks is introduced on the fundament of the governance mechanisms described before. Based on this, in a further step, the roles and responsibilities of the supervisory function of a bank in the form of the board and its committees will be discussed.

Chapter 3 describes the concept of a financial crisis and provides an in-depth analysis of the three latest financial crises to hit the European continent. The discussion helps to understand which externalities banks face during those times and what it means for the supervisory function of a bank to steer through rough water. Furthermore, it contributes to the setting of the framework for the empirical

part, where one of the core elements driving a bank's risk profile and performance is the occurrence of a financial crisis.

Chapter 4 of this study is structured in three sections. It approaches the research object from different perspectives. An analysis of the regulatory view on the roles and responsibilities of the supervisory function of a bank is performed. The focus lies on the developments in Europe as explained in the research gap. Less research has been performed despite the latest developments taking place in Europe. Furthermore, the analysis leads to the setup of Risk Governance measures, which are the basis for the further research conducted throughout the study. As a second step a literature review will be conducted. The focus will be whether and how other researchers have covered the research object and the respective questions. The outcome provides a framework on which the author can base his research and connect the results of his study. In a third section an additional perspective on the research object is gained by interviewing experts that perform their role and responsibilities regarding Risk Governance on a day to day basis in European banks.

Chapter 5 contains the empirical part of this study. The foundation of this part are the results derived in Chapter 4 especially regarding the key measures that should be implemented by a board to enhance its performance on Risk Governance from an academic, regulatory as well as expert perspective. Based on this, the hypotheses for the empirics are derived. These are tested in the following part of the chapter for 157 European banks through the economic cycle from 1999 to 2015. After an in-depth discussion of the descriptive statistics, the author tests the hypotheses with commonly used Fixed and Random Effects estimators. However, as these do not account for all relevant sources of endogeneity, the author also applies a dynamic systems GMM estimator. In the final stage, the results will be summarised and discussed.

Chapter 6 is the concluding chapter of this study and sets the results of the empirical part in the context of the academic, regulatory as well as expert analysis of Chapter 4. Based on these the theoretical and practical implications of the results are laid out. Furthermore, limitations of the study along with room for future research is being discussed.

2 Theoretical Framework

The next chapter provides an overview of the current academic status and discourses of Corporate Governance theories, which is needed as a theoretical foundation of the dissertation. To begin, the different theory streams of Corporate Governance following the strategic choice as well as the institutional perspective are analysed and explained. Focus is laid on the analysis of two theories, namely the Agency Theory and the Stewardship Theory as these are the most frequently used frameworks for the discussion of Corporate Governance problems in the context of banking based on the author's literature review. Secondly, the author explains the role of the board in the context of Corporate Governance in order to provide a further base to answer the research questions. Focus is set on board structures as well as the setup of European boards. Furthermore, the responsibilities and tasks of the board are described in more detail. Thirdly, after having described the theoretical basis and its implications on a corporation's board the author then discusses, whether bank governance is different from governance of a normal corporation. This is especially important as the theories described in part one of the chapter have their focal point on non-financial corporations. This means that Corporate Governance mechanisms which show positive results in such a corporation might not work properly if the governance of banks is different. Lastly, based on the specific governance issues of banks the concept of Risk Governance is introduced, which should help to mitigate the issues. The focus will be on the one hand on the board and on the other hand on the board committees with regard to their roles and responsibilities.

2.1 Introduction to Corporate Governance

The topic of Corporate Governance, related problems and approaches to solve associated challenges already evolved several centuries ago. Antonio, the protagonist of Shakespeare's *The Merchant of Venice* (1600) must rely on the success of others while watching his ships sail away in order to repay his own debt. Adam Smith stated in 1776, "The directors of companies (...) being the managers of others people's money rather than their own, cannot well be expected that they should watch over it with the same anxious vigilance with which they

would watch over their own.” Both shows the dilemma of the agency problem. As soon as the owner (the principal) of wealth delegates the management of her or his assets to someone else (the agent) the influence of the owner decreases and it must be ensured “...that the agent acts solely in the interest of the principal” (Tricker 2012, p. 59). The emergence of joint-stock limited-liability companies in the 19th century tremendously increased the number of directors/agents working for shareholders/principals. With its limited liability for shareholders, the joint-stock company promoted business growth, provided capital, encouraged innovation, assured employment and created overall wealth (Tricker, 2015).

Following several large-scale corporate scandals, Corporate Governance is more crucial and important than ever before and research and developments in this academic field have grown enormously over the last decades.

According to Shleifer & Vishny (1997, p.737), Corporate Governance is about “...the ways that suppliers of finance to corporations assure themselves of getting a return on their investment”. The Organisation for Economic Co-operation and Development (OECD, 2015, p. 9) defines Corporate Governance in a more protracted way:

“Corporate Governance involves a set of relationships between a company’s management, its board, its shareholders and other stakeholders. Corporate Governance also provides the structure through which the objectives of the company are set and the means of attaining those objectives and monitoring performance are determined. Good Corporate Governance should provide incentives for the board and the management to pursue the interests of the company and its shareholders, and should facilitate effective monitoring.”

Corporate Governance theory focuses in many cases, on the principal-agent problem, which arises between shareholders of a company and the acting management which will be further outlined at a later stage of this chapter. Research on the topic was mainly stipulated by different corporate scandals in the last and the present century. The early attempts to prevent such corporate scandals in the future, focused solely on the welfare of shareholders and this approach is still prevalent in the Anglo-American Corporate Governance models (Douma & Schreuder, 2013). Contemporary approaches also take social welfare of

stakeholders into account. Major contributions to principles of good Corporate Governance were made by three reports: the Cadbury Report (1992), the Principles of Corporate Governance by the OECD (1998) and the Sarbanes-Oxley-Act (SOX, Government Publishing Office, 2002). Core principles, based on the Principal-Agent Theory that are mentioned within these reports, which should prevent new corporate scandals are: - to respect and treat shareholders equally,- to respect stakeholders and recognise their interest in the corporation, - to recognise the responsibility of the Board of Directors, - to act ethical and with integrity, - to provide transparency through disclosure. Those principles could be, according to the mentioned reports, achieved by different mechanisms, which include the monitoring of the management by the supervisory function of the Board of Directors, remuneration schemes that align the interest of the shareholders and management as well as oversight by block holders as a substitute of the oversight of the Board of Directors. Furthermore, an efficient and effective internal control system must be established in order to measure, control and validate corporate transactions.

Daily and Dalton (1994, p. 646) show a relationship between “...the level of supervisory board’s self-reliance and company performance – the more independent the board, the higher the quality of management and the better company performance”.

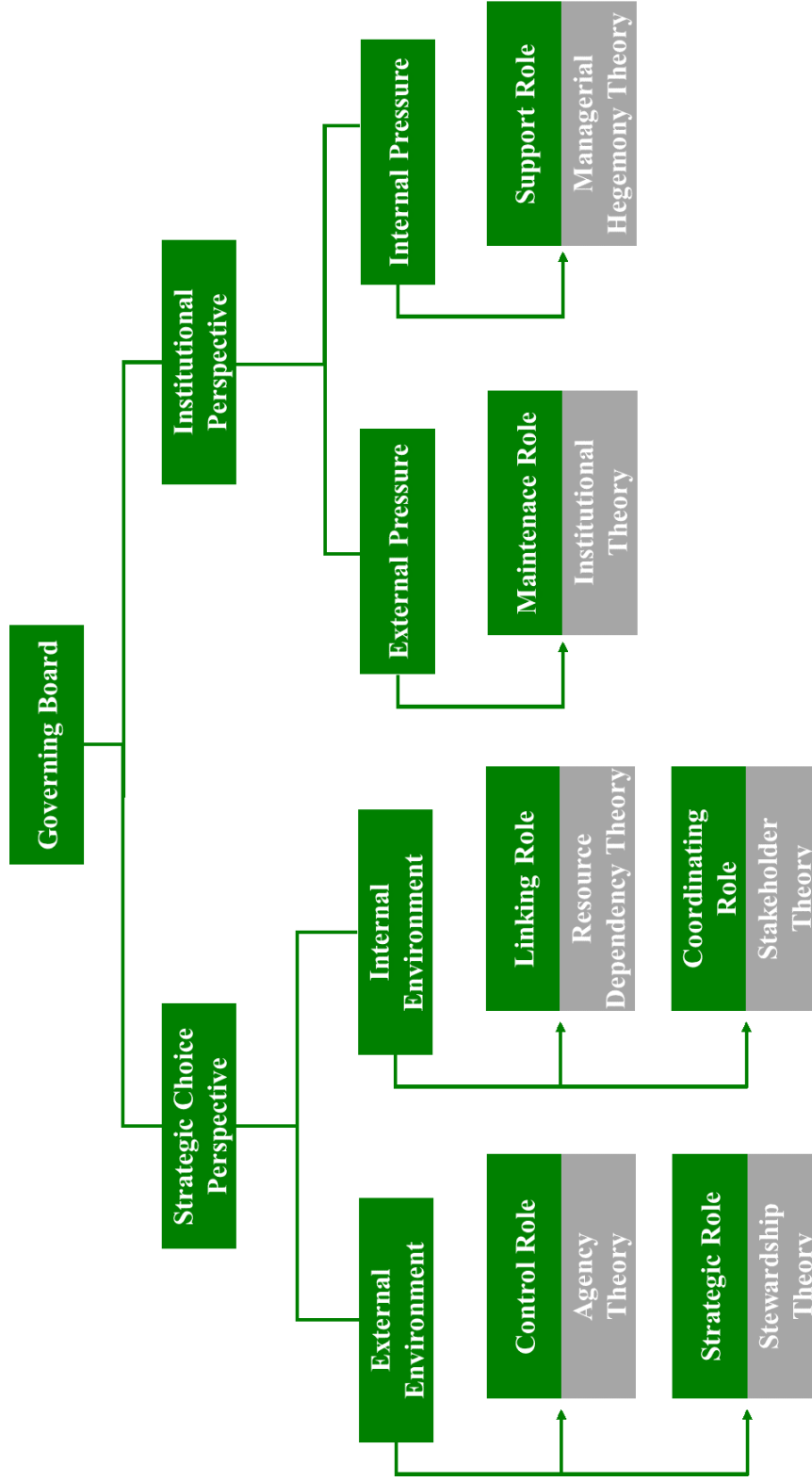
The next chapter elaborates the major theories on Corporate Governance including the roles and responsibilities a firm’s management and the Board of Directors should take, respectively. The obligations and liabilities outlined are independent of the Corporate Governance model the corporation is governed under.

2.2 Overview of relevant Corporate Governance Theories

“The Board of Directors is legally responsible for setting the strategic direction of the firm and for ensuring the firm’s long-term performance in almost all governance environments. However, many boards delegate part or all of the task of creating and executing the firm’s strategy to a group of full-time professional managers. This separation between ownership and control creates many challenges for the modern-day firm” (Judge & Talaulicar, 2017, p. 51).

The role which the Board of Directors plays in this context is a multidimensional subject and as of today, no single theory has been able to combine all aspects adequately. Hung (1998) developed a flexible typological approach to structure and classify the current research status and moreover to identify and compare the main theories and their characteristics regarding the governing board with each other. Following Hung (1998, p. 101) the main functions a Board of Directors’ holds are “...linking, coordinating, control, strategic, maintenance and support roles”. Hung (1998) linked the named functions with the major theories on Corporate Governance. Based on the results of Judge and Zeithaml (1992), a distinction is made between the strategic choice or extrinsic perspective and the institutional perspective also referred to as intrinsic perspective. The overview is depicted in the figure below.

Figure 4: Corporate Governance Theories



Source: Hung (1998, p. 105).

2.2.1 Strategic Choice and External Perspective

The strategic choice perspective fosters non-deterministic explanations and focuses on the actions taken by organisations and their members to adapt to their environment. The larger a company becomes, the greater the influence it has on the environment. This accounts for both the internal and external environment. Following Scott's (1992) approach, Hung (1998, p. 103) describes the internal environment of a firm as "...task variability, task difficulty and task interdependency, as well as organisational structure in terms of its complexity, degree of centralisation and communication network". According to Tricker (1994), the major function of a governing board should be the internal environment. In this context, two divergent strands exist. The first is based on the Cadbury Report published in 1992 which stipulates a control role the board should take. It states that:

"...boards of directors are responsible for the governance of their companies. (...) The responsibilities of the board include setting the company's strategic aims, providing the leadership to put them into effect, supervising the management of the business and reporting to shareholders on their stewardship" (Cadbury Report, 1992, p. 15).

Contrary to this are the proposals of Hilmer (1993) who states that "the board's key role is to ensure that corporate management is continuously and effectively striving for above-average performance, taking account of risk" (Tricker 2015, p. 14). Hence, a close management monitoring of the management and the firm is not required.

According to Altman, Valenzi and Hodgetts (1985), external factors mainly influencing an organisation are technology, environmental volatility and dependence on external forces. These external factors are essential for defining the roles and responsibilities of the governing board. Mintzberg (1983, p. 79) states that

"...the real problem is the need for external control of the organisation, control independent of the management. It is not controlled by the board per se that matters, but control by the External Coalition, the board being merely the formal manifestation of it."

If a board member is employed in more than one board this might lead to a linkage between the respective corporations. Furthermore, the interests of different stakeholder groups need to be considered and coordinated.

Principal-Agent Theory and Stewardship Theory consider the outside environment and respectively focus on the role of the board related to its control function. The internal environment of a firm together with the linking and coordinating role are considered by the Resource Dependency Theory and Stakeholder Theory. The named scientific approaches are further detailed below.

2.2.2 Principal Agent Theory

“Whenever one individual depends on the action of another, an agency relationship arises. The individual taking the action is called the agent. The affected party is the principal” (Pratt & Zeckhauser, 1985, p. 2).

Principal-Agent or short Agency Theory has its roots in the rational economic model of man (Davis, Schoormann & Donaldson, 1997). A rational acting person is going to aim to maximise personal wealth and mainly try to achieve personal objectives. Hence the agent might not behave in the interest of the principal (Jensen & Meckling, 1976). From an academic point of view, modern companies are led by managers who do not need to be shareholders of the companies and can be considered as a nexus of contracts between different individuals (Jensen & Meckling, 1976). Those contracts are not only closed between shareholders and management, but also between employees, suppliers, creditors and customers. However, those contractual relationships are associated with costs, namely, agency costs, which arise when “one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision making authority to the agent” (Jensen & Meckling, 1976, p. 308). If both agent as well as principal likewise are utility maximising rational individuals, it might be almost impossible that the best choice is taken by the agent for the principal. This situation can also be described as a conflict of interest. Therefore, the risk of the decisions made by the agent is carried by the principal, who has no direct control over the decision-making process. The Agency Theory identifies mechanisms in order to minimise the loss of the

principal and the conflicts with the goal of maintaining a functioning principal-agent relationship (Donaldson, 1990). Problems and possible solutions along with associated costs are introduced in the following.

Conflicts of the principal-agent relationship can be categorised into two groups, i.e. moral hazard and adverse selection according to Eisenhardt (1989).

The latter one is

“...the misrepresentation of ability by the agent. The argument here is that the agent may claim to have certain skills or abilities when he or she is hired. Adverse selection arises because the principal cannot completely verify these skills or abilities either at the time of hiring or while the agent is working” (Eisenhardt, 1989, p.61).

The adverse selection problem is also referred to as hidden characteristics (Göbel, 2002) and the following example illustrates the conflict. Before a principal, e.g. the board of a multinational corporation concludes a contract with a potential agent e.g. a person who is supposed to become an executive manager in the mentioned company, the hiring persons try to evaluate whether the candidate is suitable for the position. However, it is often not possible to assess the candidate's qualification completely. Hence, the danger is in choosing the wrong applicant.

Moral hazard problems arise after a contract has been concluded and are according to Eisenhardt (1989, p.61), the “...lack of effort on the part of the agent. The argument here is that the agent may simply not put forth the agreed-upon effort. That is, the agent is shirking”. Hess (1999) outlines that moral hazard conflicts can be divided into two aspects. The first one is a hidden action, meaning that the principal cannot monitor and control all activities of the agent. Hidden information as the second dimension of moral hazard problems describes the fact that the principal can monitor the agent's actions but is however not able to judge on the result. It is not possible, in both cases, for the principal to evaluate whether the provided outcome of the work is a result of the agent's efforts or if external factors were involved.

To minimise the conflicts mentioned before, two solutions are possible and the first one is to establish monitoring systems in order to decrease information

asymmetry. This could be for example, by setting up reporting processes or budgeting approval procedures (Eisenhardt, 1989). Regarding job applicants, the mandatory proof for qualification like job references and certificates should be implemented in corporations (Hess, 1999). The mentioned measures reveal the behaviour of the manager to the principal. A second possibility to reduce conflicts arising between principal and agents is the establishment of incentive schemes. The interests of the parties are adjusted to each other via an outcome-based contract (Eisenhardt, 1989). This could, for example, be a bonus depending on the achievement of certain revenue goals.

Taking the two possible solutions into account, it should be noted that they can be of a positive or negative nature. In cases where the outcome of work becomes visible only after several years the repayment of a bonus or a penalty payment are conceivable measures if the result is not as agreed between principal and agent. (Hess, 1999)

The introduced measures could harmonise the interest of the principal with the agent. Nevertheless, these measures are not for free and incur agency costs. Following Jensen and Meckling (1976, p. 308) such cost can be divided into:

- “Monitoring costs for the principal (incentive payments to the agent and oversight costs),
- bonding costs for the agent (resources expended to guarantee acting in favour of the principal),
- residual loss (the agent takes decisions, not maximising the welfare of the principal and hence result in a loss).”

Among the three categories of agency costs, which will never be zero, trade-off relations exist (Picot, 1991). It is for example possible to decrease the residual loss by increasing the expenses for controlling and monitoring.

In the frame of this dissertation, the role of boards should be analysed and the takeaway from this section is that from a Principal-Agency Theory perspective the board has to fulfil a controlling as well as monitoring role (Hung, 1998) and that incentive schemes can be used to align interests of shareholders and managers.

Critics, however, argue that research in the context of Principal-Agency Theory, focuses too much on quantitative data and that the behaviour of the board is not limited to several contracts triggering certain monitoring actions. They summarise that “statistical methods will not explain the reality of the boardroom” (Tricker, 2015, p. 63). A further aspect of criticism outlined by Tricker (2015) is of more philosophical and psychological nature. It is connected to the general idea of Agency Theory hypothesizing that all agents are selfish and only interested in personal goal achievement. Hence, they cannot be trusted. The next paragraph will show a theory, which takes this point of criticism into account.

2.2.3 Stewardship Theory

Stewardship Theory is based on sociological and psychological aspects stipulating that managers value the interests of the whole organisation more than their own (Davis et al., 1997). The foundation of these aspects lies in “theory Y” introduced by McGregor in 1960 and focuses on inner human motivation. It describes the general relationship between employees and their managers. It assumes that employees perceive work as natural and that they have an inner drive to be creative. Regarding management, theory Y stipulates that it

“...is responsible for organizing the elements of productive enterprise—money, materials, equipment, people—in the interest of economic ends. (...) The essential task of management is to arrange organisational conditions and methods of operation so that people can achieve their own goals best by directing their own efforts toward organisational objectives” (McGregor, 1997, p. 207).

A further theory, which is contrary to the one described before is called Theory X and presumes that employees try to work as less as possible and wants to be led. Aspects of Theory X are reflected in Principal-Agent Theory which has been discussed in the previous section.

Essential for the Stewardship Theory is the legal view of the company along with the assumption that managers are reliable and trustful. This approach is hence the opposite of Principal-Agency Theory. Every firm is an autonomous legal entity, whose owners (principals) appoint managers and directors acting as stewards (agents). The stewards report to the board supported by reports of independent

auditors showing the true accounts of the company (Tricker 2015). So far, the theories correspond with each other. However, the pursuit of individual objectives of the stewards to the detriment of the owners is not part of the Stewardship Theory. This is because of the psychological behavioural patterns. According to the theory, motivation triggered by financial aspects decreases over time. Main motivational factors are intrinsic aspects such as increasing responsibility in a company, challenging tasks or the improvement of the firms' reputation (Velte, 2010).

The legal duty of the stewards is towards the shareholders and to no other group including themselves. Different from the Agency Theory, the Stewardship Theory holds the view:

“...that there is no conflict of interest between managers and owners and that the desideratum of governance structure is to find an organisational structure that allows coordination to be achieved most effectively. (...) Managers are not opportunistic agents, according to this theory, but good stewards” (Donaldson, 1990, p. 9).

Hung (1998) points out that a non-alignment of interests between owners and management does not exist.

“Given a choice between self-serving behaviour and pro-organisational behaviour, a steward's behaviour will not depart from the interests of his or her organisation. A steward will not substitute or trade self-serving behaviours for cooperative behaviours. (...) the behaviour of the steward is collective because the steward seeks to attain the objectives of the organisation (e.g. sales growth or profitability). This behaviour, in turn, will benefit principals such as outside owners (through positive effects of profits on dividends and share prices) and also principals who are managerial superordinates, because their objectives are furthered by stewardship theory” (Davis et al., 1997, p.24).

The governing board in this context should be responsible for defining strategy-related decisions and guiding the management to successfully reach the goals and objectives set. It has, therefore, a “performance function” respectively a “strategic role” (Hung, 1998, p. 106). Nevertheless, it is inevitable to analyse stewardship and board involvement regarding the existing models, meaning the One-Tier and Two-Tier Model of boards.

Considering their research results regarding Stewardship Theory Donaldson and Davis (2001, p. 52) support a dual role of the CEO who

“...exercises complete authority over the corporation and that their role is unambiguous and unchallenged. This situation is attained more readily where the CEO is also chair of the board. Power and authority are concentrated in one person. (...) The organisation will enjoy the classic benefits of unity of direction and of strong command and control. Thus, stewardship theory focuses not on the motivation of the CEO but rather facilitative, empowering structures, and holds that fusion of the incumbency of the roles of chair and CEO will enhance effectiveness and produce, as a result, superior returns to shareholders than the separation of the roles of chair and CEO.”

The Two-Tier Model seems at first glance only to be supported by Agency Theory because the implementation of monitoring-mechanisms is not necessary for Stewardship Theory (Velte, 2010). However, the installation of an oversight function in a board of a corporation can also be explained by stewardship whereby the control function is not the primary reason. Koufopoulos and Gkliatis (2018, p. 48) summarise that “a separate but ‘affiliated’ board structure tends to develop trust, empowerment, and provide ease of communication all of which are needed for effective functioning.” The board rather fulfils a consulting function and promotes an adequate environment. It is therefore also recommended to support a change from executive management to the board in order to gain efficiency and effectiveness on the overall corporate level (Velte, 2010).

Critics of the Stewardship Theory state that it does not reflect reality in modern corporations of the 21st century. Tricker (2015) determines that in large listed companies the owners became remote from the corporation. Following several scandals in the last century “...the trust directors owed under the stewardship model had been undermined, and that this erosion of trust had adversely affected the well-being of investors, employees, and communities” (Tricker, 2015, p. 67). Moreover, the disregard of conflicts of interest as well as asymmetry of information is not in line with realistic conditions (Velte, 2010).

2.2.4 Comparison of Principal-Agent Theory and Stewardship Theory

Principal-Agent Theory and Stewardship Theory differ from each other in several aspects and can be divided into a psychological and situational dimension. Davis et al. (1997, p. 37) developed such a comparison which is shown in the table below.

Table 1: Comparison of Principal-Agent Theory and Stewardship Theory

Criteria	Principal-Agent-Theory	Stewardship-Theory
Approach	Model of Man	Self-actualizing man
Behaviour	Self-serving	Collective-serving
Psychological Factors		
Motivation	Extrinsic Lower order/economic needs (physiological, security, economic)	Intrinsic Higher-order needs (growth, achievement, self- actualisation)
Social comparison	Other managers	Principal
Power	Institutional (legitimate, coercive, reward)	Personal (expert, referent)
Situational Factors		
Management Philosophy	Control oriented	Involvement oriented
Risk orientation	Control mechanisms	Trust
Time frame	Short term	Long term
Objective	Cost control	Performance enhancement
Cultural differences	Individualism	Collectivism
	High power distance	Low power distance

Source: Davis et al. (1997, p. 37).

Psychological Factors

The model of man is the fundamental differentiation criteria between the theories. Argyris (1973, p. 253) promoted a “more complex and humanistic model of man” and claims for a “self-actualizing man”. According to the theory it is in human nature to “grow beyond their current state and reach higher levels of achievement” (Davis et al., 1997, p. 27).

Following Agency Theory, the agent is motivated by external incentives that have a measurable value. The incentives are likewise used as a controlling instrument. The motivational factors of Stewardship Theory are intrinsic, e.g. affiliation or growth and are not easy to quantify.

Power is used by managers to influence and guide others in the direction they desire. Depending on the objective, this can be the achievement of personal or organisational goals. Davis et al. (1997, p. 31) define a manager with a large amount of power as someone who "influences or directs other people; expresses opinions forcefully; enjoys the role of leader and may assume it spontaneously". In order to identify whether power is used due to stewardship or agency triggered aspects the typology of French and Raven (1959) combined with Gibson, Donnelly, Ivancevich and Konopaske (2012) are applicable. The former authors developed five categories of power, namely "reward power (...), coercive power (...), expert power (...), legitimate power (...), and referent power" (French & Raven, p. 151). The latter authors summarised the five categories into two groups, i.e. organisational and personal power.

"Legitimate, reward and coercive power are primarily prescribed by the organisation, the position, formal groups, or specific interaction patterns. A person's legitimate power can be changed by transferring the person, rewriting the job description, or reducing the person's power by restructuring the organisation. In contrast, expert and referent power are very personal" (Gibson et al, 2012, p. 294).

Organisational power is inherent to the Agency Theory because it influences the principal-agent relationship driven by rewards and incentives for the agent. Coercive power is used to control an agent for example via the potential termination of the employment contract. Personal power characterised by expert knowledge and charisma of a person is not related to a certain position or the organisational structure (Davis et al., 1997).

Situational Factors

"The management philosophy of an organisation creates a context in which the choice of agency or stewardship relationships is made by principals and managers. Control-Oriented management philosophy is more likely to produce choices of Agency Theory relationships, whereas an involvement-

oriented management philosophy is more likely to produce stewardship theory relationships“ (Davis et al., 1997, p. 34).

The authors further refer to Lawler (1986, 1992) who states that an involvement-oriented environment fosters self-management including relevant control steps and does not differentiate between an executing and controlling level, whereas a control-oriented environment suggests the opposite.

Hofstede's (1983) research concerning individualism and collectivism as well as power distance is an important factor regarding the cultural aspects to compare Agency and Stewardship Theory. He defines culture as "...collective mental programming...", meaning the "...part of our conditioning that we share with other members of our nation, region, or group but not with members of other nations, regions, or groups..." (Hofstede, 1983, p. 76).

Individualism and collectivism are described by Hofstede (1983) as the two ending points of a scale. The ties between members of an individualistic society are loose and allow a high level of self-realisation and freedom for individuals. Collectivism on the other side of the scale is characterised by very close boundaries between members of the society. Everybody looks out for each other and personal objectives are put aside. The individual in return receives protection from the group. The original results relating to nations can be transmitted to organisations. In collective organisations, which relate to Stewardship Theory, success is measured by the achievements of the whole group. The organisation strives toward harmony and tends to avoid disputes. However, conflicts are perceived as an opportunity in individualistic organised firms which might result in more open and direct communication. Such companies and firms valuing the achievements of individual employees including managers will apply an Agency Theory-based leadership.

Power distance evaluates how a society deals with inequality among members.

“In organisations, the level of Power Distance is related to the degree of centralisation of authority and the degree of autocratic leadership. This relationship shows that centralisation and autocratic leadership are rooted in the "mental programming" of the members of society, not only of those

in power but also of those at the bottom of the power hierarchy” (Hofstede, 1983, p. 81).

In centralised organisations with high power distance, large differences between authority and earnings exist. Such institutions will implement agency relationships. In decentralised low power distance organisations, differences among members are smaller and the decision-making process involves several members of the group. Stewardship relations will be applied to the firm.

Both theories find empirical evidence as well as positive and negative aspects and it is, therefore, necessary to choose between Agent or Stewardship relationship (Welge & Eulerich, 2014).

Davis et al. (1997) point out that psychological and situational aspects together with the characteristics of the principal and the agent, are decisive factors in their decision whether they choose an agency or stewardship relationship among each other. The previous section outlined the general differences between the two approaches. However, implications in case the members of the organisation choose different approaches have not been considered.

Figure 5: Principal Manager Choice Model

		Principal's Choice	
		Agent	Steward
Manager's Choice	Agent	Minimize Potential Costs Mutual Agency Relationship 1	Principal is Agent Agent Acts Opportunistically Principal is Betrayed 2
	Steward	3 Manager is Frustrated Principal Acts Opportunistically Manager is betrayed	4 Maximize Potential Performance Mutual Stewardship Relationship

Source: Davis et al. (1997, p. 39).

The available options along with the respective outcome are similar to the prisoner's dilemma and are depicted above. Options 1 and 4 present no conflict. If quadrant one is chosen a clear principal-agent relationship will be implemented. Regarding Corporate Governance-related issues, the firm is going to implement a controlling function in order to observe the agent's behaviour who is going to try to maximise personal wealth and might behave adversely towards the organisation. In quadrant 4, a stewardship relationship is chosen both parties where the principal is going to empower the steward who gains satisfaction from the increasing performance of the firm. However, a problem occurs if the parties choose divergent options as shown in quadrant 2 and 3. If the second constellation is chosen by the participants, i.e. the manager enters into an agency relationship whereas the principal aims to introduce a steward relationship to the organisation, the manager is going to maximise personal wealth and objectives according to his or her characteristics to the detriment of the principal and the whole corporation.

When the manager decides to be a steward and the principal expects an agency relationship as depicted in constellation three, the manager will likely become frustrated over time and feel betrayed. The stewards feel that the principal exercises control and hence it is not possible for them to enjoy the rewards they desire, e.g. self-realisation. Moreover, if the whole business environment is organised according to the principles of Agency Theory the manager might experience decreasing self-esteem and will eventually lose the inner drive and motivation to fulfil the tasks required by the position. This, in turn, will negatively impact employees and the overall success of the firm.

The comparison of the theories including potentially arising conflicts showed positive and negative aspects of both. It can be concluded that especially multinational corporations will most likely face issues that can be described by both theories. However, it will be challenging to cope with the issues and to find one-fits-all solutions for them.

2.2.5 Resource Dependency Theory

In 1978 Pfeffer and Salancik developed the Resource Dependence Theory (RDT) which evaluates how corporations depend on external resources and how uncertainties and dependencies can be managed. They state

“...that to understand the behaviour of an organisation you must understand the context of that behaviour - that is, the ecology of the organisation. This point of view is important for those who seek to understand organisations as well as for those who seek to manage and control them” (Pfeffer & Salancik 1978, p.1).

The general arguments for the resource dependence perspective are according to Pfeffer (1987, p.26-27):

“(1) the fundamental units for understanding intercorporate relations and society are organisations; ours is a society of organisations (Prethus, 1978);

(2) these organisations are not autonomous, but rather are constrained by a network of interdependencies with other organisations;

(3) interdependence, when coupled with uncertainty about what the actions will be of those with which the organisation is interdependent, leads to a situation in which survival and continued success are uncertain; and, therefore,

(4) organisations take actions to manage external interdependencies, although such actions are inevitably never completely successful and produce new patterns of dependence and interdependence.

Furthermore, (5) these patterns of dependence produce inter-organisational as well as intraorganisational power, where such power has some effect on organisational behaviour.”

Pfeffer and Salancik (1978) introduce five options by which corporations can reduce these dependencies and they are explained briefly in the following section.

Mergers & Acquisition

Pfeffer (1976, p.39) outlines three reasons for corporations to engage in Mergers & Acquisitions (M&A):

“First, to reduce competition by absorbing an important competitor [sic] organisation; second, to manage interdependence with either source of input or purchasers of output by absorbing them; and third, to diversify operations and thereby lessen dependence on the present organisations with which it exchanges”.

Hillman, Withers and Collins (2009) outline that empirical evidence supports the propositions made by Pfeffer (1976) and that M&A transactions are closed between companies that depend on each other to reduce dependencies. For example, this is the case for the relationship of buyers and suppliers or between competitors.

Joint Ventures and Interorganisational Relations

Contractually defined cooperation between at least two firms also known as Joint Ventures (JV) or other forms of inter-organisational relations e.g. Research & Development agreements may help to acquire new resources for the participating corporations and to reduce interdependencies and uncertainty (Pfeffer & Salancik 1978). According to Hillman et al. (2009) research results for JVs and other inter-organisational relations are similar to the results found in the area of Mergers & Acquisitions although only partial absorption of the external factors is observed. Alliances between firms can also reduce complexity at the international and domestic level and gain resources for the participants. Like M&A agreements the likelihood of entering into Joint Ventures or other relationships is greater between firms that show mutual dependencies.

Boards of Directors

According to Pfeffer (1972), companies can gain resources and reduce dependencies also via their boards. This is feasible via four criteria board members contribute, i.e. “...advice and counsel, channels of information flow, preferential access to resources, and legitimacy” (Hillman et al., 2009, p. 1411). The role of the board is therefore not only the one of a monitor but rather a management partner that helps develop and establish strategies and policies for a company (Cohen, Krishnamoorthy and Wright, 2008). Cohen et al. (2008, p.184) continue by quoting J. Reingold who says that “many of today’s high-tech board members see their job as actively setting the company’s course. Indeed, on many

high-tech boards, outsiders are brought in for their connections or specific technical knowledge“. Board members are therefore building boundaries between the company and its environment (Tricker, 2015). Pfeffer (1972, p. 222) concludes that “...organisations (...) use their boards of directors as vehicles through which they co-opt, or partially absorb, important external organisations with which they are interdependent.”

Political Action

Firms themselves are not able to reduce interdependencies or uncertainties on a political level. Pfeffer and Salancik (1978, p.189) point out that “the organisation, through political mechanisms, attempts to create for itself an environment that is better for its interest” and that “organisations may use political means to alter the condition of the external economic environment”. Hence, corporations try to influence the government in order to shape regulations in a way that is favourable to and for the firms’ environment. Existing research that has been reviewed by Hillman et al. in 2009 (p. 1413) shows that

“(a) political action correlates with the degree of environmental dependency the firm faces,

(b) firms facing the same environment are likely to choose the same forms of political behaviour to manage it,

and (c) performance benefits accrue to firms that create linkages with the political environment.”

Executive Succession

Executive Succession “is itself one strategic response to environmental contingencies” (Pfeffer & Salancik 1978, p.248). The authors provide the model below:

“(1) the environmental context, with its contingencies, uncertainties, and interdependencies, influences the distribution of power and control within the organisation; (2) the distribution of power and control within the organisation affects the tenure and selection of major organisational administrators; (3) organisational policies and structures are results of decisions affected by the distribution of power and control; and (4) administrators who control organisational activities affect those activities and resultant structures.” (Pfeffer & Salancik, 1978, p. 228). Hence in case,

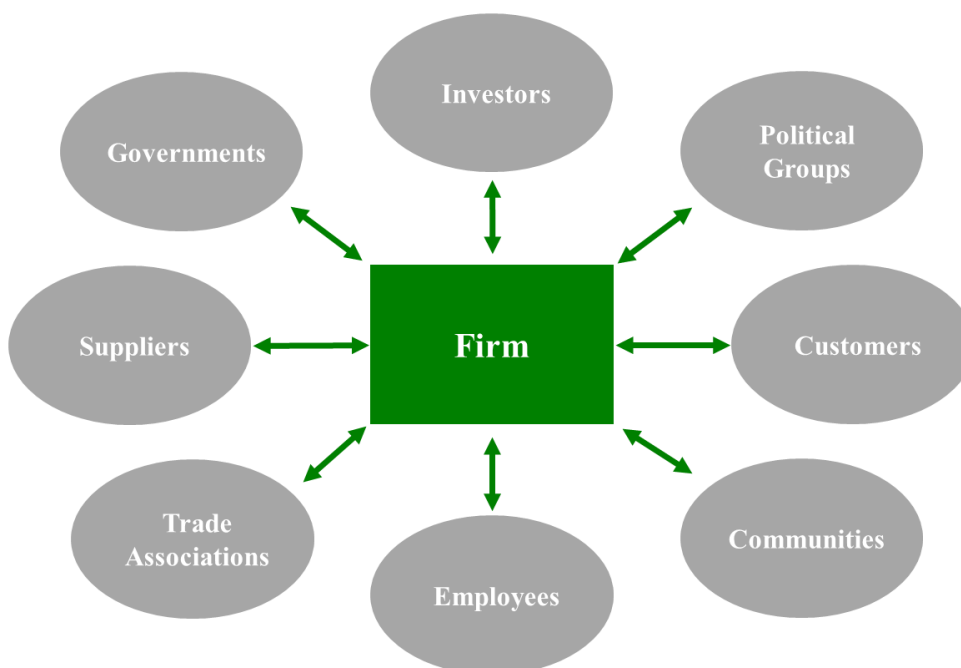
a corporation is not performing as desired, a change in management and especially of the CEO who is “capable of coping with the critical problems facing the organisation” might solve the problems (Pfeffer & Salancik, 1978, p. 236).

2.2.6 Stakeholder Theory

Stakeholder “means many different things to many different people and hence evokes praise or scorn from a wide variety of scholars and practitioners of myriad academic disciplines and backgrounds” (Phillips, Freeman & Wicks, 2003, p. 479). What is special about Stakeholder Theory is that it addresses ethical aspects such as values and morals as the central aspect of how to manage organisations (Phillips et al, 2003). Jones and Wicks (1999, p. 206) state that “this form of theory is (...), demonstrating how managers can create morally sound approaches to business and make them work.” Stakeholder management aims to satisfy all groups having a stake in the firm. It means to

“...manage and integrate the relationships and interests of shareholders, employees, customers, suppliers, communities and other groups in a way that ensures the long-term success of the firm. A stakeholder approach emphasises active management of the business environment, relationships and the promotion of shared interests” (Freeman & Mcvea, 2001, p. 69).

Figure 6: Stakeholder Approach



Source: Donaldson and Preston (1997, p. 69)

The figure above shows the different interactions with stakeholders in which a firm is involved in.

As part of the Stakeholder Theory, a company should provide one flexible framework to handle environmental changes without continuously adopting new strategic plans. This is because Stakeholder Theory is about strategic management and not about strategic planning. Whilst strategic planning tries to anticipate prospective changes of the environment, strategic management provides guidance to the corporation and considers how the firm interacts with the environment and vice versa (Freeman & Mcvea, 2001). Freeman (1994) formulates two central questions that firms' management should focus on according to Stakeholder Theory:

“First, it asks, what is the purpose of the firm? This encourages managers to articulate the shared sense of the value they create, and what brings its core stakeholders together. This propels the firm forward and allows it to generate outstanding performance, determined both in terms of its purpose and marketplace financial metrics. Second, stakeholder theory asks, what responsibility does management have to stakeholders? This pushes managers to articulate how they want to do business—specifically, what kinds of relationships they want and need to create with their stakeholders to deliver on their purpose” (Freeman, Wicks & Parmar, 2004, p.364).

The authors (Freeman et al., 2004) continue and state that value is created by people (e.g. suppliers, employees or customers) cooperating to improve the circumstances of all stakeholders. This should be fostered by the company which should create an environment that encourages and inspires all stakeholders to achieve the highest performance, customer service, value for the company and hence all participants benefit over time.

Critics of the Stakeholder Theory argue that the various objectives of the many different stakeholder groups including shareholders might diverge from each other and that “...it is impossible to maximise all stakeholder interests simultaneously” (Tricker, 2015, p. 72). Friedman postulated in 1962 (p.133) already that

“...few trends could so thoroughly undermine the very foundations of our free society as the acceptance by corporate officials of a social

responsibility other than to make as much money for their stockholders as possible. This is a fundamentally subversive doctrine. If businessmen do have a social responsibility other than making maximum profits for stockholders, how are they to know what it is? Can self-selected private individuals decide what social interest is?"

A new discipline emerged recently and aims to combine stakeholder and shareholder interests. Jensen (2001, p.299) originally calls the approach Value Maximisation Proposition and states that

"...managers must have a criterion for deciding what is better, and better should be measured by the increase in long-term, the market value of the firm. (...) managers should make all decisions so as to increase the total long-run market value of the firm. Total value is the sum of the values of all financial claims on the firm – including equity, debt, preferred stock, and warrants."

However, Jensen (2001, p. 309) concludes that

"...it is a basic principle of enlightened value maximisation that we cannot maximise the long-term market value of an organisation if we ignore or mistreat any important constituency. We cannot create value without good relations with customers, employees, financial backers, suppliers, regulators, and communities".

Eric Pichet (2011) further developed the approach and introduced the Enlightened Shareholder Theory, which is contrary to Jensen's approach when it comes to the focal point. He (Pichet, 2011, p. 361) summarises that "...it is the long-term interest of the firm that must be the aim of Corporate Governance and the constant concern of board members". Enlightened Shareholder Theory recognises that only if stakeholders' interest is satisfied, is corporate success possible and hence shareholder wealth will increase (Tricker, 2015). However, in contrast to Jensen (2001) Pichet (2011) used the Shareholder Theory as a basis and integrates ideas of the Stakeholder Theory instead the other way around. His (Pichet, 2011) main idea is that the ultimate goal of managers of a corporation should be to serve the interest of a company, which is to maximise long-term value. According to Pichet (2011) the long-term interests of the company and shareholders converge to each other and end in the aim to increase long-term profits. This should also help to identify the relevant stakeholder groups of a corporation as those should be

considered that are critical to the long-term success of a company. In order to do so management has to take shareholder, who are focused on value creation, as well as stakeholder interests into account an aligning it with the long-term value goal. This alignment should help (Pichet, 2011) to properly identify the relevant stakeholder groups of a company. Pichet (2011, p. 361) summarises that based on the before said Corporate Governance is a

“...system comprised of all of the internal mechanisms enabling shareholders to be informed of the proper functioning of their company, controlling it through their AGMs and by the powers they delegate to the Board of Directors, while ensuring corporate strategy in compliance with existing laws in the long-term interest of the firm.”

The mechanisms to govern such a corporation are not much different to the ones learned in the chapter on Principal-Agent Theory, but the definition of the principal has changed. Whilst before especially shareholders were in focus, the enlightened Shareholder Theory includes stakeholder that are critical to the long-term success of the company as well into this group. Therefore, their interests have to be considered will governing a corporation.

2.2.7 Institutional and Intrinsic Perspective

Resulting from institutionalisation and socialisation the institutional string as a deterministic framework outlines why and how organisational processes and structures are developed. The great emphasis for the explanation of an organisations' actions is placed on its social and environmental impact (Hung, 1998). Organisations are according to Meyer and Rowan (1977, p. 340)

“...driven to incorporate the practices and procedures defined by prevailing rationalised concepts of organisational work and institutionalised in society. Organisations that do so increase their legitimacy and their survival prospects, independent of the immediate efficacy of the acquired practices and procedures.”

A board acts therefore as an intermediary between the firm itself and the environment and strives to maintain a good relationship. Coase (1937) and Williamson (1988) argue that a corporation's management should primarily focus on the reduction of the transaction cost. The implementation of adequate

governance structures promotes achievement of this. However, the board only supports management decisions and does not play an active part in these decisions.

A focus on this intrinsic perspective is set by the Institutional and Managerial Hegemony theories which are described in the following chapters.

2.2.8 Institutional Theory

The Institutional Theory aims to describe the external pressure on a board, and it was introduced by Selznick in 1949 (p. 10) who stated that "...the most important thing about organisations is that, though they are tools, each nevertheless has a life of its own". He further stipulates that

"...institutionalisation is a process. It is something that happens to an organisation over time, reflecting the organisation's own distinctive history, the people who have been in it, the groups it embodies and the vested interests they have created, and the way it has adapted to its environment (...) to institutionalise is to infuse with value beyond the technical requirements of the tasks at hand" (Selznick, 1957, p. 16-17).

Boards are in this context rather technical instruments designed from external environmental pressure. The actions that can be taken by the governing board are limited and it is, therefore, the primary task to maintain the current status. As described by Ingram and Simons (1995, p. 1466) regarding Institutional Theory "...the key argument has been that organisations are constrained by social rules and follow taken-for-granted conventions that shape their form and practice". Especially in periods of uncertainty and instability the board carries out ceremonial or symbolic tasks and roles, e.g. the replacement of the auditor instead of the management (Cohen et al, 2008). A further aspect for Institutional Theory is the approach of isomorphism, defined as "...constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions" meaning that organisations become similar over time (DiMaggio & Powell 1983, p. 149). The impact for organisations is severe resulting in externally legitimated elements rather than efficiency aspects, employment of external criteria for the definition of values though on the positive side the orientation on externally fixed aspects reduces turbulences (Meyer &

Rowan, 1977). Cohen et al. (2008, p. 187) summarise that "...institutional theory emphasises how governance mechanisms fulfil ritualistic roles that help legitimise the interactions among the various actors within the Corporate Governance mosaic".

Critics of Institutional Theory state that "...explicit attention to the strategic behaviours that organisations employ in direct response to the institutional processes that affect them" (Oliver, 1991, p. 145) is missing. Considering the over socialisation, Oliver developed five response possibilities "...which vary in active agency by the organisation from passivity to increasing active resistance: acquiescence, compromise, avoidance, defiance, and manipulation" (1991, p. 151).

2.2.9 Managerial Hegemony

"Institutional force exerted on a governing board from within the organisation can be explained in terms of managerial hegemony" (Hung, 1998, p. 107). The theory holds the view that directors themselves and their behaviour has implications on Corporate Governance. However, this influence has a negative connotation, because the management might behave in an elite way by dominating the organisations' structure as well as its external linkages (Tricker, 2015). Cohen et al. (2008, p. 186) point out that in contrary to Agency Theory where the board is an effective and independent monitor over the activities of the management in Managerial Hegemony Theory the board is a "...toothless tiger...". Mace (1971) emphasises that boards are used as a tool by management in order to support their decisions. Tricker (2015) outlines that due to the access to confidential information and knowledge combined with decision-making power directors might govern the strategic decisions of the company. According to the theoretical approach, management appoints persons for board positions who will not interfere with managements actions and are rather passive members. The board members depend on the information provided by directors to gain further insights into the company. Consequently, the board is only in place to fulfil regulatory requirements but does not have appropriate oversight over management. According to Westphal and Zajac (1994) to enhance the board by appointing outsiders of the company does not help. To their opinion, the CEO will appoint a

sympathetic outsider who depends on management's benevolence to keep the position on the board. Hung (1998) adds that directors have benefits from the directorship which is an incentive for their cooperation with the management.

Following the holistic view on Corporate Governance theory, the next chapter strives to outline Corporate Governance and the associated functions of the board in practice.

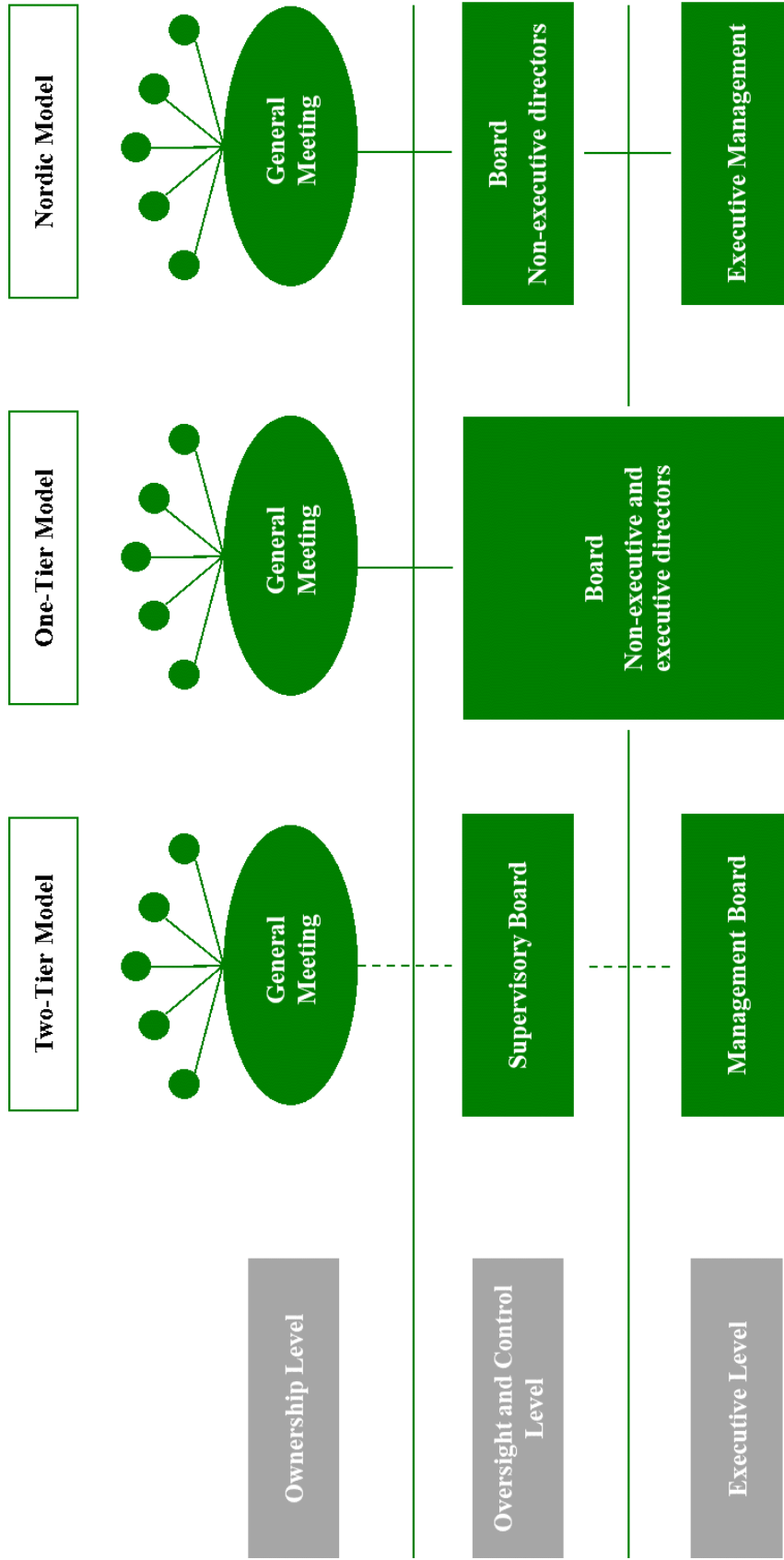
2.3 Corporate Governance and the Board

To understand the role of a corporation's board it is essential to differentiate between the supervisory function or sometimes referred to as governance and the management. Tricker (2015, p 45) states that "Management runs the business; the board ensures that it is being well run and run in the right direction." In other words, "...governance is concerned with 'doing the right thing', management is concerned with 'doing things right' (World Bank, 2007, p. 71)". In order to fulfil these requirements across the world, several Management- and Board structures have been developed and are currently existing. As this study solely focuses on the EU28 and Switzerland, the European approaches are outlined in the following.

2.3.1 European Board Structures

European Board structures can generally be divided into three models, i.e. the One-Tier and the Two-Tier model along with the Nordic Structure which is illustrated in figure 7. The monistic board system is applied in the United Kingdom and Ireland whereas the dualistic approach is followed in Germany, the Netherlands and Austria. Besides, several legislations such as Spain, Portugal or Belgium decided to leave the decision of which system is used with the company (Jungmann, 2006). Even the European Legislator implemented a mixed approach by introducing the Societa Europea (SE, EU, 2001). Article 38 of the Council Regulation (EC) No 2157/2001 of 8 October 2001 on the Statute for a European company states that "either a supervisory organ and a management organ (two-tier system) or an administrative organ (one-tier system) depending on the form adopted in the statutes" can be used.

Figure 7: European Board Structures

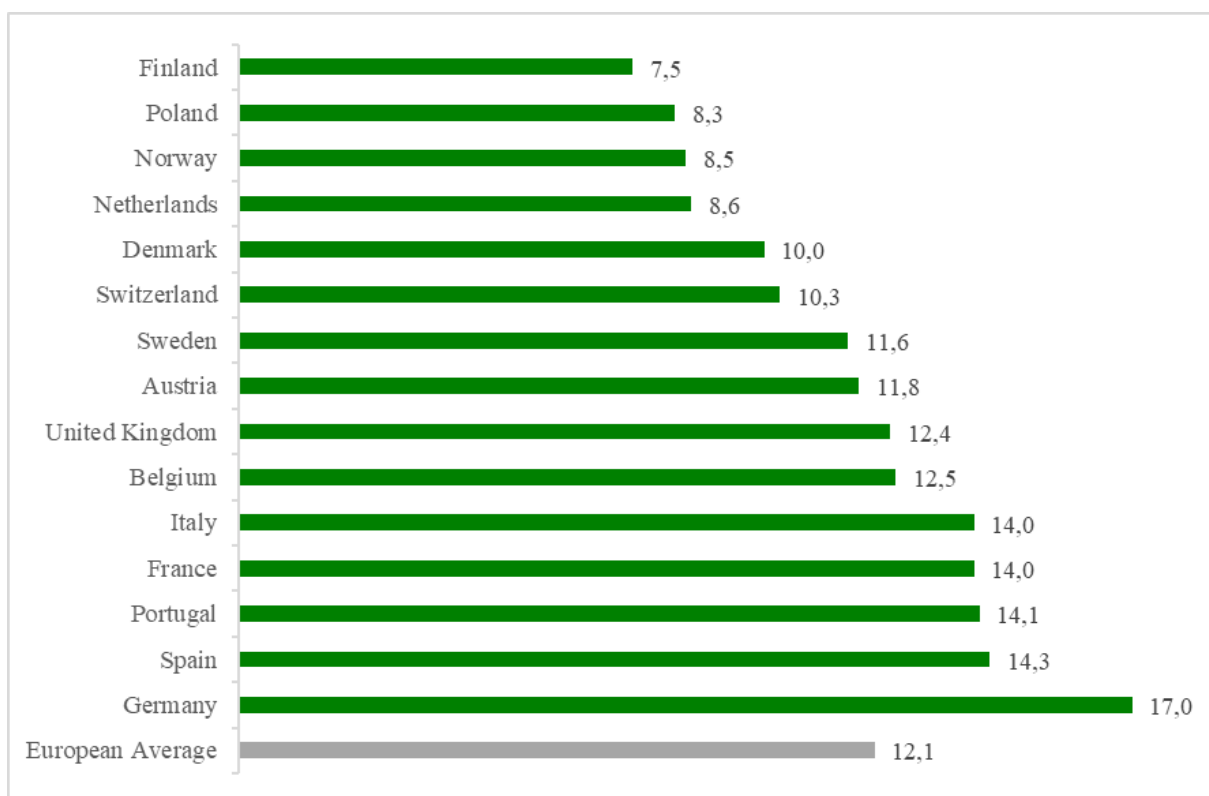


Source: Lekvall (2014, p. 60).

An overview of the present Board Types in Europe and the board composition is included in annex A.

The size of the board varies among Europe. Heidrick & Struggles Internat. (2014, p. 19) found that in Finland on average a board has 7.5 members whereas in Germany 17 members (including representatives of the staff), comprise the Supervisory Board. An overview of the average number of directors on European Boards is shown in the chart below:

Figure 8: Average number of directors 2013



Source: Heidrick & Struggles Internat. (2014, p. 19).

Ferreira and Kirchmaier (2013, p. 209) concluded in their research that “...country effects do not seem to matter much except for the effect of the rules governing the choice between one-tier and two-tier boards”. The differences in board size are rather subject to industry and company characteristics.

Independently from the Board model chosen, it includes different types of directors, namely executive and non-executive.

“A non-executive director is a member of a company’s Board of Directors who is not part of the executive team. A non-executive director typically does not engage in the day-to-day management of the organisation but is involved in policymaking and planning exercises” (ecoDa/IFC 2015, p. 39).

The Hampel Report (1998, p. 25) summarises that

“...non-executive directors are normally appointed to the board primarily for their contribution to the development of the company’s strategy. This is clearly right. We have found general acceptance that non-executive directors should have both a strategic and a monitoring function. In addition, and particularly in smaller companies, non-executive directors may contribute valuable expertise not otherwise available to management; or they may act as mentors to relatively inexperienced executives. What matters in every case is that the non-executive directors should command the respect of the executives and should be able to work with them in a cohesive team to further the company’s interests.”

The European Commission (EC, 2005) emphasises in a recommendation paper the importance of Board Members that are independent and non-executive. Independence is defined as

“...the absence of any material conflict of interest; in this context, proper attention should be paid namely to any threats which might arise from the fact that a representative on the board has close ties with a competitor of the company” (EC, 2005, p. L52/52).

The recommendation paper (EC, 2005, p. L52/63) lists nine criteria that characterise an independent Board Member and the respective person should:

- a) “ not be an executive or managing director of the company or an associated company, and not having been in such a position for the previous five years;
- b) not to be an employee of the company or an associated company, and not having been in such a position for the previous three years (...);
- c) not to receive, or have received, significant additional remuneration from the company or an associated company apart from a fee received as non-executive or supervisory director (...);
- d) not be or represent a controlling shareholder (...);

- e) not to have, or have had within the last year, a significant business relationship with the company or an associated company, either directly or as a partner, shareholder, director or senior employee (...);
- f) not to be, or have been within the last three years, partner or employee of the present or former external auditor of the company or an associated company (...);
- g) not to be executive or managing director in another company in which an executive or managing director of the company is non-executive or supervisory director, and not to have other significant links with executive directors of the company through involvement in other companies or bodies (...);
- h) not to have served on the (supervisory) board as a non-executive or supervisory director for more than three terms (...);
- i) not to be a close family member of an executive or managing director, or of persons in the situations referred to in points (a) to (h)”.

The named characteristics are only recommendations and should be considered by national legislation. Depending on these, the boards choose their board members and ultimately the decision is their responsibility.

The executive directors of a firm

“share with their non-executive colleagues' overall responsibility for the leadership and control of the company. As well as speaking for the business area or function for which he or she is directly responsible, an executive director should exercise individual judgement on every issue coming before the board, in the overall interests of the company” (Hampel Report, 1998, p. 25).

They are actively managing the company and are involved in the daily operative business. Heidrick & Struggles Internat. (2014) published a survey including an overview of the composition of boards in Europe referring to executive and non-executive directors. In Poland, only 59% of the directors are non-executives whereas the value increases to 98% in Norway. Independently from the composition of board members, they all need to foster and secure the firm's success (Higgs, 2003). The differences and similarities, advantages and

disadvantages together with the general characteristics of the three Board models, are elaborated below.

2.3.2 One-Tier Model

A unitary board is established when a corporation is governed by one single body that oversees all activities performed by the corporation. Management and control function are combined into one board (Tricker, 2015). The respective body is called the Board of Directors whereas the head is the chairman and members are called directors (Ortner, 2017). The directors are elected by all shareholders during the Annual General Meeting (AGM). Tasks and responsibilities of the Board of Directors differ depending on the legislation from nation to nation and also from company to company. However, as already outlined in the previous section the Board of Directors consists of executive and non-executive directors. For the composition of a unitary board, four variations are possible according to Tricker (2015), i.e. only non-executive or mostly non-executive directors or on the other extreme only executive directors or a majority of executive directors. A board with only executive managers that are directors at the same time is common in small firms or family businesses. For such companies, a stage where outside influence or control is required is not reached yet and this changes when the company further grows and enters a transition phase (Tricker, 2015). Non-executives might simply finance the company or add value regarding expertise and experience for example regarding new product lines or market entries. However, non-executive board members remain in the minority according to Tricker (2015). This model was common in the United Kingdom until the 1970s and research, however, showed that boards should be formed preponderantly of non-executive board members and this is the current standard for advanced economies (Tricker, 2015). The fourth and remaining category of a board, comprised of only outside directors, is often found in sports, health or not-for-profit organisations, but it is not implemented in publicly listed companies (Tricker, 2015).

As advantages of the unitary Board, the European Confederation of Directors Associations (ecoDa, 2014) identified that mutual respect and partnership exists among board members. This in return leads to improved interaction between the

members and the non-executive members have closer contact with the corporation. Bureaucratic and administrative processes are easier as only one governance body holds meetings. What might be the most important advantage is the direct access to data and, the information does not get lost. Therefore, potential information asymmetries among board members decrease (Jungmann, 2006).

On the contrary, Bezemer, Peij, de Kruijs and Maassen (2014, p. 18) argued that

“...the structure of one-tier boards in which executive and non-executive directors operate on one board may jeopardise the board’s ability to monitor executive directors and provide independent advice to management. Moreover, insider dominated boards might miss business opportunities, as independent outsiders may offer alternative views on environmental developments.”

2.3.3 Two-Tier Model

The Two-Tier Board model follows a different approach than the unitary Board of Directors and the governance structure is divided into two separate and independent bodies, i.e. the executive Management Board and the non-executive Supervisory Board (ecoDa/IFC, 2015). The Management Board is responsible for all business aspects whereas the Supervisory Board monitors the Management Board. Members of one of the boards cannot be members of the other one at the same time, which ensures a separation between the management and the control over a company (Ortner, 2017). In the structure of the Two-Tier-Model, the members of the Supervisory Board are appointed at the Annual General Meeting while the executive managers are chosen by the Supervisory Board.

Conceptually it is apparent that the non-executive directors described in the One-Tier-Model have the same structure as the Supervisory Board of the dualistic governance approach. The Management Board on the other side consists solely of executive directors (Tricker, 2015). The author (Tricker, 2015) further outlines that for example, in Germany the concept of co-determination is prescribed by law. This requires close cooperation between capital and labour. Hence, half of the Supervisory Board has to consist of staff representatives appointed by the trade union in Germany. Shareholders interest are represented by the other fifty percent of the Supervisory Board and elected during the AGM. A different

concept exists in the Netherlands, which follows a threefold approach for the Supervisory Board composition (Tricker, 2015). Each one third is presented by employees, capital and society respectively. A firm's own court evaluates the qualification and suitability of positioned candidates to adequately represent the groups of interest.

According to Tricker (2015) critics of the Two-Tier Board Model state that Management Boards often do not adhere to the advised information input from the Supervisory Board which is different in Unitary Boards as the information is available to all directors likewise. Furthermore, the actual power of Supervisory Boards is questioned and that it cannot effectively control the Management Board (Tricker, 2015). According to the results of a survey among Dutch Supervisory Board members the main challenges they face are

“...(i) the ability of non-executive directors to ask management critical questions, (ii) information asymmetries between executive and non-executive directors and their boards and (iii) interpersonal tensions in the relationship between the management and supervisory boards” (Bezemer et al., 2014, p. 29)

On the contrary, a strict separation between management and supervisory function, a liability separation between management and supervisory board and the distinction between chair of the supervisory board and Chief Executive Officer (CEO) promote the independence as well as the control and management functions of the two bodies (ecoDa, 2014).

2.3.4 Nordic Model

“The fundamental principle of Nordic Corporate Governance is to provide the shareholder majority with strong powers to control the company while providing minority shareholders with effective protection against abuse of power by the majority. The system thus gives dominating shareholders the motivation and tools to act as engaged owners and take long-term responsibility for the company. The primary means to obtain this is a clear-cut and strictly hierarchical chain of command between the general meeting, the board and the executive management” (Lekvall, 2014, p. 17).

The governance boards of Nordic corporations are independent, and the framework provides extensive power to manage as long as it is in line with the

“...fiduciary responsibilities to the shareholders” (ecoDa/IFC, 2015, p. 38). The AGM is the main decision-making body and the place where a shareholder can exercise his or her rights. The board is appointed by the AGM and is except for the staff representatives mainly comprised of non-executive members. Moreover, the role of CEO and chair of the board are separated not only on an organisational level, but this also includes a split of the duties and responsibilities. This approach provides a strict distinction between the Board and management function (Lekvall, 2014; ecoDa/IFC, 2015).

To consider the opinion and demands of minority shareholders and to protect their rights alike, the Nordic Model includes a respective set of regulations. This includes among others equal treatment of all shareholders and none may be favoured, strong requirements including full consent for certain decisions or minority power to force resolutions to the AGM (Lekvall, 2014). Research confirms the practical success of the approach and Nenova (2003) summarises that controlling bodies in Nordic companies are law-abiding and that potential consequences on reputation and social status discipline behaviour and hence prevent minority abuse.

Although successful and relevant in Scandinavian countries, i.e. Finland, Norway and Sweden the Nordic Model so far has not influenced the prevailing One- and Two-Tier approach in Europe. Whether a reciprocal influence on the international level is relevant at all is outlined in the next section.

2.3.5 Convergence, Hybridisation or Differentiation of Global Corporate Governance Models

When comparing Corporate models, the central question is whether an independent control function should monitor the management (Bezemer et al., 2014). In a world of international trade relationships and multinational corporations that continuously grow together, the question remains whether the Corporate Governance systems should also approach each other. The topic of Corporate Governance convergence across nations has therefore been subject to research and controversy debates (Tricker, 2015). Discussions assess whether globalisation leads to hybridisation of the governance systems, a convergence or

nothing at all (Yoshikawa & Rasheed, 2009). In favour of convergence are Best Practice Codes of Corporate Governance Codes, globally published e.g. by the World Bank or the OECD, who promote transparency, independence and accountability. These developments are however hampered by differences in a nation's legal framework, common ownership structures and historical and cultural background (Tricker, 2015). Shleifer and Vishny concluded in 1997 that whichever system is chosen or prescribed by law, no evidence is available that one system is superior to the others., p. 213-214) find that

“...neither global convergence that eliminates systemic differences nor the emergence of a hybrid best practice safely can be projected because each national governance system is a system to a significant extent. Each system, rather than consisting of a loose collection of separable components, is tied together by a complex incentive structure. (...) The cross-reference hypothesis, in contrast, presupposes divisible Corporate Governance institutions-a world in which one system's components can be adapted for use in the other system without significant frictions.”

The authors (Bratton & McCahery, 1999) find that every kind of reform program would lead to disappointing outcomes because none of the examined approaches would lead to conforming adjustments. Jungmann in 2006 conducted an empirical research study concerning the effectiveness of One- and Two-Tier Board systems. According to his results in terms of control, both systems are effective. Finally, the literature review of Yoshikawa and Rasheed (2009) suggests that changes in Corporate Governance are driven by the integration of capital and product markets. However, there is only “limited evidence that such changes constitute convergence. Governance changes seem to be primarily attributable to the quest for greater efficiency in governance and enhanced legitimacy in capital markets” (Yoshikawa & Rasheed, 2009, p. 388).

Based on the research results explained above, the author decided not to differentiate between the models of board structure in the following parts of the study. The terms Board or Board of Directors are used synonymously without differentiating between the governance system in place. Relevant for the presented research results are rather the functions and responsibilities of the board and the applicable board committees which will be outlined in detail in the

following chapters. If needed, the different roles will be addressed by stating in which capacity the board is acting, either in its management or supervisory role.

This approach is as well in line with the EBA's (2017) perspective on Corporate Governance of banks, which does not differentiate between the board types, when setting regulatory standards across Europe.

2.3.6 Functions of the Board

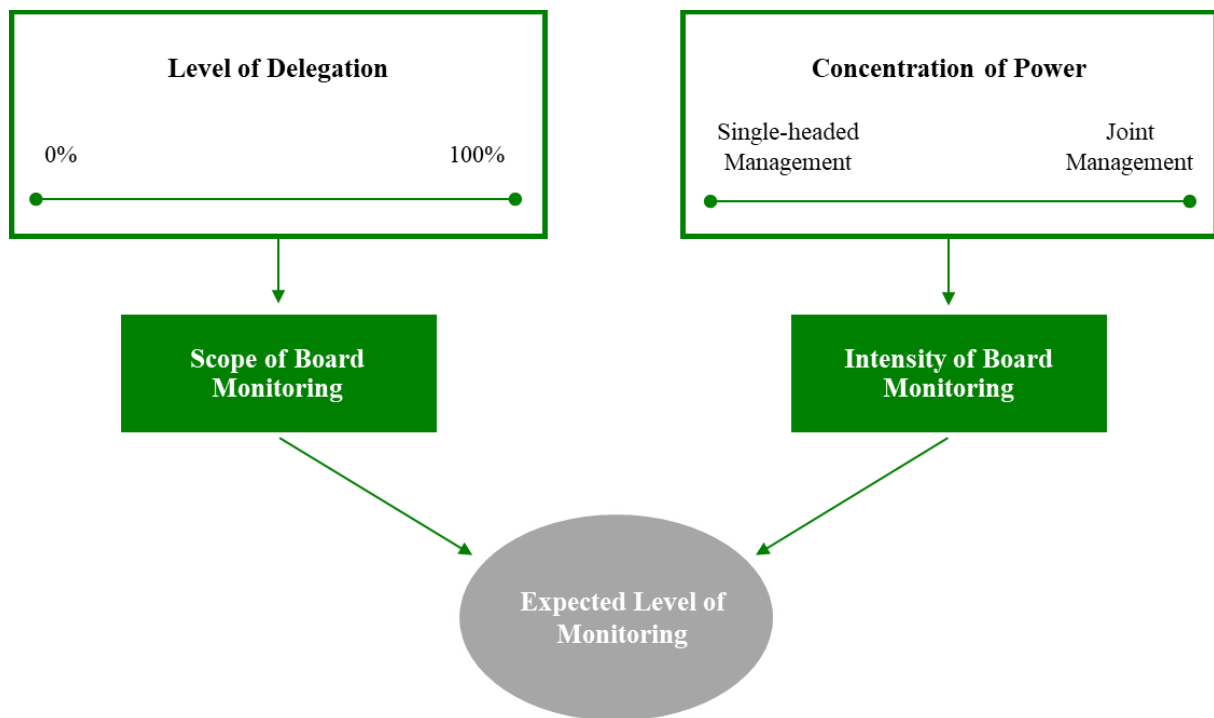
Acknowledging juridical differences, the Basel Committee on Banking Supervision (2015, p. 8) states that

“...the board has overall responsibility for the bank, including approving and overseeing management's implementation of the bank's strategic objectives, governance framework and corporate culture. (...) The members of the board should exercise their “duty of care” and “duty of loyalty” to the bank under applicable national laws and supervisory standards.”

Following the consensus in literature, the board has two primary functions – advising and monitoring the management of a company. Agency Theory mainly focuses on the monitoring function of the board. According to Van den Berghe and Baelden (2005, p. 681)

“...the monitoring role of the board involves more than ensuring the accuracy of financial information and the adequacy of internal controls. (...) monitoring means [to] evaluate a situation and act upon this evaluation in order to get reasonable assurance that you are in control of the situation.”

To determine an adequate level of monitoring the level of delegation and the concentration of power are essential for the authors. Both approaches combined, result in a delegation-monitoring framework depicted in the figure below.

Figure 9: Delegation Monitoring Framework

Source: Van den Berghe and Baelden (2005, p. 684).

The left-hand section defines how the scope of the monitoring is influenced by the level of delegation whereas the right-hand section determines the intensity of monitoring. Boards can only monitor the tasks they delegated to the management. If they do so, they need to decide who takes over these tasks, i.e. one or several managers. Van den Berghe and Baelden (2005, p. 683) summarise that “...the more authority the board delegates to management, and the more such delegated authority is concentrated into the hands of one person, the higher the level of board monitoring should be”. Clearly, there is no perfect approach to fitting every company. They should find the right balance based on criteria like e.g. company size, business complexity, legal environment and especially the trust in the management and CEO. The individual firm requirements should ensure that that the board pays enough attention to the performance while having control over the firm and the delegated tasks.

The advisory function of the board is based on Resource Dependency Theory. The knowledge and expertise of directors who act as advisors will counsel the board on a strategic level and will enrich the decision-making process of the firm. Crucial, is the role of independent and external board members who are

experienced and are professionals in their field of expertise (Fraile & Fradejas, 2012). However, Chen found in his 2008 (p. 1) study “...that higher advising intensity is associated with lower monitoring quality and higher agency costs “.

Tricker (2015) divides boards activities and responsibilities into four areas, namely management supervision, strategy formulation, being accountable to share- and stakeholders and policymaking. While fulfilling these tasks not only the present situation but also the future is essential. Additionally, the organisation itself, as well as the external environment, needs to be evaluated. The relation is depicted in the figure below.

Figure 10: Tasks and Responsibilities of the Board



Source: Tricker (2015, p. 46)

This approach is not a static one but rather a dynamic process. Following the passing of a strategy, relevant policies and procedures need to be implemented to the organisation's written framework. The board will review the executive performance and provide at the same time accountability to the stakeholder. This is the basis for the future strategy and the cycle is re-started. The Cadbury Report (1992, p. 14) also summarises “...the responsibilities of the board include setting the company’s strategic aims, providing the leadership to put them into effect, supervising the management of the business and reporting to shareholders on their stewardship.” However, unique to every corporation is the extent to which the

board fulfils the named tasks by themselves or if they are delegated to the executive management team. Decisive for this is the Corporate Governance model in place and the structure of the Board is essential for the effectiveness of Corporate Governance. The model defines the influence and power of the members as well as their accountability (ecoDA/IFC, 2015).

2.4 Corporate Governance of Banks

The previous chapters explained and discussed the relevant Corporate Governance models as well as the role of the Board of Directors and in this context especially its supervisory function. However, most of the models and theories are derived from non-financial corporates and the tools as well as processes to mitigate Corporate Governance challenges are made for these (Fernandes et al., 2018). As this study focuses on banks and in particular on Corporate Governance of these, it has to be understood whether banks are different when it comes to Corporate Governance in comparison to companies from other sectors.

Generally, banks also face the same issues arising from the principal-agent relationship as non-financial firms. Nevertheless, when looking at banks one must account for the differences between financial institutions and non-financial corporations with respect to Corporate Governance, which weaken the traditional institution of board oversight that is usually set up to overcome the principal-agent problem and has been explained before (Mehran et al., 2011). There are two key differences according to Mehran et al. (2011): On the one hand the business of banks experiences higher complexity, opaqueness as well as volatility compared to other businesses, and on the other banks have to satisfy much more interests of stakeholders than other corporations.

2.4.1 Opaqueness and Complexity

Due to their very nature banks are opaque and complex. This is driven by the fact that they can easily adjust the risk they are carrying by adjusting the mixture of their assets (Mehran et al., 2011). Furthermore, they can hide problems within their balance sheet related to their loan assets by simply extending loans of the borrowers (Levine, 2004).

On top of this, the business model of modern banks relies on a multitude of technically complex transactions, which are based on sophisticated quantitative formulas as well as models that could lead to further opaqueness (Flannery, Kwan & Nimalendran, 2004).

Furthermore, banks are able to mask the risk in their balance sheet through securitisation and other tools as for example through repo agreements as occurred in the case of Lehman Brothers; where assets were sold through short-term repurchase agreements around the balance sheet date and the incoming cash was used to pay down the debt in order to mask the real leverage of the investment bank (Mehran et al., 2011).

Valuation of assets contributes also to the opaqueness of banks. An example for this, is one of the key roles of banks in an economy the maturity transformation, which means that banks use short-term deposits or other short-term debt instruments to invest in riskier long-term assets, which have a long payoff horizon and are most of the time illiquid. Based on the nature of those assets it is hard to find the correct value for them and therefore to correctly analyse the risk carried by the bank (Becht et al., 2011). This can be observed by the fact that for no other sector financial analyst recommendations and external rating reports differ that much as for banks (Mehran et al., 2011)

The complexity and opaqueness described above are the main obstacles in the oversight by the Board of Directors as well as by the regulators. It is hard for a non-executive member of the Board of Directors to understand, what the risk is that a bank carries at a certain point of time and the impacts different external shocks could have on the balance sheet together with the business model of a bank.

2.4.2 Leverage

Furthermore, the balance sheet of banks carries much more debt than the one of non-financial corporations (Macey & O'Hara, 2003). This high leverage is caused by the fact that debt is not only a source of financing for banks but also a factor of production. The leverage in commercial banks is most of the time generated by small deposits and by short-term borrowing from other banks or institutional

investors. In a Modigliani-Miller-world this would not make sense as equity and debt would cost the same and banks would not need to take such high leverage (Hull, 2012). Nevertheless, in most countries of the world deposit insurances prevent the opportunity of bank runs and thus the danger of the immediate insolvency of banks due to the maturity transformation. However, the insurances cover only a limited amount per depositor. Therefore, depositors do not face the same risk of banking failure than other debtholders. Based on that and on tax effects (tax shield), funds from deposits are under-priced (Macey & O'Hara, 2003). Standard economic theory suggests that the cheapest production factor is always employed, which leads in the case of banks to higher leverage compared to non-financial firms (Mehran et al. 2011). In addition, mispricing results in banks, when applying Net-Present-Value models, investing in riskier assets, as the discounting factor is lower than it should be without the deposit insurance, which makes banks even riskier.

High leverage leads to another difference in the Corporate Governance of banks compared to non-financial firms: banks tend to have more stakeholders than normal companies according to Becht et al. (2011). Stakeholders in a bank are overwhelmingly debt holders, as shown above, which could be on the one hand depositors or at the other hand providers of subordinated debt. Depositors are by nature very small compared to the overall debt volume of banks and therefore free-rider issues with regard to monitoring could arise; due to that, it is even more relevant that other stakeholders fulfil the task of monitoring, e.g. large institutional debtholders (Becht et al. 2011). Further stakeholders are employees, taxpayers, deposit insurance companies, regulators and society. Despite the different types of stakeholders, as seen above, the supervisory function of the Board of Directors solely represents the interests of shareholders and in some countries also employees e.g. in the Franco-German context (Becht et al., 2011; Ellul & Yerramilli, 2013). This fact leads to an overrepresentation of shareholders in the supervisory function of boards and the monitoring of banks might be led by their preferences rather than taking the ones of other stakeholders into account. Therefore, standard Corporate Governance settings and tools do exclude a large group of stakeholder interests within a financial institution.

2.4.3 Risk Preferences

A further principal-agent problem arises between management and shareholders when it comes to the levels of risk preferred by those two groups. Managers are usually seen as risk-averse in contrast to shareholders, which are seen as risk-neutral from a theoretical point of view (Balachandran, Kogut & Harnal, 2010). This is because managers invest their entire human capital in their jobs, which is most of the time also specific to the company. In order to protect their human capital, managers tend to invest in projects that have a lower risk, as high-risk projects could lead to insolvency of the corporation (Fahlenbrach & Stulz, 2011). Shareholders on the other side prefer more risk as they can diversify their investment portfolio and greater risks could lead to higher profits for them. This especially holds true when one takes too big to fail as well as the deposit insurance into account, which acts as a kind of banking failure insurance for investors following the argumentation Becht et al. (2011). Therefore, shareholders try to align management with their preferences through equity-based compensation in order to overcome this conflict of interest (Becht et al., 2011). However, standard Corporate Governance tools that try to heal this conflict with the before described compensation schemes fall short when it comes to banks as they are modelled for companies without a high leverage and do not account for the amount of risk a corporation is wilfully carrying (Becht et al., 2011). Due to this standard compensation schemes might lead to excessive risk taking by management and could spur financial breakdown of banks especially in times of a financial downturn in the economy.

Risk preference may diverge not only between managers and stakeholders but may also diverge significantly between shareholders and stakeholders. Mehran et al. (2011) state that shareholders usually prefer more volatility in order to gain short-term profits, whilst debt holders and regulators usually prefer lower volatility and aim for long-term profits or growth.

2.4.4 Risk Shifting and Debt Overhang

Another conflict between shareholders and debtholders may arise according to Becht et al. (2011) through the phenomenon of risk-shifting, which states that in

times of financial distress banks will invest in riskier projects to survive, which favours the shareholders. Equity of banks, near the insolvency, is worthless as the value of assets will most of the time be just high enough to pay debtholders due to the high leverage. Through the execution of risky projects, the chance to create value for shareholders improves, but also the chances for losses for debtholders increase (Becht et al., 2011). As the Board of Directors in banks is mostly staffed with shareholder-friendly members and aligned via compensation schemes the increasing risks for debtholders are not considered and these are not able to efficiently monitor such situations.

A further conflict between shareholders and creditors in banks is the debt overhang (Becht et al. 2011), which is a situation where banks are not willing or able to raise further outside equity, which happens mostly in times of financial distress. In these times management may not raise further equity in order to invest in new projects as the expected value of the projects may not increase the value for the existing equity holders (the expected payoff must be distributed to the new and old investors). The effect increases with the leverage of the bank as debtholders have superior claims on the assets. This leads to the fact that in times of financial distress banks are not just unable to raise further equity, but also prevent to perform further equity raisings, putting higher risk on debtholders (Becht et al. 2011).

2.4.5 Impact on Society

When it comes to the society banks differ from non-financial firms on the one hand by their influence on the society in form of social costs of their failures and on the other hand by the high influence that regulators have on banks (Dermine, 2013). This means in terms of Corporate Governance that banks could be too important for a certain government to be overseen just by the Board of Directors, as they could have a major impact on the economy and the social welfare of a state. That could be observed during the financial crisis of 2008 when large banks proved to be systemically important and their failure could have led to harmful results. Therefore, governments had to bail out those banks to prevent the mentioned negative outcomes (Sinha, 2013). The systemic importance of banks could be an implicit state guarantee, which is drawn in times of financial distress

and means that the government could be the lender of the last resort (Muelbert, 2010). Those implicit guarantees could lead to another Corporate Governance issue, which should be considered when talking about banking Corporate Governance. From a shareholder perspective an implicit guarantee could incentivise excessive risk-taking, which could be observed already with the deposit insurance, as the shareholders received the profits and the losses were implicitly pushed to the social system; therefore, it makes economic sense for shareholders of a systemically important bank to prefer higher risk (Becht et al., 2011). Due to that, a conflict of interest arises between the government, taxpayers and shareholders of a bank: governments prefer lower risk and shareholders higher risk given the implicit state guarantees. This phenomenon could also be observed when carefully reading bank rating analysts' reports, who downgraded several European banks, when the new banking resolution act came into force, as through this the implicit state guarantee is not further valid (Schich & Lindh, 2012).

As banks are important for an economy and their failures costly, governments try to get more influence on banks through regulatory bodies, like the European Central Bank (ECB), US Federal Reserve Bank (FED), Swiss Financial Market Supervisory Agency (FINMA) or British Financial Conduct Authority (FCA). Those regulatory bodies also have an impact on the Corporate Governance of a bank as they have an oversight function on the decisions taken by and the economic situation of banks. This might lead to the circumstance that from a Corporate Governance perspective the increased supervision by regulators could in the end be a substitute of bank internal governance (Becht et al. 2011). Whether this is true, is not yet clear from an academic point of view but would have a major impact on the structure and processes of banking oversight. From a shareholder's perspective Corporate Governance, as a free-market institution, should function as an internal oversight of private banking corporations and regulators should only provide the necessary institutions and tools, e.g. effective property rights or a properly working law system in order to stabilise contractual relationships. Nevertheless, after having seen the numerous special issues with Corporate Governance of banks, a tighter regulatory oversight could be value-adding from

a social welfare point of view as it could mitigate shareholders tendency to take excessive risk.

2.4.6 Conclusion on the Corporate Governance of Banks

The points discussed before show that banks are different from non-financial corporations when it comes to Corporate Governance, and it could be observed that standard Corporate Governance mechanisms for corporates, based on Agency Theory, which stipulates a pure shareholder focus, could lead to harmful results for debtholders and the rest of the society. Based on the importance of the stakeholders for banks as well as the proof that a pure shareholder focus falls short for banks' Corporate Governance, which has been pointed out before, the author decides by considering the analysis of Chapter 2.2 to use the enlightened Shareholder Theory, which tries to combine the shareholder as well as stakeholder interests by aiming for long-term success of a company, as a basis for this study. This will allow the author to not only assess if shareholder views are accounted for, but as well whether the long-term interests of stakeholders are considered as well by regulating and governing banks.

Furthermore, by taking these points as well as the devastating results of the financial crisis from 2008 into account, regulators (e.g. FINMA, 2016 and EBA, 2017) and scholars (Fernandes et al., 2018) thought that it might be time for a change in Corporate Governance theories and regulations for banks. Next to new compensation schemes, which will be discussed in Chapter 4.2 of this study, a further strand of academic theory and regulatory concept emerged from the discussion before, which should prevail in future breakdowns of banks from a systemic perspective and to overcome the challenges described before in this chapter. This concept is called "Risk Governance" and will be explained in the next chapter of this study.

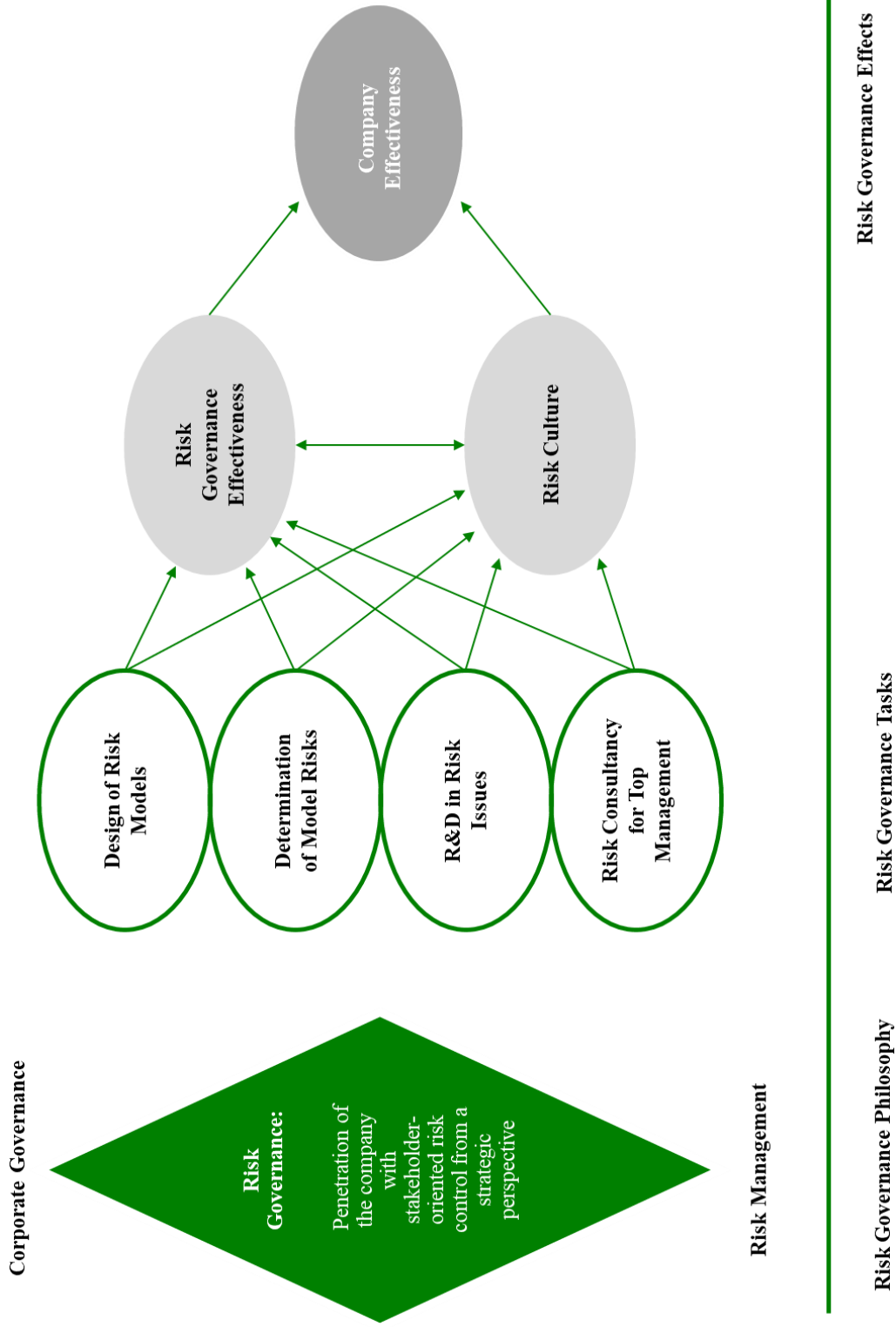
2.5 Risk Governance

The following section shall give an overview of the concept of Risk Governance, which emerged in the last 10 years, right after the global financial crisis in 2008 and which should help to prevent further breakdowns of financial institutions.

Risk Governance is verbally seen as a combination of Corporate Governance and risk management.

First, a general overview of the concept will be given before diving deeper into its specific application in the context of banks. According to van Asselt and Renn (2011, p. 431), Risk Governance incorporates “...the core principles of governance to the context of risk-related decision-making”. The International Risk Governance Council (2019) states that “...Risk Governance applies the principles of good governance to the identification, assessment, management and communication of risks”. Stein and Wiedemann (2018) summarise that effective Risk Governance *inter alia* contributes to transparency, accountability and prudence, and ultimately to a corporation’s sustainability. Moreover, they conclude that “Risk Governance as (...) corporate function (...) is directed towards the overall regulation of risk management” (Stein & Wiedemann, 2018, p. 100). Following this, they developed a Risk Governance model combining philosophy, tasks and the effects of Risk Governance, which is illustrated in figure 11. The compact approach of the authors (Stein & Wiedemann, 2018) is a connective link between Corporate Governance and risk management but does at the same time not replace one of the two.

Figure 11: Basic Concept of Risk Governance

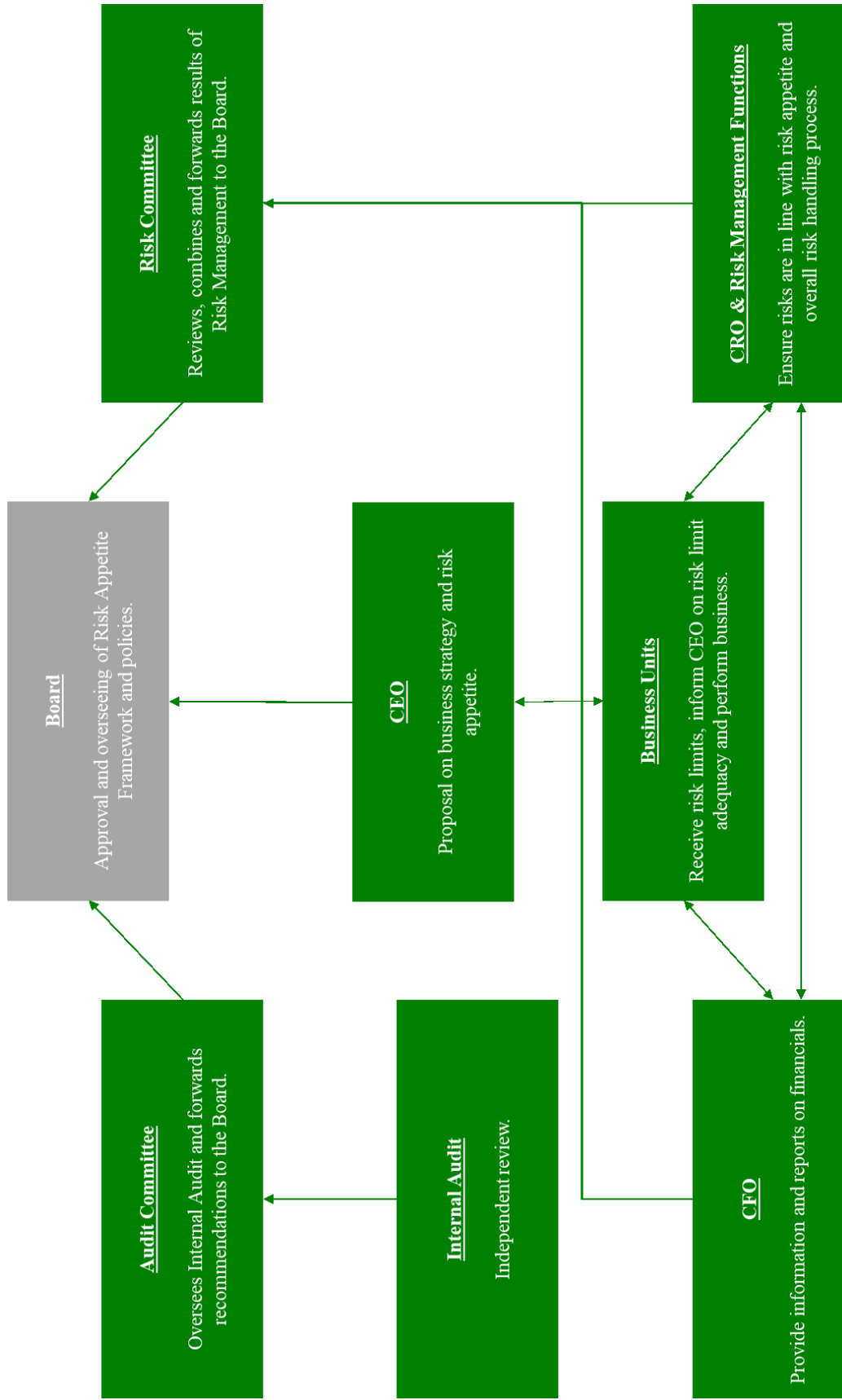


Source: Stein and Wiedemann (2018, p. 101).

The meeting point between Corporate Governance and risk management follows the philosophy that risk control should be stakeholder-oriented and guided from a strategic perspective. In order to be successful, this approach must be followed throughout the organisation. The tasks that Risk Governance should fulfil are divided into four responsibilities. The first one is the design of risk models representing the bank's business model including the risks a bank is exposed to, their aggregation and prioritisation. The risks arising from the defined risk models need to be further determined in the course of the second task. Model risks occur if e.g. technical errors or wrong data impact the result of a business model. The models themselves need to be calibrated constantly. The third tasks assigned to Risk Governance according to Stein and Wiedemann (2018) are Research and Development (R&D) aspects. The R&D on quantitative matters e.g. profiling, case studies or forecasting methods and the inclusion of Risk Governance metrics can contribute to the further development of the risk models. Finally, the fourth task of Risk Governance is management consultancy. The derived results and knowledge enable the management of a bank to base their decisions on well-founded research results. All four of the tasks are intended to be performed simultaneously, continuously and influence each other. The tasks of Risk Governance lead to risk control in line with the defined business model. Risk Governance becomes efficient and effective and appropriate risk culture is derived. All taken together the company becomes more effective "in terms of sustainability, long-term survivability, and value creation by fostering the overall risk robustness of the company" (Stein & Wiedemann, 2018, 103).

After having learned the theoretical concept behind Risk Governance, it should now be explored what this means in the context of a bank. A prerequisite for adequate Corporate Governance, risk management and consequently Risk Governance is an appropriate framework that must be established in the financial institution. To derive this, the Financial Stability Board (2013) developed a Risk Governance framework including the various participants. It (FSB, 2013b, p.6) introduces its framework with Risk Governance referring "...to the role and responsibilities of the board, the firm-wide CRO and risk management function, and the independent assessment of the Risk Governance framework". The framework is depicted in the figure below.

Figure 12: Risk Governance Framework



Source: FSB (2013b, p. 6).

According to this model (FSB, 2013b), the board is central to the Risk Governance framework of banks and in particular its supervisory function. The general European approaches of board structure along with their tasks and responsibilities have already been discussed in the previous chapters. In the context of this specific model (FSB, 2013b), the essential roles of boards are the approval and oversight of the financial institution's Risk Appetite Framework (RAF) and the policies to implement the Risk Management Framework. Both need to be in line with the business model. To derive an adequate set-up of the named Risk Governance, all relevant information needs to be bundled and evaluated. The Chief Financial Officer (CFO) will provide information and reports on earnings, cost and budget split per business line if necessary and capital requirements. The business lines will inform the Chief Executive Officer (CEO) on the adequacy of the risk limits on the operational level and handle their operations in line with the risk limits. The CEO will further develop proposals on the overall business strategy and the risk appetite from the received information. The results and requests for changes will then be transported to the board. In return, the CEO will pass on new information on risk limits to the business units.

The risk management function together with the Chief Risk Officer (CRO) are responsible for the group-wide risk management ensuring that the bank's risks are in line with the defined risk appetite (FSB, 2013b). Moreover, the risk handling process itself is as well in their scope. The risk committee reviews, combines and forwards the results to the board.

The independent review of the overall adequacy of the risk appetite, the internal control- and Risk Governance framework is essential for a company and is assessed by the internal audit department (FSB, 2013b). The work of internal audit is overseen by the audit committee which passes the results along with derived recommendations to the board. The FSB also notes in its 2013 published 'Thematic Review on Risk Governance' that following the financial crisis of 2008 national authorities and banks alike took actions to improve Risk Governance.

The Basel Committee on Banking Supervision (2015, p. 2) defines a Risk Governance Framework

“...as part of the overall Corporate Governance framework, the framework through which the Board and management establish and make decisions about the bank’s strategy and risk approach; articulate and monitor adherence to risk appetite and risk limits vis-à-vis the bank’s strategy; and identify, measure, manage and control risks.”

The Financial Stability Board (2013) emphasises the crucial role of the Board and the risk committee in relation to Risk Governance, which will further be described in the next chapter.

2.5.1 Risk Governance and the Board

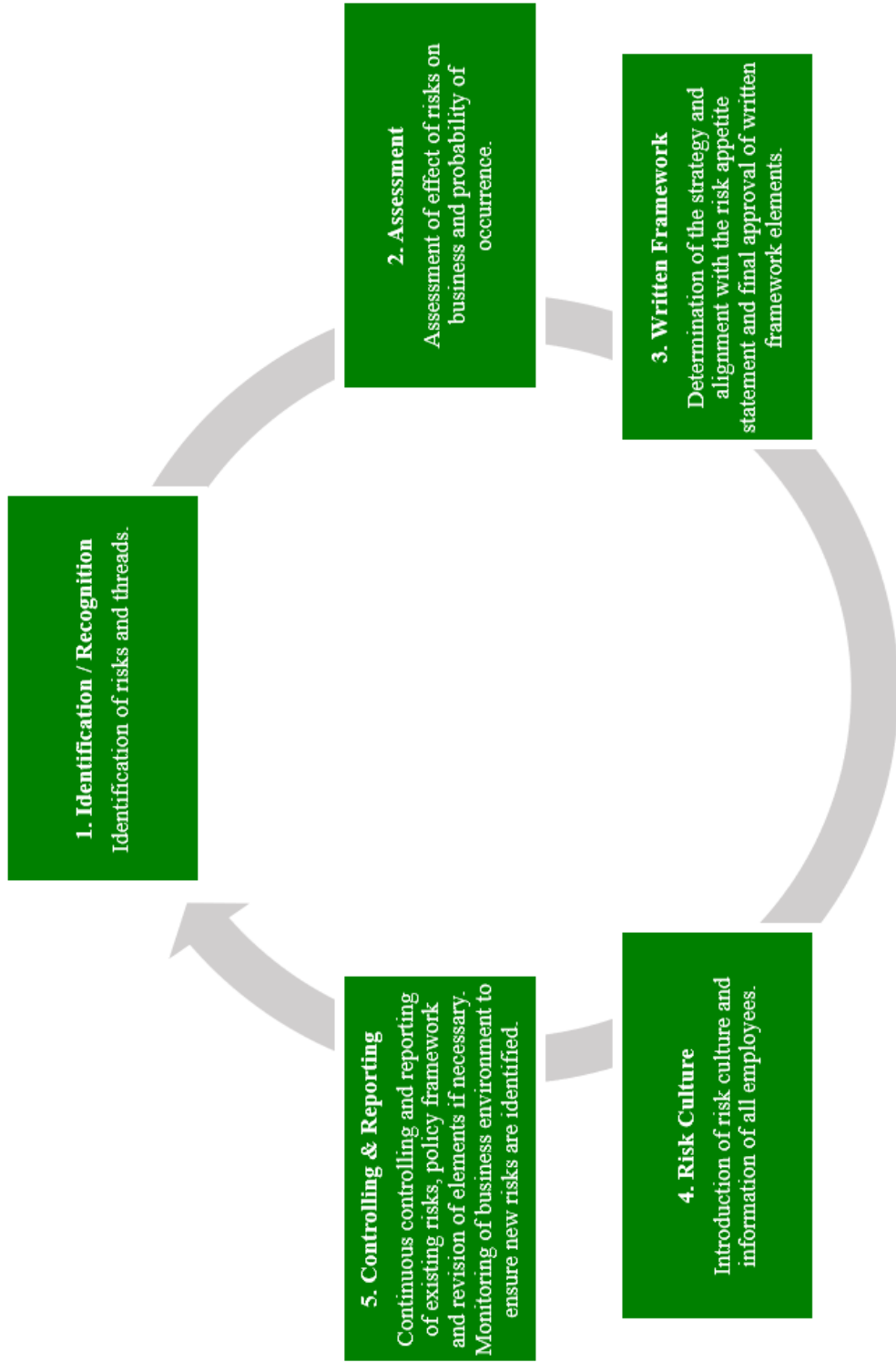
As this dissertation investigates Risk Governance at Board level, the Board’s responsibility is researched in more depth. In 2009, David Walkers’ highly respected report concerning Corporate Governance in the United Kingdom (UK) Financial industry was published. His results, however, are not only relevant to the British financial sector but rather for all Boards of banks and their constitution and responsibilities. Walker (2009, p. 90) identifies the “...monitoring and management of risk (...) as core strategic objectives of the entity”. The Board should subsequently ensure that risks are identified and assessed in due time and in consequence effectively controlled. The resulting strategy and the Risk Appetite Statement need to be implemented and aligned with each other. Finally, the Board needs to ensure the implementation of an adequate risk culture framework in the bank (Walker, 2009).

The identification, analysis and monitoring of risks in a company are also crucial for Tricker (2015) and involves the phases of recognition, assessment, evaluation, policy determination, Board approval, monitoring and reporting. A combined risk handling process is depicted in figure 13.

The identification of new risks and threats to the firm is of crucial importance because undetected risks might hit the bank without warning and safeguarding measures. Tricker (2015) emphasises the importance of a group-wide risk culture that encourages all employees to report potential risks. The risk assessment leading to the advice presented to the Board should be based on qualitative and quantitative data (Tricker, 2015). Data can be used in the beginning to define the risk appetite and the strategy and later to track the respective outcome. This can

include the target ratings for the bank, value at risk or exposure and respective distribution. According to Tricker (2015) the results need to be presented and a decision regarding appropriate risk appetite and the implementation of adequate policies and procedures must be obtained from the Board. The subsequent desired risk culture of the firm needs to be introduced and must be in line with the written framework. What might be even more important is the tone from the top and Board and senior management should serve as a role model following Tricker's (2015) view. Monitoring of risks is subject to regular review and development of the identified threats. The board, as well as the relevant management levels, need to be informed adequately and depending on the changes policies and procedures as well as the Risk Appetite Statement.

Figure 13: Risk Handling Process



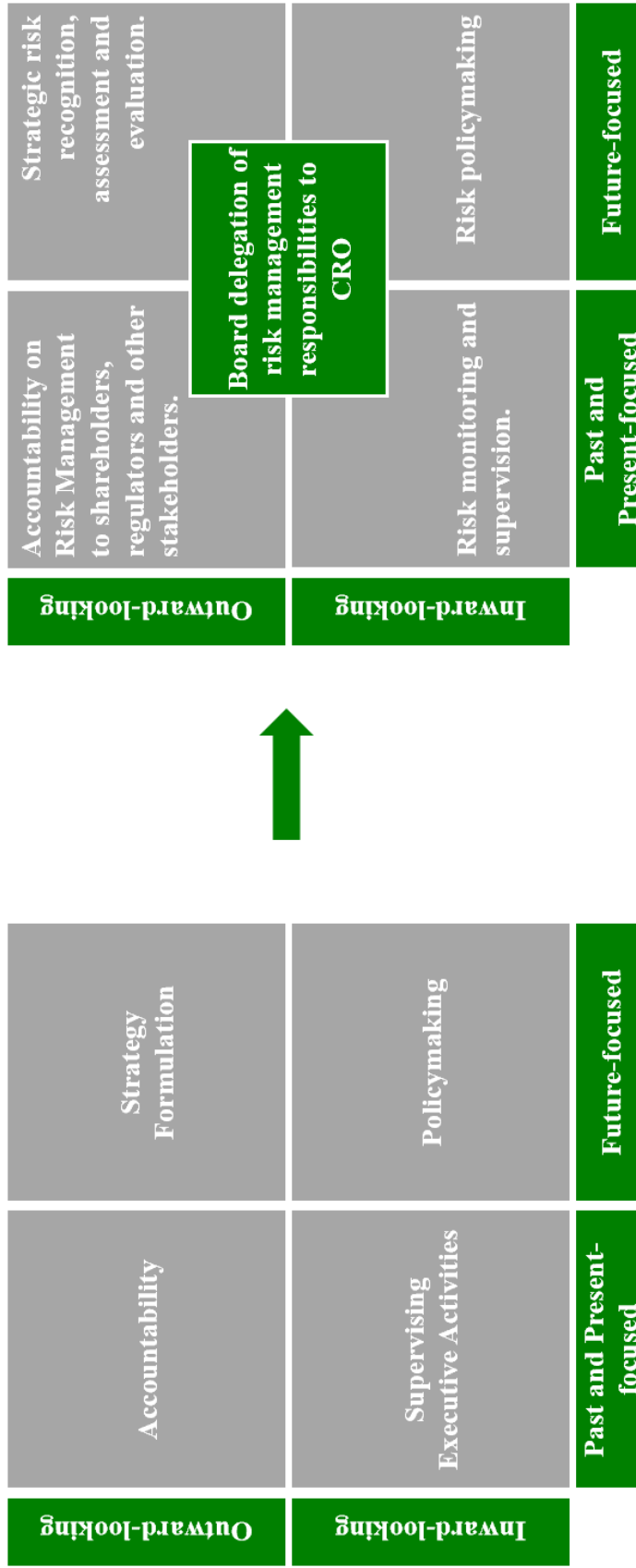
Source: Own development based on Walker (2009) and Tricker (2015).

The management of risks is not only a one-time task but rather a continuous responsibility that eventually involves all employees. A constant adaption to changing market environments is inevitable to protect the bank from harm. Taking these necessary steps into account it is obvious that they cannot be fulfilled completely by the board alone. Tasks are therefore delegated to the management for example to the Chief Risk Officer (CRO) as shown in figure 14. Tricker (2015) developed an integrated framework combining the relevant tasks of the risk analysis process and delegations to CEO and CRO.

Walker (2009, p. 19, recommendation 24) also acknowledges the requirement of board support by a CRO and states that a

“...board should be served by a CRO who should participate in the risk management and oversight process at the highest level on an enterprise-wide basis and have a status of total independence from individual business units. Alongside an internal reporting line to the CEO or CFO, the CRO should report to the board risk committee, with direct access to the chairman of the committee in the event of need. The tenure and independence of the CRO should be underpinned by a provision that removal from office would require the prior agreement of the board.”

Figure 14: Board Tasks



Source: Tricker (2015, p. 46 and 206).

2.5.2 Board Committees

The Basel Committee on Banking Supervision (2015, p. 15-16) defines that

“...the board should define appropriate governance structures and practices for its own work, and put in place the means for such practices to be followed and periodically reviewed for ongoing effectiveness. (...) To increase efficiency and allow deeper focus in specific areas, a board may establish certain specialised board committees. The committees should be created and mandated by the full board.”

For unitary boards mainly two aspects lead to the creation of committees (Tricker, 2015). Firstly, it is the chance for independent directors to meet separately from the whole board, which enables them to perform their control function more effectively. Secondly, delegating board activities to a committee reduces the workload for the whole board.

For the overall set-up of committees, their mandate, the scope, applicable procedures and reporting requirements to the board need to be defined according to the BCBS (2015). The composition of committee members should include the rotation of members as well as the chair to foster new perspectives and the chair should always be a non-executive, independent board member (BCBS, 2015). As part of the working routine boards of banks should keep records of the work performed, e.g. meeting minutes including decisions taken (BCBS, 2015).

2.5.2.1 Audit Committee

Following the recommendations of the BCBS (2015) all systemically relevant financial institutions and other banks, depending on their risk profile, complexity or size, should establish an audit committee. Moreover, the BCBS (2015, p. 15) defines that audit committees should:

- “...be distinct from other committees;
- have a chair who is independent and is not the chair of the board or of any other committee;
- be made up entirely of independent or non-executive board members; and

- include members who have experience in audit practices, financial reporting and accounting.
- The audit committee is responsible for:
- framing policy on internal audit and financial reporting, among other things;
- overseeing the financial reporting process;
- providing oversight of and interacting with the bank's internal and external auditors;
- approving, or recommending to the board or shareholders for their approval, the appointment, 19 remunerations and dismissal of external auditors;
- reviewing and approving the audit scope and frequency;
- receiving key audit reports and ensuring that senior management is taking necessary corrective actions in a timely manner to address control weaknesses, non-compliance with policies, laws and regulations, and other problems identified by auditors and other control functions;
- overseeing the establishment of accounting policies and practices by the bank; and
- reviewing the third-party opinions on the design and effectiveness of the overall Risk Governance framework and internal control system.”

According to Walker (2009, p. 93), the audit committee is responsible for the “...oversight and reporting to the board on the financial accounts and adoption of appropriate accounting policies, internal control, compliance and other related matters”. These tasks are, however, backwards-looking and focus on the implementation of adequate policies aiming to support the overall strategy. The forward-looking tasks are in the responsibility of the risk committee.

2.5.2.2 Risk Committee

Just like for the audit committee the BCBS (2015) suggests that all systemically relevant banks and other financial institutions, depending on the risk profile,

complexity or size, should establish a risk committee. Crucial for the definition of a future strategy the board, according to Walker (2009), has besides the obligation of risk appetite and risk tolerance determination the responsibility to oversee risk in real-time including the monitoring and hence approving of adequate limits and exposures. As these tasks are mainly forward-looking a distinction of the more backwards-looking tasks of the audit committee is advisable and is put into practice by the implementation of a risk committee. Walker (2009, p. 19) states in recommendation 23 of his report that

“...the board (...) should establish a board risk committee separately from the audit committee. The board risk committee should have responsibility for oversight and advice to the board on the current risk exposures of the entity and future risk strategy, including strategy for capital and liquidity management, and the embedding and maintenance throughout the entity of a supportive culture in relation to the management of risk alongside established prescriptive rules and procedures. In preparing advice to the board on its overall risk appetite, tolerance and strategy, the board risk committee should ensure that account has been taken of the current and prospective macroeconomic and financial environment drawing on financial stability assessments such as those published by the Bank of England, the FSA and other authoritative sources that may be relevant for the risk policies of the firm.”

According to the BCBS (2015), certain attributes should be applied by a risk committee. It should be:

- “...be distinct from the audit committee, but may have other related tasks, such as finance;
- should have a chair who is an independent director and not the chair of the board or of any other committee;
- should include a majority of members who are independent;
- should include members who have experience in risk management issues and practices;
- should discuss all risk strategies on both an aggregated basis and by type of risk and make recommendations to the board thereon, and on the risk appetite;
- is required to review the bank’s risk policies at least annually; and

- should oversee that management has in place processes to promote the bank's adherence to the approved risk policies" (BCBS 2015, p. 15).

The risk committee is

"...responsible for advising the board on the bank's overall current and future risk tolerance/appetite and strategy, and for overseeing senior management's implementation of that strategy. This should include strategies for capital and liquidity management, as well as for credit, market, operational, compliance, reputational and other risks of the bank. To enhance the effectiveness of the risk committee, it should receive formal and informal communication from the bank's risk management function and Chief Risk Officer" (BCBS, 2010, p. 21).

According to Walker (2009), his view on focus of the risk committee is close to the one of BCBS (2015) as it should focus at a high level on the fundamental risks, namely liquidity, leverage, currency, interest, credit/counterparty and other risks related to the market. However, he (Walker, 2009) makes clear that the committee should thereby not extend its scope to the operational level. External macroeconomic and financial environment, the overall risk tolerance and the bank's financial situation, as well as the general capability to control risks, should be considered by the risk committee while advising the board (Walker, 2009). To understand how the described factors could influence the financial institution, stress and scenario tests should be conducted as these will provide the board and the risk committee with a comprehensive overview of the current risk exposure and hence enable them to develop adequate risk-mitigating actions (Walker 2009). Important to note at this stage is again that the committee has only an advisory function and the final decisions must be taken by the overall board according to Walker (2009).

In order to foster effective risk coverage, internal communication between the audit and risk committee should be implemented (BCBS, 2015). Walker (2009) even goes further and states that an appropriate overlap between risk and audit committee is required and involves the participation of the chairman of the audit committee in the risk committee. Following this the chair of the risk committee should be a non-executive director and a majority of the participating members should also be non-executives from Walker's (2009) perspective. Walker (2009)

also recommends that the CFO is either a member or participating whereas the CRO should be present permanently. The attendance of the CEO is upon discussion with the chair of the committee. However, it can be fruitful to have open discussions without the CEO being present.

The structures, tools and processes described before, should according to regulatory bodies (e.g. EBA, 2017; FINMA, 2016) help to prevent further breakdowns of banks and future financial crises. The regulatory view on Risk Governance and its implications on the setup of banks will be further explained in Chapter 4.1 of this study. In the next part of the dissertation, an analysis and description of the financial crises that occurred in this century and their resulting implications for societies as well as economies will be made. This is necessary to build a proper ground to answer the research questions set in the introduction of this study. Furthermore, it will lay the ground for the empirical study of this dissertation as a panel data analysis will be carried out at a later stage in order to answer the research questions properly.

3 Financial Crises

The following discussion represents the third part of this study and covers the financial crises, which occurred in this century. As explained in the introduction, the research questions of this study aim to understand what makes banks more robust through the economic cycle and especially in times of a financial crisis, which becomes important having in mind the negative effects of bank failures to society and the overall economy. In order to properly answer the research questions, the term financial crisis needs to be explained and discussed. Furthermore, as also indicated in Chapter 1 of the study the author wants to conduct a panel data analysis in order to find evidence, which can be used to answer the research question. Therefore, the author will analyse the three cycles including their crises of this century, relevant for Europe, in-depth to provide enough ground for the empirical part. That means support for hypotheses and variable development. In the following, the dot.com, the global financial and the Eurozone crisis will be analysed regarding root causes and impact on society as well as economy.

Firstly, there is need to shortly answer, what financial crises are exactly. They are also often referred to as bubbles and are undesirable developments of a market, which is commonly driven by governments, the financial sector and the industry. It further grows into a speculative delusion resulting in a financial crash and finally in an economic crisis (Janszen, 2008). Historically, such crises occurred in regular intervals, approximately every 100 years, but nowadays in a globally connected world, the interval length is shrinking (Janszen, 2008).

3.1 Dot.com Crisis

The first crisis analysed and explained should be the so-called dot.com crisis, which was related to the new economy, namely internet and tech companies. After exploring the events leading to the crisis, the crisis itself and the impact on society as well the economy will be explained.

3.1.1 Events Leading to the Crisis

The hype of the new economy finally resulting in the burst of the dot.com bubble has its origins in the 1990s when the use of personal computers along with the internet entered U.S. households. Global companies like Amazon.com and eBay entered the stage and went public shortly after foundation and its founders became overnight (multi-) millionaires. The internet changed from a hobbyist- to a global marketplace and many technology companies started to sell their equity in Initial Public Offerings (IPOs) which encouraged further technology firms to become publicly listed (Colombo, 2012). Not only big companies invested, but also private persons took their chance to become millionaires. The effect was even strengthened by the stock-options employees received from their tech and internet employers as payments (Colombo, 2012). Rapp (2008, p. 229) summarises:

“During the 1990s, Americans were pouring money into the stock markets, but predominantly into the dot.coms. The great expansion in (...) retirement plans and the overwhelming preponderance of investment of those funds into stocks was an important factor. In a year and a half starting in 1995, the Dow-Jones average climbed 45 % and the NASDAQ rose 65 %. By the summer of 1996, there were 800,000 online stock trading accounts in the USA.”

The race for increasing stock prices continued and

“...from early 1998 through February 2000, the internet sector earned over 1000 percent returns on their public equity. In fact, by this date, the internet sector equalled 6 percent of the market capitalisation of all U.S. public companies and 20 percent of all publicly traded equity volume” (Ofek & Richardson 2003, p. 1113).

Politics and Monetary Authorities, i.e. the FED did not intervene in the hype and the public trusted that no matter how much the market grew, the people in charge knew what they were doing (Mahar, 2003). This became especially obvious through Alan Greenspan back then chair of the FED.

“In December of 1996, he spoke of “irrational exuberance”, but a month later, when the Fed chairman spoke before the Senate budget committee, what was “irrational” had become “breath-taking.” Before long, Greenspan began to proclaim the wonders of a “productivity revolution not seen since

early this century” as he made the case for rational exuberance.” (Mahar, 2003, p. 32).

An important role during that time was played by the Wall Street analysts who continued to recommend shares without taking real cash-flows and assets of a firm into account. (Mahar, 2003) goes on by quoting the former analyst Henry Blodget

“...it did not matter if the company was any good; if you downgraded it, you were almost certain to be wrong. And, on Wall Street, the reality was that picking a good stock was far more important than picking a good company” (Mahar, 2003, p. XX-prologue).

3.1.2 Burst of the Bubble

On 10 March 2000 NASDAQ reached its all-time high of 5,048 points (Mahar, 2003). However, the previously highly praised internet companies were short of cash and only investors and speculators gained at the increasing stock price. The firms still could not provide real value. The public started to pay attention to negative press reviews on the internet sector, felt the danger of an overheating market and decided not to further invest in companies that started from scratch without any valuable assets often headed by young and inexperienced CEOs (Mahar, 2003). As a result, on 03 April 2000 NASDAQ had fallen by 35% from its peak in March (Rapp, 2008). What came as a shock for so many was a foreseeable outcome according to Mahar, who quotes a research specialist:

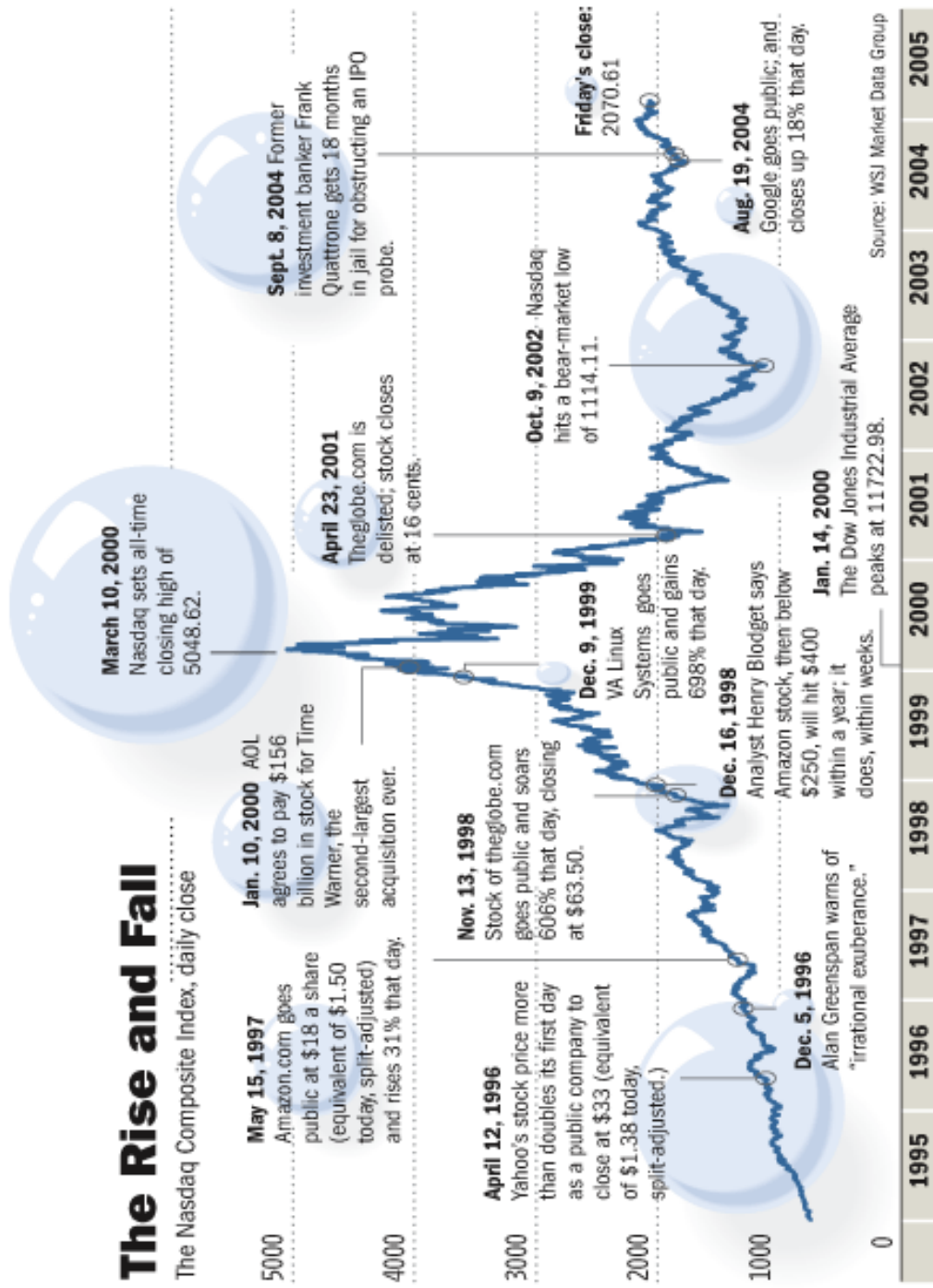
“You only had to do the math. By March 1, 2000, stocks trading on the Nasdaq had climbed \$3.1 trillion in 12 months, (...). Over the same 12 months the total value of all U.S. stocks—including Nasdaq shares—rose by only \$2.1 trillion. Anyone who subtracted the Nasdaq’s gain from the total realised that by March of 2000, the overall market had fallen by \$600 billion.” (Mahar, 2003, p. 325).

Another indicator was the increasing volatility in the market with days of ups and downs and in March 2000 there had been 15 days with a daily change of three percent or more (Rapp, 2008).

The meltdown of the market continued until 2002 and several stocks collapsed and were delisted. This included for example ‘theglobe.com’, a company which

reached the biggest first-day share price increase of an IPO resulting in a 606% gain above the initial share price which was then 9\$ (the globe, 2009). On 23 April 2001, theglobe.com was delisted with only a share price of 16 cents. The figure below summarises the events leading to the dot.com crisis.

Figure 15: Dot.com Crisis



Source: Ward, 2017

3.1.3 Consequences and Impact

In the US market, the burst of the bubble was followed by a recession at the beginning of 2001 although the internet- and technology sector only had a small proportion of the overall economy (Janszen, 2008). The Nasdaq Composite Index lost between March 2000 and October 2002 almost 4,000 points, i.e. 78%. The same could be observed in Europe, where the German DAX lost between 2000 and 2003, 73% (5,800 points) of its value (ARD, 2019). Triggers for the downturn were the missing assets and success of the new economy companies, increases in key interest rates and scandal related to accounting fraud of the former high valued start-ups (Janszen, 2008). The events of 9 September 2001 and the following military actions further reinforced the crisis in the United States and in Europe as they brought uncertainty to the global markets (finanzkun, 2018). Eventually, investors had lost trust in the markets.

The downturn was not only one of the financial markets but had an impact on the global real economy. The Gross Domestic Product (GDP) in the European Union decreased between 2000 and 2003 and started to recover in 2004. The same can be observed in the member states as the table below summarises. Just like in Europe the United States and Switzerland went through the same downturn but with even higher decreases in the GDP growth.

Table 2: GDP Growth After the Dot.Com Crisis

	2000	2001	2002	2003	2004	2005
Germany	3%	1,7%	0%	0,7%	1,2%	0,7%
United Kingdom	3,7%	2,5%	2,5%	3,3%	2,4%	3,1%
France	3,9%	2%	1,1%	0,8%	2,8%	1,6%
Spain	5,3%	4%	2,9%	3,2%	3,2%	4,2%
European Union	3,9%	2,2%	1,4%	1,3%	2,6%	2,1%
Switzerland	4,0%	1,3%	0,2%	0%	2,8%	3,1%
United States	4,1%	0,9%	1,8%	2,8%	3,8%	3,3%

Source: Own development based on World Bank Data (2019).

Along with the decreasing economy, the unemployment rates increased especially in Germany, where they increased from 9.4% in 2001 up to 10.5% in 2003 and even

11.7% in 2005 (bpb, 2019). On European Level, however, the unemployment rate remained stable with 9.2% in January 2000 and 9.3% in December 2002 (Eurostat, 2019a). In countries like the United Kingdom or France the unemployment rate even decreased from 5.7% in January 2001 to 5.1% in December 2002 in the UK and from 9.8% in January 2000 to 8,5% in December 2002 in France (Eurostat, 2019a).

In order to fuel the economy, the FED lowered its rates between January 2001 and November 2002 12 times and started to stimulate the economy (managemagazin, 2002). The low-interest rates in the United States set the beginning of a real-estate boom leading to the next crisis outlined in the next section.

3.2 Global Financial Crisis

The next crisis analysed and explained should be the subprime crisis which ended in a global financial crisis and was related to subprime mortgages in the United States of America. The crisis was fuelled by the low-interest environment provided by e.g. the FED after the burst of the dot.com bubble. However, the crisis can be divided into two sub-crises which will be outlined in the following sections. As before the focus will be on the events leading to the crisis, the burst of the bubble as well as on the impact of the events on society and economy. Furthermore, one should also keep in mind that this crisis is the trigger for the regulatory changes introduced over the last 10 years in the aftermath of this crisis and that especially the global spreading of the crisis is tied to financial products and insufficient risk management practices in banks. Therefore, this crisis can be seen as a turning point in bank regulation linked to Risk Governance as shortly explained in Chapters 2.4 and 2.5 and will be discussed in-depth in Chapter 4 of this study.

3.2.1 Subprime Crisis

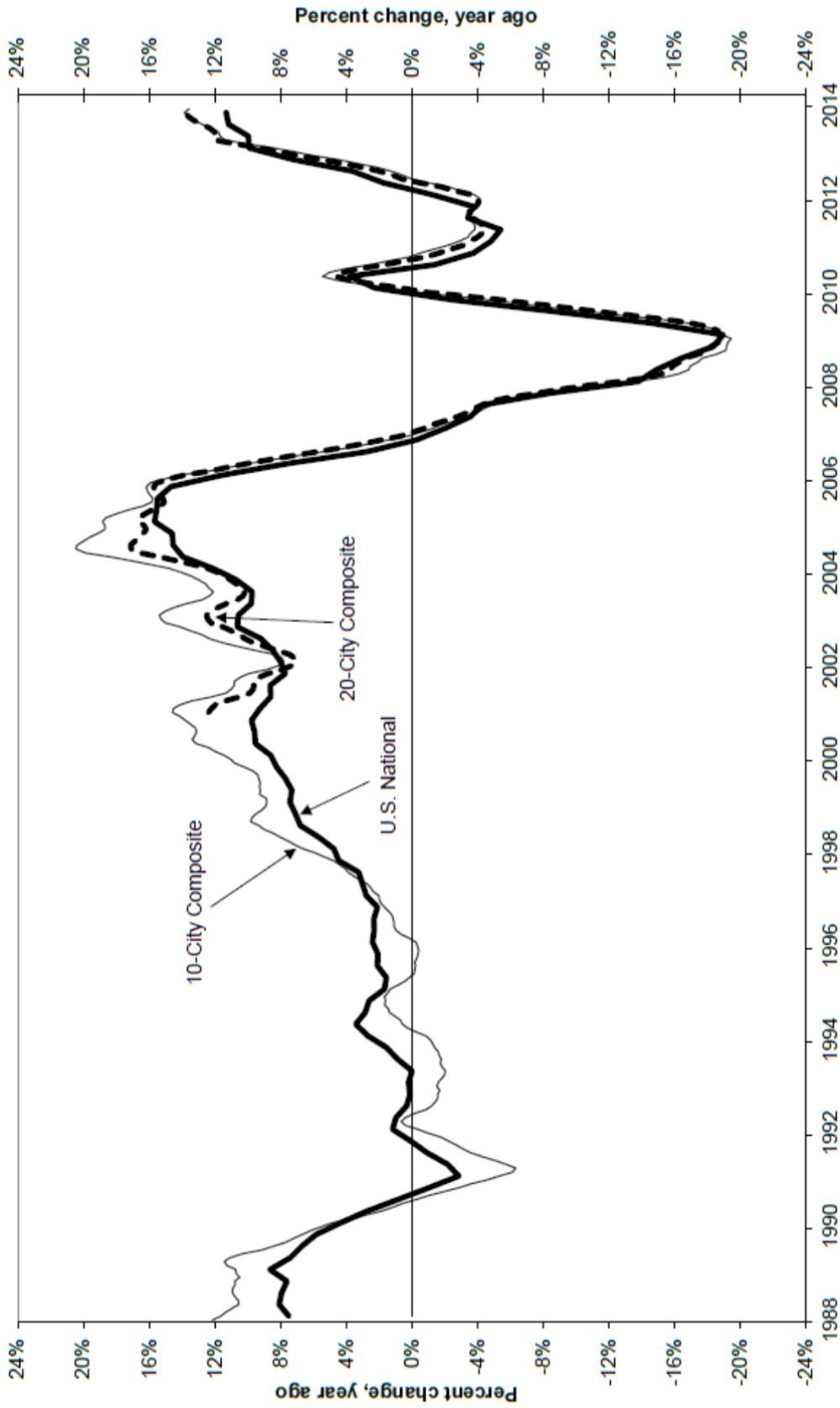
The preceding events leading to the subprime crisis and setting the starting point for the global financial crisis lay in the developments of the U.S. housing market since the 1990s. The S&P CoreLogic Case-Shiller Home Price Indices below outlines the development of real estate prices on a national level and for urban areas in the United States of America. Figure 16 shows a continuous increase of

housing prices until 2006. For 10 respectively 20 metropolitan areas the annual increase was even higher than on the national level as depicted in the figure below.

Reasons for the ongoing growth are manifold. Firstly, a period of low-interest rates initiated by the USA, Japan, China and Arabic countries with the aim of mitigating the negative results of the dot.com crisis (Möller, 2012). Goodhart (2008) outlines that the decreasing interest rates on a nominal as well as on a real level starting in 2001 set the path for the burst of the growing housing bubble. Between 2001 and 2002 the FED decreased the interest rate from 6% down to 1,24% which also led to a comparable decrease of the London Interbank Offered Rate (LIBOR) what enabled the banks to fix the interest rates for adjustable-rate mortgage rates (ARMs) (Janszen 2008). Janszen (2008) further outlines that with such a decrease monthly costs for mortgages in the US for a US\$500,000 property were not higher than the cost for a US\$250,000 property two years before. Taylor (2007) argues that in this constellation the demand for property increases because taking the low-interest rates into account financing becomes cheap for borrowers.

Besides the low-interest rate level, one of the main contributing factors was a change in the mortgage lending practice (Hull, 2015). Hull (2015) outlines that mortgage lenders in the US changed their lending standards in the 2000s. In consequence, families which were considered not creditworthy were then entitled to qualify for home loan financing. These mortgages were classified as subprime mortgages because they are riskier than average. The demand for own property of the higher-risk borrowers in combination with the low-interest rates led to price inflation on the housing market as depicted in figure 16.

Figure 16: S&P/Case-Shiller Home Price Indices



Source: Blitzer (2014, , “ S&P/Case Schiller Home Price Indices”).

For brokers as well as for lenders such developments meant increasing profits. Moreover, they felt safe because in case of a default the loan would be covered by the underlying collateral (Hull, 2015). However, as the house pricing rose it became again difficult for buyers to afford a new home. To further sell property, lending standards were again relaxed which was possible because the U.S. government wanted the private homeownership to increase also to low-income households (Hull, 2015). In consequence, an increasing number of subprime mortgages were issued and rose to 20% in 2006 from historically 8% or below (Rapp, 2015). Not only did more and more high-risk borrowers receive loans, but the financing structure itself changed as well. Rapp (2015, p. 287-288) points out that

“...lenders offered increasingly risky loan options and borrowing incentives. In 2005, the median down payment for first-time homebuyers was 2 %, with 43% of those buyers making no down payment whatsoever. Four out of ten first-time buyers used no-down-payment mortgages in 2005 and 2006.”

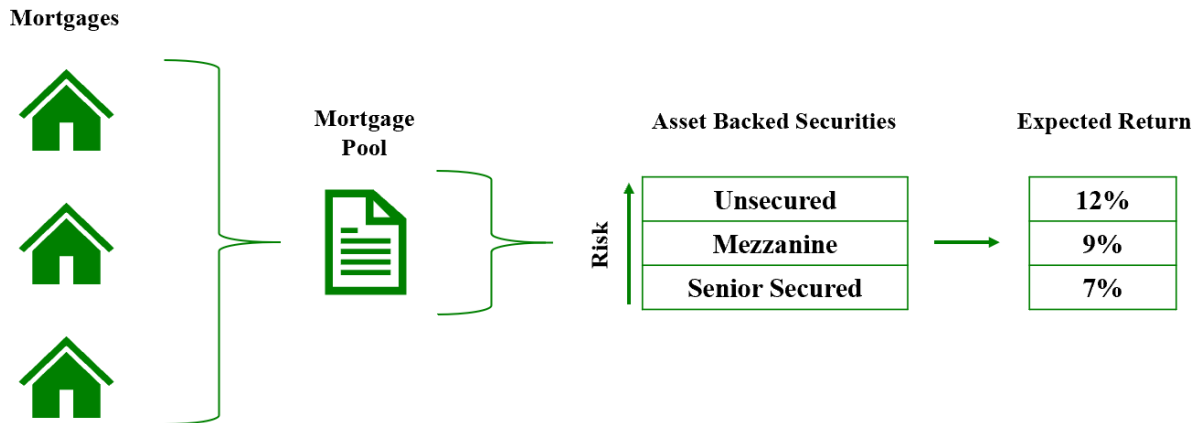
These loans were also referred to as NINJA loans – no income, no jobs, no assets (Soros, 2008).

In addition to homeowners, speculators began to invest in the housing market and eventually outnumbered the homeowners using the property as a residence. Having the growing market in mind, speculators bought real estate seeking to resell it one or two years later resulting in almost 40% of purchased property not used for primary residence (Rapp, 2015).

The immense effects of the subprime crisis were further driven by securitisation. Goodhart (2008) summarises the financial structure of securitisation under the title ‘Originate and Distribute’. Financial Institutions originate loans but however do not want to keep them. In order to achieve this Asset-Backed Security (ABS) were invented. These are securities where a portfolio of income-producing assets, i.e. mortgage loans are pooled to a basket and then sold to companies who created products for investors. The ABS are sold to special purpose vehicles (SPVs) which allocate the cash flows of the underlying assets into tranches and the

tranches are then sold to investors who expect a respective return. Figure 17 below explains the securitisation process.

Figure 17: Securitisation Process



Source: Forbes (2013).

Rapp (2015, p. 292) outlines that

“...the quality of these securities in many cases was not very good for a number of reasons, including (1) the increasing number of precarious subprime mortgages that were involved, (2) the susceptibility of payments on many mortgages to any downturn in house prices, and (3) the difficulty in dealing with homeowners scattered across the country who became delinquent in payments or who defaulted”.

Additionally, Keys, Mukherjee, Seru and Vig (2009) show that securitisation reduces the screening incentives of lenders. Hull (2015, p. 186) summarises: “When considering new mortgage applications, the question was not: ‘Is this a credit we want to assume?’ Instead, it was: ‘Is this a mortgage we can make money from by selling it to someone else?’”

Nevertheless, investors’ confidence was strong and almost steadfast because the ABS were reviewed by rating agencies. Moving away from traditionally evaluating bonds, where rating agencies had long-term experience, they started rating structured products such as the different tranches of ABS. For such products little historical data was available and rating agencies only had limited experience in that area (Hull, 2012). However, besides that lack of knowledge, the different tranches received investment-grade ratings. Rapp (2015) explains these results with a conflict of interest faced by the rating agencies because the ABS issuing

financial institutions paid them. Goodhart (2008) however argues that rating agencies depend on their reputation and that any doubt of that would harm the whole business. He (Goodhart, 2008), therefore, does not see a conflict of interest but highlights a possible misunderstanding of market participants. According to the author (Goodhart, 2008, p. 337)

“...these agencies usually, and primarily, only rate the credit default risk of the assets to which they give a particular rating. Unfortunately, this aspect of ratings has been widely misinterpreted, and many subsequent lenders who bought these tranches of debt misinterpreted the ratings as covering market and liquidity risk as well. So, government debt with a rating of AAA had a different and generally superior overall quality, as compared with the AAA of senior tranches of collateral mortgage obligations”.

This fact, however, was not realised by the holders of the tranches of Asset-backed Security.

Hull (2010, p. 72) summarises that overall “...macroeconomic events, government policies, the relaxation of lending standards by financial institutions, and the failure of regulation...” were crucial for the crisis. Eventually, caused by growing house prices the demand declined and the FED also increased the interest rates, hence some borrowers could no longer afford the mortgage rates which resulted in foreclosures and in an increase for real estate being on the market for sale (Hull, 2015; Möller, 2012). This created a domino effect and individuals who had borrowed 100% of the required house financing realised that the mortgage owed to the lender was greater than the value of the property. This again led to more foreclosures and so on. The mortgages could no longer be redeemed, and recovery rates went down to 25% in 2008 (Hull, 2015). Consequently, the ABS could not be repaid as well and the first manifestation of the bursting subprime bubble occurred in early 2007 with the announcement of Freddie Mac (Federal Home Loan Mortgage Corporation) that it would not buy anymore subprime mortgage loans (Becht et al., 2011). From 2007 on the real estate prices started to shrink at first in the USA but soon after in Great Britain and Spain (Möller, 2012). Property prices outside the U.S. market were, however, especially badly affected (Hull, 2012).

3.2.2 Financial Crisis

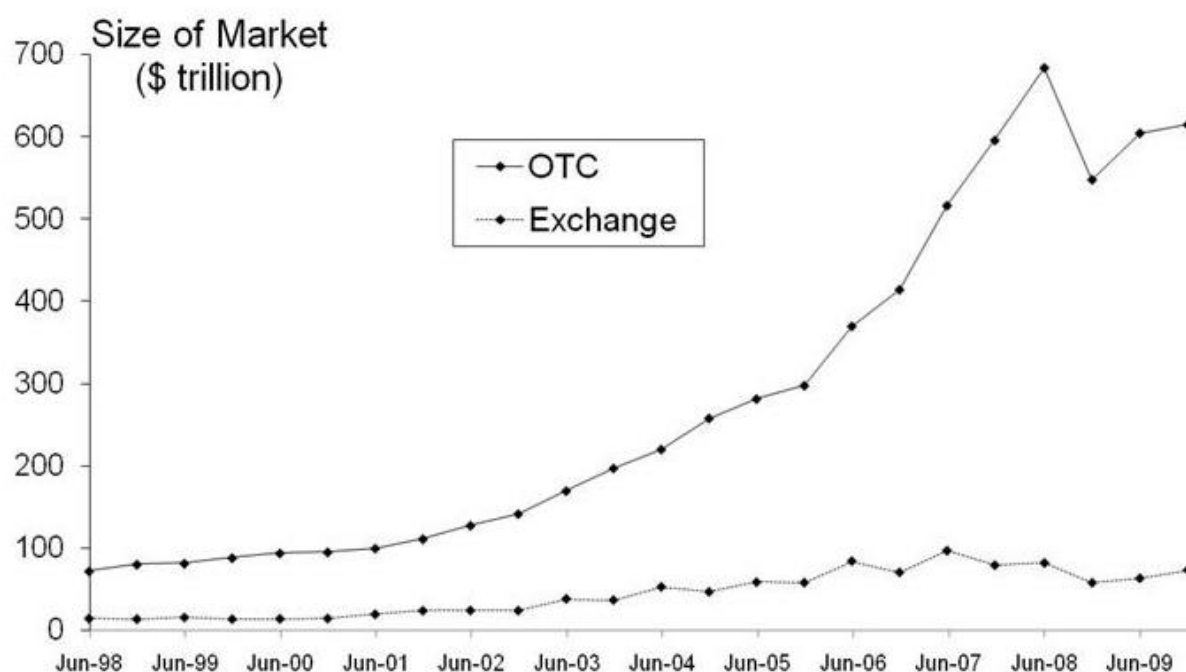
Understanding the real economic aspects of the subprime market does not explain the global impact when the bubble of U.S. home loans eventually burst. The crisis spread to several economies caused by a combination of "...direct exposures to subprime assets, the gradual loss of confidence in a number of asset classes and the drying-up of wholesale financial markets" (Nier & Merrouche, 2010, p. 4).

The root cause of the systemic risk, the extent and the consequences of the financial crisis was among the above-outlined reasons determined by the role of over-the-counter (OTC) derivatives. Warren Buffet (2003) stated that "...derivatives are financial weapons of mass destruction carrying dangers that (...) are potentially lethal" (p. 15).

"A derivative can be defined as a financial instrument whose value depends on (or derives from) the values of other, more basic, underlying variables. (...) However, derivatives can be dependent on almost any variable, up to the amount of snow falling at a certain ski resort" (Hull 2012, p. 3).

OTC derivatives are contrary to exchange-traded derivatives which are traded directly between two market participants without the interposition of an intermediary, e.g. a corporate and a financial institution or between two financial institutions. Prescribed characteristics do not have to be met and the participating parties can freely negotiate all terms and conditions. Due to the higher flexibility, the OTC market is much larger than the market for exchange-traded derivatives (Hull 2012, p.4) as illustrated in figure 18.

The ABS were highly complex and pooled thousands of loans and were easily tradeable. The securities themselves became part of new securitisations, called Credit Default Obligations (CDO), which made it almost impossible to determine who is responsible in case of losses. Derivative products used the ABS as underlying but became worthless when the real estate market started to decline (Hull, 2012).

Figure 18: OTC vs. Exchange Markets

Source: Hull (2012, p. 4).

Different to exchange-traded derivatives, OTC products resulted in substantial counterparty risk between market participants (Klein & Yang, 2013). The interrelated market participants on a global financial market in conjunction with the tremendous volume of traded securitisations started a chain reaction and lead to different bank failures in Europe as well as in America finally resulting in the global financial crisis (Hull, 2012). This included the Northern Rock bank run, bailout of Bear Stearns and IKB, the takeover of Freddie Mac and Fannie Mae reaching its maximum with the bankruptcy of Lehman Brothers and the bailout of AIG in late 2008 (Allen & Faff, 2012). Some institutions, also suffering, were regarded as “too big to fail” and intervention by central monetary authorities globally occurred to curb systemic failure (Hull, 2012). However, due to missing information market participants did not know which counterparties they could trust, and it was uncertain which financial institutions would be saved (Möller, 2012). In case of bankruptcy, the failing market participant could not fulfil its debt obligations anymore. Due to that instability and uncertainty financial institutions did not provide each other with credit anymore while at the same time not knowing which obligation, they are reliable for. In consequence, the interbank

market froze (Möller, 2012). Soros (2008, p. 312) summarizes “confidence in the creditworthiness of many financial institutions was shaken and interbank lending was disrupted.”

This was the moment when the financial crisis, stipulated by the subprime crisis in the U.S. housing market became a crisis for the real economy on a global level. Financial institutions hoarded liquidity in case obligations from the collapsing market had to be met. The illiquidity resulted in credit shortages for the bank's customers and unfolded in an economy-wide credit crunch (Möller, 2012). Debtors had to file for insolvency because refinancing was only possible at very high rates or not at all. The constraints of refinancing of corporate enterprises in conjunction with the shock of the collapsing financial sector pushed the economy into recession resulting in increasing unemployment rates and at the same time decreasing purchasing power (Möller, 2012).

OTC derivatives were not the starting point of the financial crisis. However, speculating with such products and the convoluted market itself led to opacity, illiquidity, the insolvency of several financial institutions and to an extent the breakdown of the global financial system. Edmond Lau, Executive Director of the Hong Kong Monetary Authority, summarised in 2011 at the annual ISDA conference:

“Taken together, interconnectivity and opaqueness were a perfect recipe for disaster. Interconnectivity meant high contagion risks and the ability for a single failure to spread to the entire financial system. Opaqueness meant that many firms were simply unaware of these contagion risks and therefore failure to implement appropriate risk management practices. This was compounded by the fact that even regulators lacked the information required to properly assess the build-up of exposures in the market and devise preventive measures”.

3.2.3 Consequences and Impact

The ground-shaking banking failures led to massive losses for shareholders as well as for the overall society globally. Nevertheless, it is questionable why a crisis on the other side of the Atlantic Ocean affected Europe so much. Gros and Alcidi (2009) argue that only the initial trigger event took place in the USA.

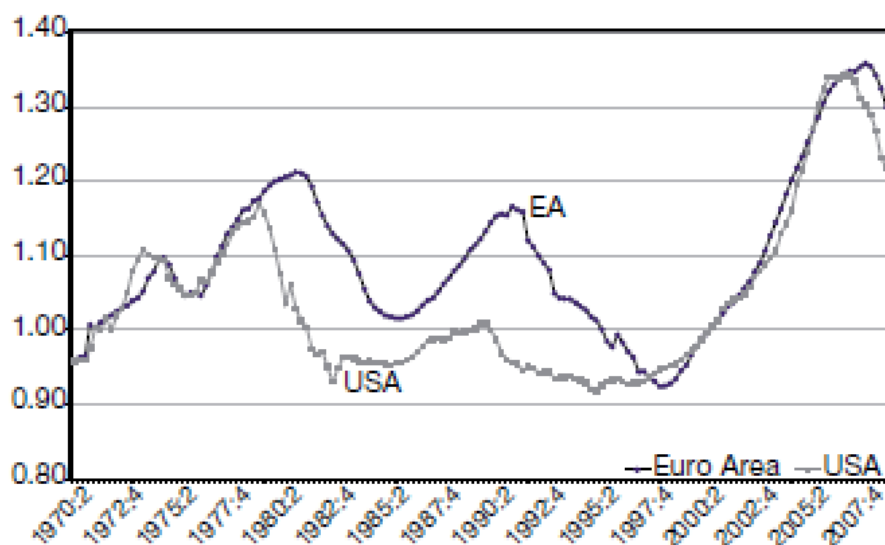
Following their (Gros & Alcidi, 2009) reasoning, major crises are characterised by two factors: credit expansion/increasing leverage and increasing asset prices. Both phenomena occurring in the US could be observed in Europe likewise. Financial standard terms define leverage as the debt-to-equity ratio and an increasing rate indicates that the ability of a corporation to absorb losses declines. Regarding macroeconomic terms, leverage is the credit to GDP ratio, and it increases when without an appropriate adjustment in GDP, credit expands. The authors (Gros & Alcidi, 2009) compare these terms of the USA and the Euro Area (EA) and find that the debt-to-GDP ratio on an economy-wide, the corporate sector and household level in Europe increased even more than in the US.

Table 3: Debt to GDP Ratio Comparison for Euro Area and the United States of America

Debt-to-GDP ratio								
	Economy-wide		Non-financial Corporate Sector		Financial Sector		Households and Small Businesses	
	EA	USA	EA	USA	EA	USA	EA	USA
1999	3.51	2.66	1.61	0.79	0.48	0.88	0.67	0.46
2007	4.54	3.47	2.32	1.17	0.61	1.28	0.92	0.49
2008	4.73	3.46	2.42	1.17	0.61	1.24	0.97	0.49
Change 1999 - 2007	1.03	0.81	0.71	0.38	0.13	0.4	0.25	0.03

Source: Gros and Alcidi (2009, p. 256).

Similar results can be observed for the development of asset prices in the euro area. Gros and Alcidi (2009) show that real estate prices increased by almost the same level in the eurozone and in the US by comparing the house-price-to-rent ratios for both regions (similar to price/earnings ratio for stocks).

Figure 19: House Prices: Price-to-Rent Ratios

Source: Gros and Alcidi (2009, p. 256).

Like for the EA, the authors (Gros & Alcidi, 2009) found similar results for the United Kingdom. Leverage and real estate prices increased at the same level. It can be concluded that the same causes that lead to the crisis in the US occurred all over Europe.

Besides the occurring phenomena regarding leverage ratios and asset price increase, the international relations between financial institutions did not limit the financial crisis to one market but rather spread it globally and set the starting point for the crisis in Europe. “By October 2007, the financial crisis spreads to Europe. England, China, Canada, Sweden, Switzerland and the European Central Bank cut rates in a coordinated effort to aid the world economy” (Allen & Faff, 2012, p. 4). In 2008 the crisis hit the hardest and it became more and more difficult for banks to borrow. This is indicated by the spread between the EURIBOR (European interbank offer rate) and the EONIA (euro overnight index average) for euro-area banking market (Shambaugh, 2012) as depicted in the following chart.

Figure 20: Euribor-Eonia Swap Spread

Source: Wolff (2011, para “Euribor-Eonia swap spread”)

The market values of major banks experienced massive decreases as e.g. the Royal Bank of Scotland had a share price trough of 5% in the heights of the financial crisis as compared to its peak in early 2007, and the same applies for Citigroup (Dermine, 2013). Commerzbank was worth not more than 8% of its before crisis value and Lloyds TSB, UBS and Deutsche Bank also lost around 80% of their pre-crisis value (Dermine, 2013).

Besides the decrease in share price banks had to cope with severe depreciations especially in 2008. The depreciation resulting from the crisis for Germany are exemplarily outlined in figure and a total of 60.1 billion euro until February 2009 (Sinn, 2009).

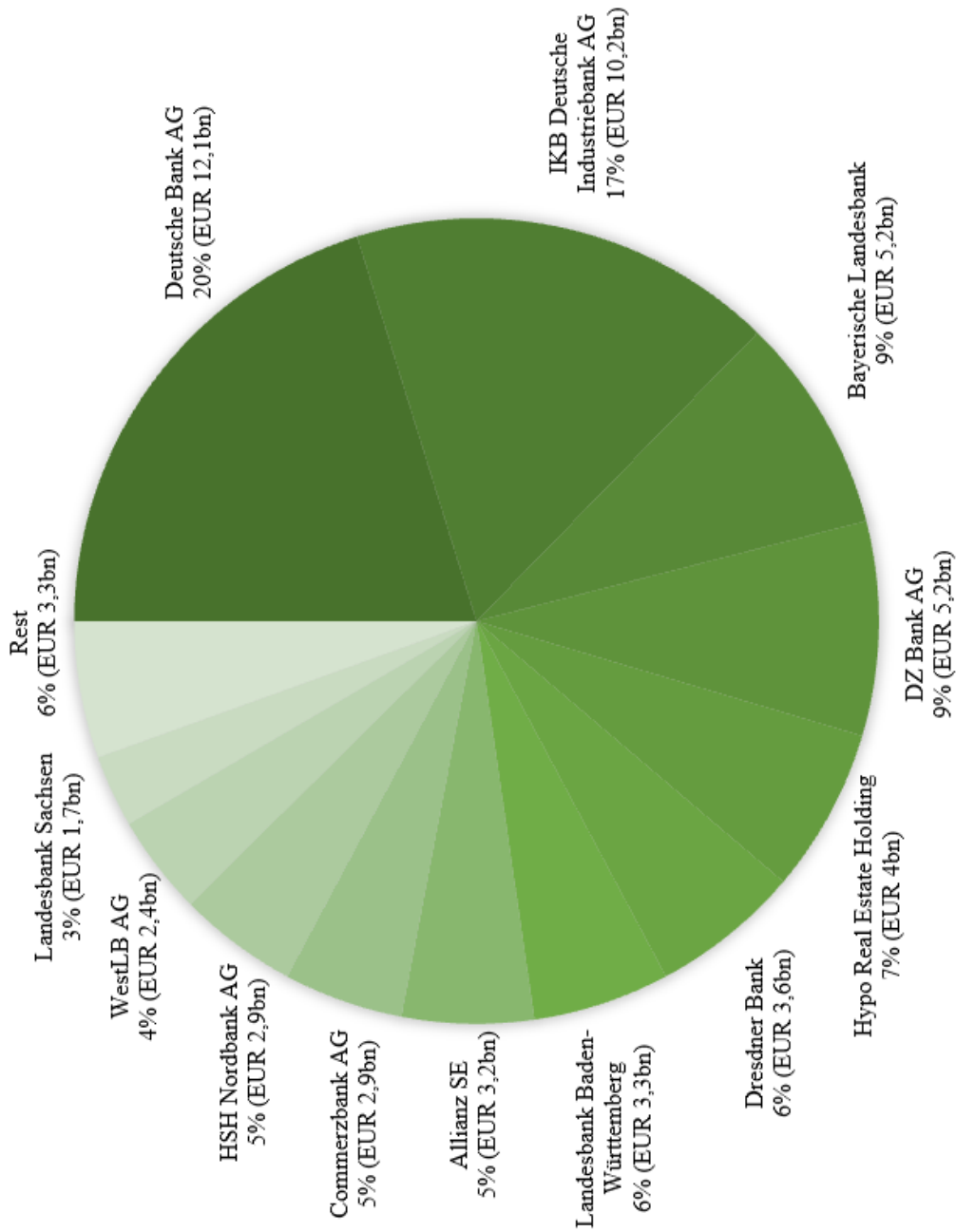
The extent becomes even bigger on a global level. Goel (2009) stated that in

“...August 2008 financial firms around the globe have written down their holdings of subprime-related securities by US\$501 billion. (...) About \$750 billion in such losses had been recognised as of November 2008. These losses wiped out much of the capital of the world banking system. (...) Thus, the massive reduction in bank capital just described has reduced the credit available to businesses and households” (p. 77).

The peak was reached in September 2008 when Lehman Brothers declared bankruptcy, the bank of America purchased Merrill Lynch and Goldman Sachs as well as Morgan Stanley became bank holding companies in order to receive emergency FED lending (Melloy, 2011). The US money market was subject to a bank run when within two days 150 billion USD were withdrawn from respective accounts (Goel, 2009). On 18 September 2008, Ben Bernanke back then chairman of the Federal Reserve Bank presented a US\$700 billion emergency plan to US government representatives in order to regain trust in the financial system according to Nocera (2008). However, there was still panic in the markets and the S&P 500 lost 22% value within nine days starting from October first (Yahoo Finance, 2009). The FED and the European Central Bank (ECB) reacted with the largest monetary policy action ever and purchased during the last quarter of 2008 US\$2.5 trillion of troubled private assets from banks and government debt according to Goel, 2009). Moreover, European and US governments purchased US\$1.5 trillion in preferred stock issued by the banking system (Goel, 2009).

In order to prevent future crises and to regulate, the banking sector especially, several new regulations for the markets itself were introduced. This is for example in Europe the European Market Infrastructure Regulation (EMIR) which regarding the OTC derivatives market aims to minimize economic and systemic risks, increase transparency and to stabilize the market in general (Stiller, Dammert & Joehnk, 2013). EMIR especially regulates changes in the field of Reporting, Risk Management, Collateral Management and Clearing according to Stiller et al. (2013).

Figure 21: Crisis-Driven Depreciations of German Financial Institutions and Insurance Companies



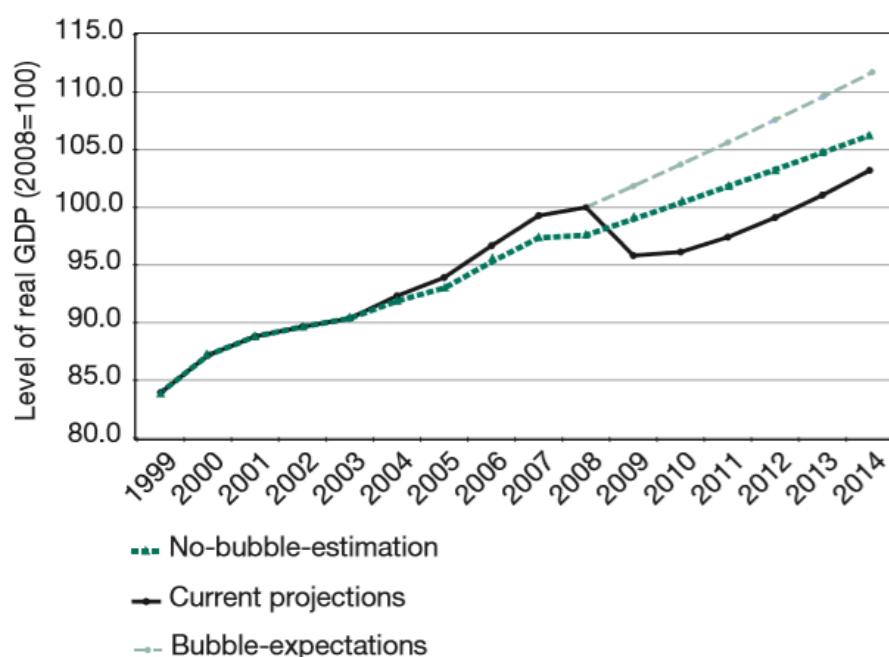
Source: Sinn (2009, p. 188).

Beside EMIR, the BCBS also introduced at the end of 2009 the BASEL III regulation which increases the amount of capital financial institutions are required to keep and regulates liquidity requirements of banks (Hull 2012).

Parallel to global changes in the regulatory environment, initiatives were taken at the domestic level to further regulate the financial markets. In 2009 the United Kingdom, for example, announced a “super-tax’ on bonuses of more than £25,000” (Hull 2012, p. 191).

Following the impact on the financial sector, the real economy also had to face severe consequences. Due to illiquidity in the market banks could not lend any money to the industry which in turn led to a deterioration of the creditworthiness of the corporations, hence companies became insolvent. The negative sentiment jumped over to the whole population, private consumption fell which further negatively impacted further industries (Möller, 2012).

To understand the effects of the financial crisis on the real economy, one must evaluate the development of GDP. However, it must be kept in mind that the burst of the bubble triggered the crisis. Gros and Alcidi (2010, p. 4) therefore assessed “...the excess growth during the bubble against the loss of output during the crisis...” which is depicted in figure 22.

Figure 22: Long-Term Effect of the Crisis on GDP in the Euro Area

Source: Gros and Alcidí (2010, p. 5).

The dark line shows the expected GDP estimated by the International Monetary Fund (IMF), whereas the light green line shows the predicted GDP development in case the bubble had not burst. The authors (Gros & Alcidí, 2010) further examined how GDP would have developed in case there would not have been a bubble and in consequence also no crisis. The result is shown in the green line of figure 22. Relating to data of the European Commission and own calculations Gros and Alcidí (2010) assumed that the bubble increased the annual GDP growth rate by 0.5% between 2004 and 2008. The comparison for the European Union, the Euro Area and the US show that the impact of the crisis is even worse in EU/Euro Area. Table 4 shows in the first column

“...the percentage difference between the IMF’s current prediction of 2014 real GDP levels in its World Economic Outlook (WEO) of October 2009 and the 2014 GDP levels expected at the peak of the bubble under the assumption that it would not burst. The second column shows the percentage difference between the estimated levels of output expected for 2014 if there had never been a bubble (or a burst) and the 2014 GDP if the bubble had lasted. This latter calculation, by using an estimation of the “normal” path of the economy as a benchmark, is likely to be a better indicator of the cost in terms of lost output from the crisis. This column suggests that the cost of the bubble burst is quite similar across the Atlantic,

though larger in the USA and that within Europe the euro area has suffered somewhat less than the UK and the new member countries. By contrast, the first column suggests that the cost of the crisis (if compared to “bubble expectations”) is much higher in the EU” (Gros & Alcidi, 2010, p. 5).

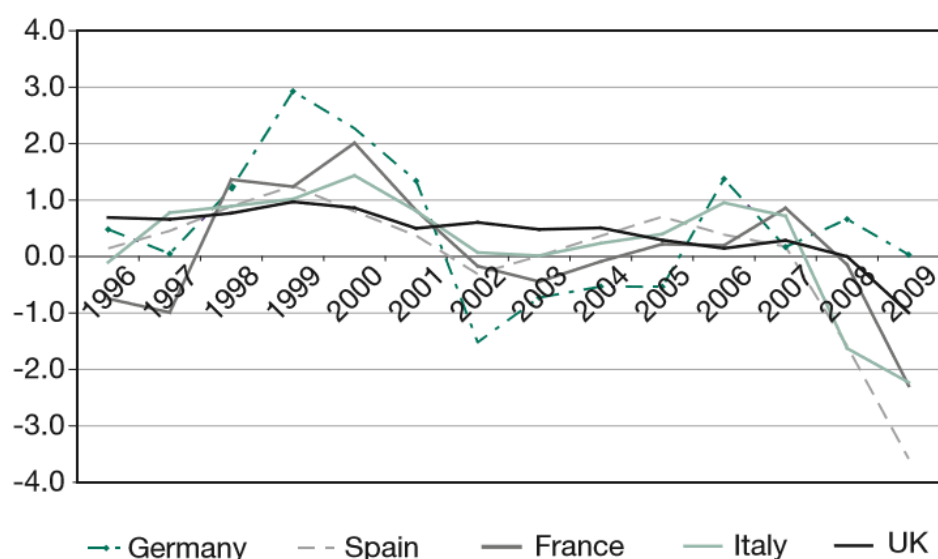
Table 4: Long-Term Implications of the Crisis

	Percentage difference between:	
	Current projections and “bubble expectations” for 2014	No-bubble path and “bubble expectation” for 2014
EU	-9.6	-5.5
Euro Area	-8.4	-5.4
USA	-6.3	-6.5

Source: Gros and Alcidi (2010, p. 6).

The Gross Domestic Product is one way to evaluate the impact of a crisis. However, the change in GDP does not provide information on the effect on the population of a country. A further is the happiness index, which combines the increase in the unemployment rate and change in consumption. The two parameters are chosen because the life of an individual is dependent on whether the employment is secure and how much of the income can be spent.

Figure 23: Standardised Happiness Index for Selected European Countries



Source: Gros and Alcidi (2010, p. 7)

Across the European Union (EU) the development is noticeably different. The happiness index for Germany did not decline as much as it did for example, in Spain or Italy. The reason for this is the employment rate which remained relatively stable and therefore consumption continued (Gros & Alcidi, 2010). Nevertheless, due to the financial crisis across Europe, investments decreased, and short-time work had to be introduced even leading to dismissals and increase of the unemployment rate and growth of the overall economy slowed. (Möller 2012) and Hull (2012, p. 188) recapitulated “The world experienced its worst recession in several generations.”

Next to the already mentioned regulatory changes on the market level like EMIR changes on the firm-level Corporate Governance were as well introduced in the aftermath of this crisis. These will be explained in more detail in part IV of this study.

3.3 Eurozone Crisis

The last crisis analysed and explained should be the Eurozone crisis which started shortly after the global financial crisis and can be linked to the consequences of this crisis. This is different from the US, which recovered shortly after the global financial crisis and did not dive into a further crisis. Especially in the context of this study, it is important to understand this as most of the research based on the author’s literature review in Chapter 4.2 of the study, focused on Risk Governance and on the US in a pre-global financial crisis setting. Therefore, empirical evidence for the just recently introduced Risk Governance measures is limited to periods without a crisis in the before mentioned setup (Fernandes et al., 2018). Therefore, the crisis described in the following is providing additional ground for the empirical part of this study and by that enhancing the robustness of it compared to studies on the US banking market. As before the focus will be on the events leading to the crisis, the burst of the bubble as well as on the impact of the events on society and economy.

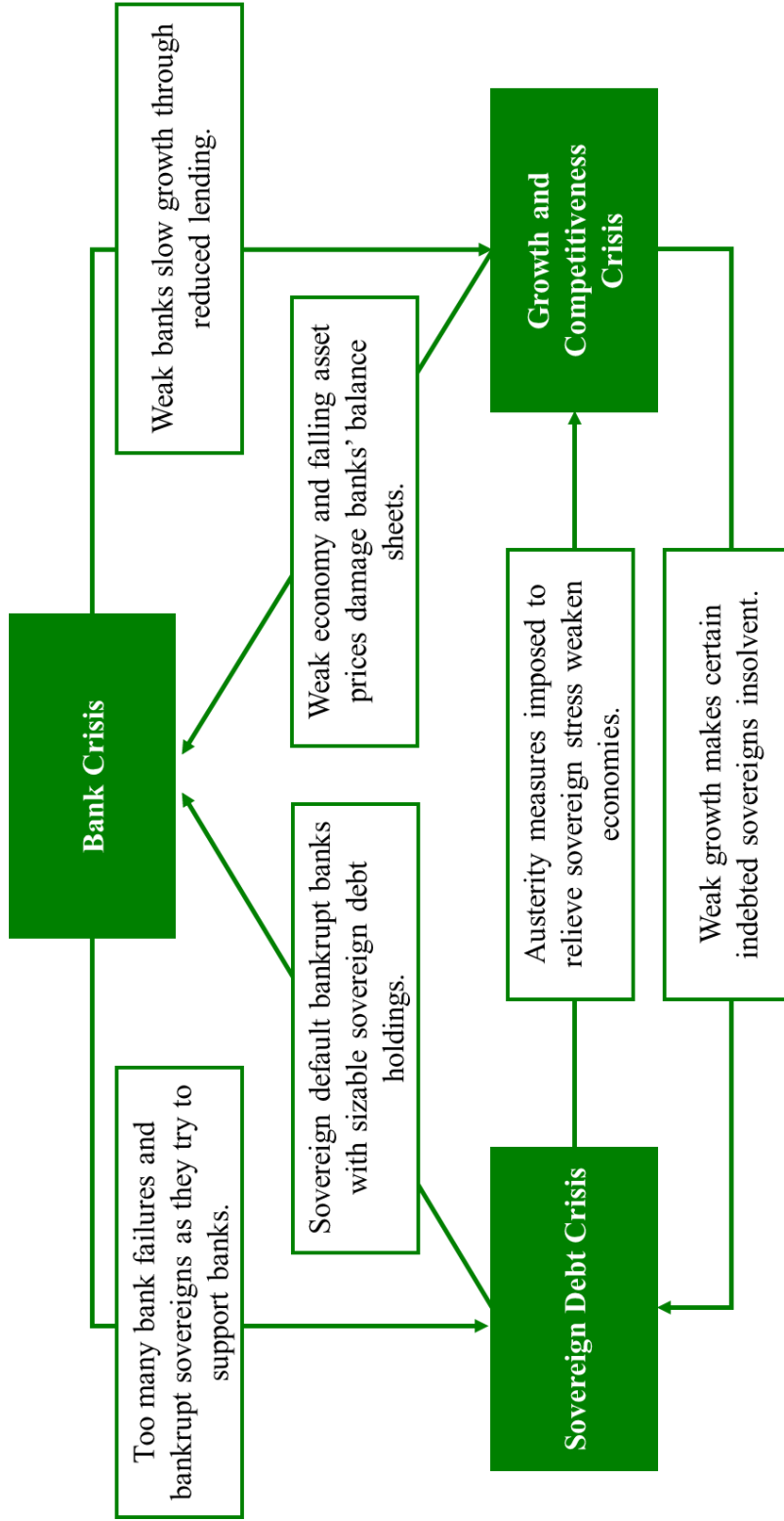
To understand the crisis and the impact on the different states especially in the European Union one must understand the set up and the prerequisites.

“Monetary union has imposed fiscal rigidity, removed monetary independence, and forced economic adjustment through the labour market. (...) European banks faced a pressing need for liquidity after 2007. Banks also had to deal with the excesses of the preceding bubble. The ECB provided extraordinary volumes of liquidity, allowing banks to repair balance sheets by reducing lending, but thus intensified the recession. (...) during 2007-8 banks of core eurozone countries (Germany, France, Netherlands, Belgium) had continued to lend to peripheral countries (Italy, Spain, Ireland, Greece, Portugal). Gross cross-border claims from the core to periphery reached 1.5 trillion euro in 2008, representing almost three times the capital of core banks.” (Lapavitsas et al, 2010, p. 2-3)

Eventually, the eurozone crisis was triggered when at the beginning of the fourth quarter of 2009 the Greek government admitted that the true size of its national budget deficit had been hidden by the previous administration and that the actual deficit was twice as large as publicly presumed (Baldwin & Giavazzi, 2015). However, Lapavitsas et al. (2010, p. 4) argue that the actual reason for the crisis was the “...precarious integration of peripheral countries in the eurozone”.

However, the Eurozone crisis is according to Shambaugh (2012) not a single crisis but rather contains three interlinked sub-crises, namely the banking crisis, the sovereign debt crisis and the growth crisis as outlined in figure 24. The following section outlines each crisis, evaluates the interdependencies between them and closes with the impact the Eurozone crisis in total had on Europe.

Figure 24: Eurozone Crisis Components



Source: Schambaugh (2012, p. 159).

3.3.1 Banking Crisis

The banking system in the European Union is huge and in 2007 its total assets were more than 300% of the GDP of the eurozone for the same timeframe compared to less than 100% for the US (Shambaugh, 2012). Shambaugh (2012) therefore concludes that companies in the euro area depend much more on financing that is provided by the banking sector directly than US firms do, as they make more use of bond markets. Hence, the strength as well as the condition of the banking market in Europe are particularly important for the economy. The previous chapter outlined the impact of the subprime crisis on banks and how it spread globally. The consequences of this to banks can be attributed to the banking crisis in the context of the Eurozone crisis. Central banks intervened and took several measures, i.e. cutting interest rates. Financial Institutions could borrow from them and in consequence, they enlarged the loan distribution to the banking sector to support their robustness in the aftermath of the subprime crisis (Shambaugh, 2012). Besides that, several banks required US dollars in order to pay off their short-term dollar lending, but they could not because they only held illiquid US assets. The FED then provided dollars to other central banks in the form of liquidity swaps which in turn they could lend to the banking sector (Shambaugh, 2012).

3.3.2 Sovereign Debt Crisis

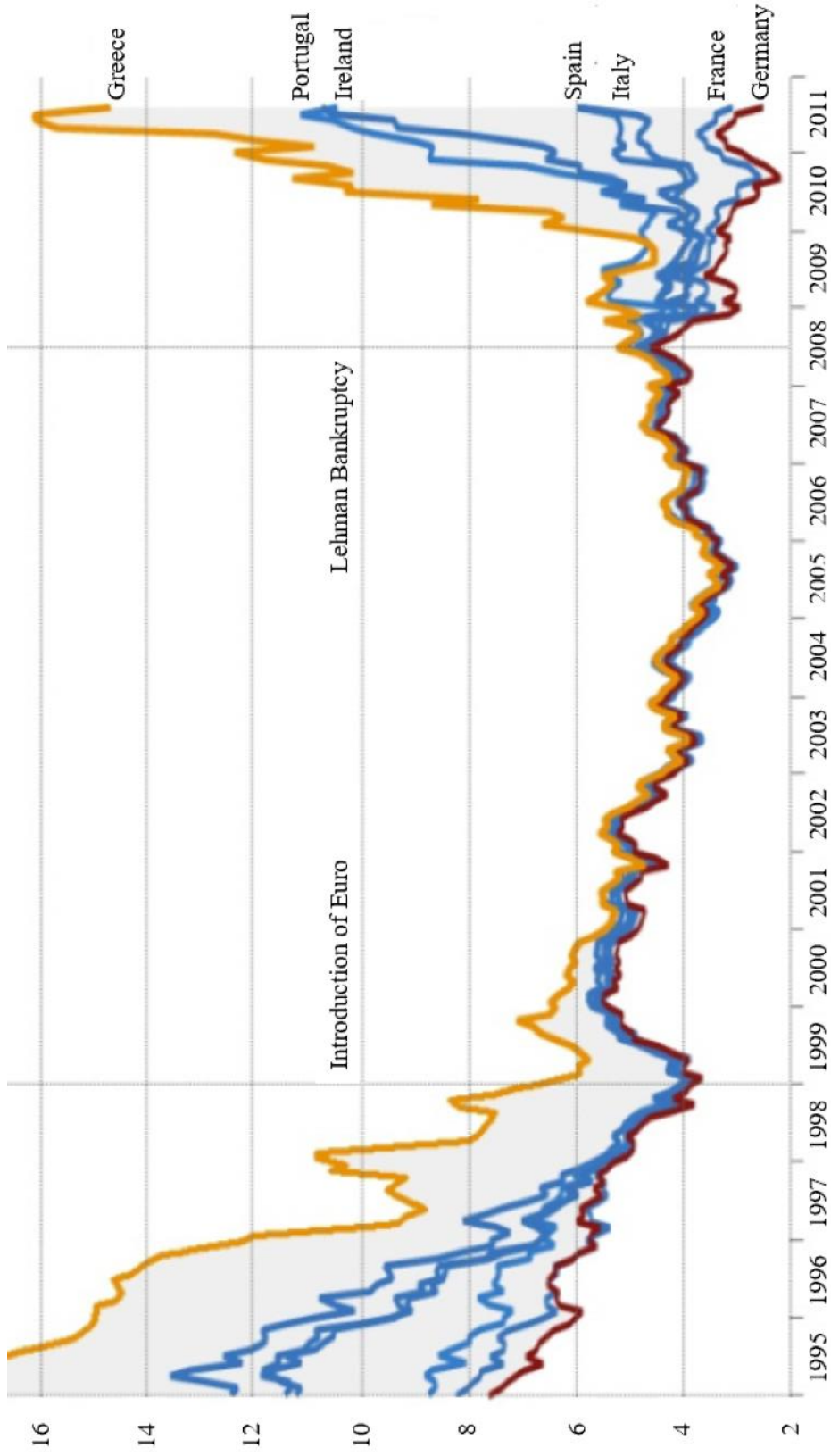
Historically investors demanded different interest rates depending on the creditworthiness of a sovereign borrower. This also accounts for

“...interest rates on the bonds of two countries if the currency from one of them is expected to strengthen against the other (because then the bond denominated in the strengthening currency will be worth more over time, and investors will be willing to hold it even if it pays a lower interest rate)” (Shambaugh 2012, p. 166).

This fundamental rule was also valid for the eurozone before the common currency, the Euro, was introduced. Due to the single currency for the Eurozone amendments in the exchange rate were not possible any longer and the market assumed that none of the Euro countries could default, the interest rates converged as shown in figure 25 (Shambaugh, 2012).

Figure 25 clearly shows that in 2009 and speeding up in 2010 the interest rates again started to diverge. Markets realised that the Euro-Area as a whole is solvent, however, uncertainty about the creditworthiness of single-member states evolved. The loss of liquidity in the market triggered by the credit crunch during the financial crisis “...of 2008 inevitably violated the eurozone’s most cherished principle (perfectly separable public debts)” (Varoufakis & Holland, 2012, p. 4).

Figure 25: Development of Interest Rates in 10-year Government Bonds

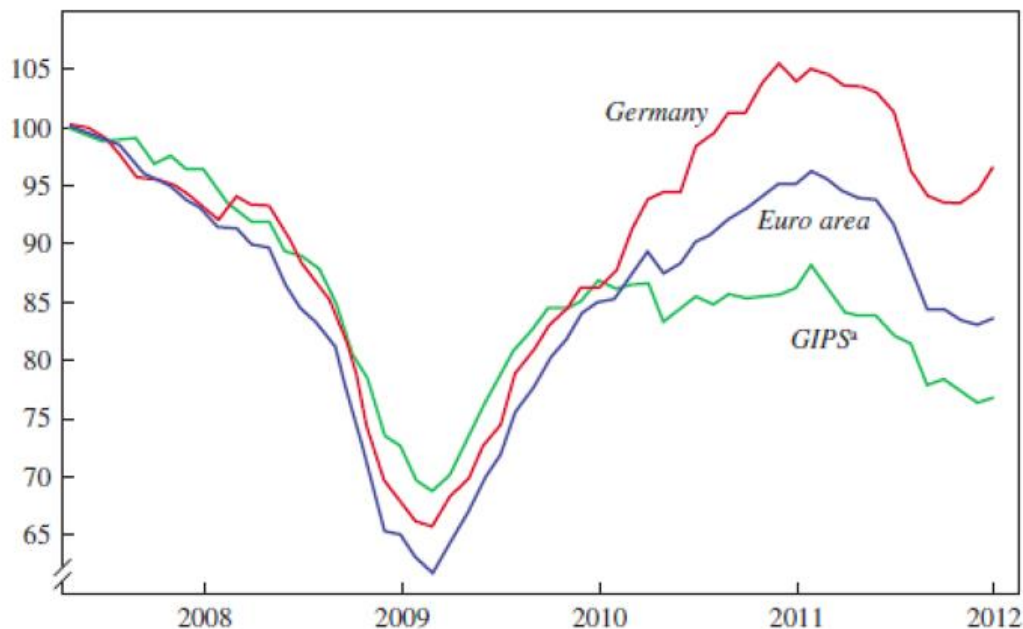


Source: Marron, (2011, , para “ The most Important Economic Chart of the Year”).
 Note: Greece joined in 2001 and is therefore delayed to the founding countries is 1999.

3.3.3 The Growth Crisis

The consequences of the sovereign debt crisis finally lead to a growth crisis. In 2009 the eurozone, along with other countries in the world, started to recover from the financial crisis. However, it emerged that some countries within the European Union recovered faster than others which was of course noticed by the markets (Shambaugh, 2012). A chart of the economic sentiment in the euro-area outlines the issue in figure 26. The sentiment shows the confidence in the economy and is evaluated by the European Commission. It becomes clear that the trust in the GIPS states (Greece, Italy, Portugal and Spain) was much lower than into the euro-area or into faster-recovering countries like Germany.

Figure 26: Economic Sentiment in the Euro Area, Germany, and the GIPS



Source: Shambaugh (2012, p.169).

Note: (May 2007 = 100)

This is understandable by looking into the GDP growth rates and the unemployment rates in table 5. Whereas the European Union slowly started to grow from 2010 on again, the GDP of the GIPS states continued to decrease.

Table 5: Gross Domestic Product Development 2008-2015

Gross Domestic Product Development 2008 - 2015								
Data in EUR bn	2008	2009	2010	2011	2012	2013	2014	2015
European Union	13,087	12,331	12,842	13,217	13,484	13,597	14,072	14,829
Euro Area	9,501	9,236	9,492	9,754	9,791	9,887	10,139	10,535
Germany	2,562	2,460	2,580	2,703	2,758	2,826	2,939	3,049
Greece	242	238	226	207	191	181	179	177
Italy	1,632	1,573	1,605	1,637	1,613	1,605	1,622	1,652
Portugal	179	175	180	176	168	170	173	180
Spain	1,116	1,079	1,081	1,070	1,040	1,026	1,038	1,081

Source: Own development based on Eurostat data (2019b).

Like the GDP, the overall unemployment rate within the EU in 2011 was 10% whereas the rates in the GIPS states continued rising tremendously as outlined in the table below.

Table 6: Development Unemployment Rate 2008 – 2015

Development Unemployment Rate 2008 - 2015								
Data in %	2008	2009	2010	2011	2012	2013	2014	2015
European Union	7.0	9.0	9.6	9.7	10.5	10.9	10.2	9.4
Euro Area	7.6	9.6	10.2	10.2	11.4	12.0	11.6	10.9
Germany	7.4	7.6	7.0	5.8	5.4	5.2	5.0	4.6
Greece	7.8	9.6	12.7	17.9	24.5	27.5	26.5	24.9
Italy	6.7	7.7	8.4	8.4	10.7	12.1	12.7	11.9
Portugal	8.8	10.7	12.0	12.9	15.8	16.4	14.1	12.6
Spain	11.3	17.9	19.9	21.4	24.8	26.1	24.5	22.1

Source: Own development based on Eurostat data (2019a).

It can be summarised that the EU had to face two aspects of growth problems during the crisis:

“First, the euro-area economy as a whole is growing too slowly to reduce unemployment and support existing debt. Facing historically high unemployment and the likelihood of a second recession within 3 years, the region needs faster growth. At the same time, the distribution of growth across the euro area is unbalanced, with those economies facing the greatest pressure in bond markets growing most slowly. (...) these countries are quite likely to continue to struggle with their debt burden because they need growth to become solvent. Thus, regardless of what is done to meet their liquidity and funding needs, and even if the banking system avoids collapse, without growth in the GIIPS, the crisis in the euro area overall cannot end.” (Schambaugh, 2012, p. 170-171).

3.3.4 Interconnection of the three crises and Consequences

The following section aims to outline the relationships between the three crises as shown in figure 24 and will be followed by an evaluation of the impact for the Eurozone and its member states.

3.3.4.1 Banking Crisis ↔ Growth Crisis

According to Shambaugh (2012) decreasing growth impacts banks in two ways. First, a weak economy also means that loans on the private as well as on the corporate side cannot be repaid by the borrowers. In consequence losses of banks increase. The same accounts for the declining value of assets through a recession which has a negative impact on banks’ balance sheets. On the other side, the financial crisis directly impacted the real economy as banks were not able to provide lending which in consequence reduces overall consumption and investments and hence the growth of an economy in general. Shambaugh (2012) further outlines that in 2011 EBA raised capital requirements for banks to 9%, which in general is good because banks have larger reserves to withstand losses. In order to increase the capital ratio, two possibilities exist. They can either raise capital or pay down debt and sell assets. Most banks decided to use possibility two and decreased lending or did not purchase riskier assets anymore according to Shambaugh (2012). Hence, credit is not available to the economy anymore and has a negative impact on growth.

3.3.4.2 Sovereign Debt Crisis ↔ Banking Crisis

During the crisis, the exposure of debt to sovereigns, especially the GIPS states, was so big for the financial institutions, that if one of the sovereigns would not have been able to repay its debt, the whole banking system would have defaulted (Shambaugh, 2012). The research of Allegret, Raymond and Rharrabti (2016, p. 130) shows that a devaluation in

“...European sovereign debt had a negative impact on the balance sheets of European banks. Banks hold large amounts of government bonds to satisfy multiple purposes. First, investing in government bonds allows financial institutions to diversify their portfolio into low-risk assets. The European prudential regulation has encouraged banks to hold such safe and liquid securities that may help to cushion losses on riskier assets. Second, holding government bonds is crucial for banks to access the central bank liquidity, insofar as the refinancing operations of the central bank are based on highly rated securities. Besides, interbank loans and repos rely heavily on the use of public bonds as collaterals. Therefore, when the value of sovereign bonds plummets it reduces both the market value of these assets in banks' balance sheets and banks' access to funding. These large holdings of eurozone government bonds by European banks have led to a growing concern about possible spillovers from the sovereigns to the banks and a second round of spillovers from banks to sovereigns”.

Moreover, the states are trying to support the banks, which were weakened due to the financial crisis, which in turn downgrades the creditworthiness of the state itself. Varoufakis and Holland (2012) point out that the national governments in Europe

“...lack the backing of a national central bank to maintain national control over global banks within a transnational currency union. At a time when forced recapitalisation of essentially insolvent banks is of the utmost importance, we end up with the unwholesome sight of fiscally stressed member states (e.g. Spain) borrowing massively on behalf of their insolvent banks. And because this new public debt stresses their fiscal position further, they are abandoned by private creditors and have to rely on ECB liquidity that comes to them (to the states) via the very banks that the states are trying to save!” (Varoufakis and Holland, 2012, p. 4).

3.3.4.3 Growth Crisis ↔ Sovereign Debt Crisis

The slow growth rates bear the danger of driving states further into insolvency as they cannot repay the debt. However, saving measures and budget cuts of the economies to reduce current and prospective debt aims to increase market confidence in a country and in return decrease interest rates that need to be paid (Shambaugh, 2012). The growing interest rates, some states had to pay from 2009 on, influenced their GDP. Shambaugh (2012, p.168-169) states

“...if the interest rate paid on the outstanding debt exceeds the growth rate of the economy, then even if the primary budget is in balance, debt as a share of GDP will grow (...). A country that can fund itself with low-interest rates may be solvent, but the very same country forced to pay a higher interest rate may suddenly be feared to be insolvent, even if its primary budget is in balance.”

In order to avoid increasing interest rates, several European countries decided to take austerity measures. Shambaugh (2012) shows that countries with the deepest cuts in the budget also faced the biggest decrease in economic activity. The example of the United Kingdom underlines this statement. The UK was not as much under financial stress during the crisis as other European countries were. Nonetheless, the Kingdom decided to engage in austerity and faced high unemployment and low growth afterwards (Shambaugh, 2012).

Taking all aspects of the previous chapter together Shambaugh (2012, p. 157) concludes that “the problems of weak banks and high sovereign debt are mutually reinforcing, and both are exacerbated by weak growth but also, in turn, constrain growth.”

3.3.5 Consequences and Impact

Eichengreen, Jung, Moch and Mody state in 2014 that the recovery of Europe is very disappointing compared to other economic regions in the world. Reasons are according to the authors (Eichengreen et al., 2014) a large amount of public debt the EA entered the crisis with. Moreover, European states were not able to improve export rates by adjusting the national currency, since there is no local currency that can be adjusted. They (Eichengreen et al., 2014, p. 305) summarize

the slow and miserable recovery with 10 words by “austerity, the difficulty of adjustment, chronic banking problems, and debt overhang”.

3.4 Conclusions of the Financial Crises Analysis

As discussed before all three major crises in this century starting in the early 2000s had a major impact on banks as well as on the overall real economies. Furthermore, it is clearly observable that all three are linked to each other. They are linked, either based on central bank interventions regarding the interest rate environment or by the real economic consequences, which spurred the new crisis. Moreover, it could be observed that the recovery of the eurozone after the global crisis, which was fuelled by the subprime mortgage market in the US, took longer than other countries and was further impacted by the Eurozone crisis starting shortly after the global financial crisis.

The crises discussed before will be used as indicated in two ways. First, they gave, and this is especially true for the subprime crisis, rise to new regulation not only on the market but on the firm level as well. Particularly the global financial crisis was a worldwide trigger for regulatory reforms and an in-depth analysis of these regarding the Corporate Governance of banks will be conducted in the following Chapter 4 of this study. Secondly, the analysis should help to determine the relevant crisis periods for the empirical study. Based on the courses of the financial crises described before in scope the author determines the troughs of these as following: dot.com from 2001 to 2002, global financial crisis 2008 and the Eurozone crisis 2011. These assumptions will be validated at a later stage against the empirical data especially, profit and loss from accounting as well as stock market perspective, derived for the banks in the research sample.

Moreover, the analyses shown before are making as well clear that banks themselves were not the root cause for the crises but spurred especially through their interconnectedness as well as weak risk management practices the rise of these and, furthermore, broadened the bandwidth of the crises by that. This view is supported by researches as well e.g. Francis et al. (2014). Based on that, the author is able to assume the financial crises outlined before as external shocks to the banks in the empirical part of the study in Chapter 5.

4 Regulatory, Academic and Expert Analysis

After having introduced the theoretical framework of Corporate Governance as well as the concept of Risk Governance, the author analysed and described the three economic cycles including their crises of this century. The following Chapter 4 of this study is structured threefold and approaches the research object, namely the Risk Governance at the board level of European banks from different angles. It starts with a regulatory review of the roles and responsibilities of the supervisory function of a bank. The focus of the discussion is on the developments in Europe as based on the research gap, less research has been performed in that context and the latest developments have happened here as well, when it comes to regulatory actions. In the second part, a literature review will be conducted that analyses if and how the research object and the respective questions have been covered by other researchers. The outcome provides a framework which the author can base his research on and subsequently connect the results of his study. Thirdly, a further perspective on the research object is being gained by interviewing experts that perform their role and responsibilities regarding Risk Governance from day to day. This part is especially relevant as it is part of the triangulation introduced in Chapter 1, which should help to provide further robustness to the research results.

4.1 Regulatory Analysis

As indicated in the financial crisis section in Chapter 3 several regulatory actions have been taken, not only on market but on the firm level as well, after the subprime or better said global financial crisis. The biggest question for the society, the governments and regulators after the aforementioned crisis was how could that happen and how can a banking crisis, with such disastrous impacts, be prevented in the future (Dermine, 2013)? Several reports and studies were performed by supranational institutions and independent experts early after the crisis, which aimed to answer the questions raised before.

Main reports and studies conducted and published after the global financial crisis are shown below and will be analysed in the following paragraphs:

- the Walker Report (2009), which concentrates on the financial system of the UK,
- the de Larosière Report of the High-Level Group on Financial Supervision in the EU (2009),
- the Basel Committee's Principles for Enhancing Corporate Governance (2010),
- the Study of Muelbert (2010) from the European Corporate Governance Institute,
- the European Central Bank report (2010) on lessons learned from the financial crisis.

According to the Report of the High-Level Group on Financial Supervision (2009), the main causes for the financial crisis can be variously found at firm as well as country level and are interrelated to each other, e.g. weaknesses in regulatory policy-making and loose monetary politics as well as breakdowns of risk management and Corporate Governance in financial institutions. Based on that excessive risk-taking of financial institutions have been fostered and contributed in the end to the severity of the crisis in 2008.

All authors and institutions agree on the fact that the excessive risk-taking by banks was related to shortcomings in the Corporate Governance of financial institutions. According to Muelbert (2010, p. 5):

“Banks Corporate Governance was one of the most important failures in the present crisis...”

and, furthermore,

“Risk management-focused (...) on measuring instead of identifying risks, the riskiness of structured products such as CDOs, ABS and others was not fully realised, areas of concentration were not properly identified below top management level, risk testing were performed using past events instead of identifying new risks...”

The main issues regarding Corporate Governance raised in the reports can be concluded under the following headlines:

- misaligned incentives, which lead to excessive risk-taking,
- ineffective oversight by the board of bank’s strategy and objectives,
- insufficient setting and controlling of risk tolerance and appetite,
- inadequate qualification of members of the Board of Directors, as for example a lack of understanding of risk management techniques,
- insufficient risk identification, measurement and controlling.

These issues can be grouped into the two Corporate Governance mechanisms they are referring to:

- alignment of interests between shareholders and managers
- monitoring through shareholders

Compensation, as an instrument for the alignment of interest, is one of the major points criticised in the reports (e.g. Walker, 2009; Muelbert, 2010). The compensation schemes were, according to the reports (e.g. ECB, 2010; Muelbert, 2010), designed in a way that favoured short-term profit and stipulated excessive risk-taking. In the end compensation schemes did also not increase the shareholders' wealth as it destroyed long-term value for shareholders after the crisis.

Monitoring is performed by the Board of Directors and according to the European Commission (EC, 2010, p. 8-9):

“One of the most profound failures during the financial crisis was the widespread failure of Risk Governance. Executive and non-executive board members were unwilling or unable to adhere to a level of risk sustainable for the financial institution. Often the board failed to adequately identify and constrain excessive risk-taking. In particular, in a number of cases boards of financial institutions did not understand the characteristics of the new, highly complex financial products with which they were dealing. Nor were they aware of the aggregate exposure of their firms, seriously underestimating the risks of their operations.”

Therefore, not Corporate Governance itself, but the Risk Governance of banks has failed. As seen in the Chapter on banks' Corporate Governance (2.4), banks' natural business model is to deal with risks, but this has major implications on the structure and rules of Corporate Governance of banks as compared to non-financial firms.

Before the global financial crisis governance rules and best practices of non-financials were applied to banks, leading, as described in Chapter 2.4 of this study and supported by the above mentioned reports, to the negative implications of the financial crisis, which would also tie into the academic discussion that the Corporate Governance of banks is different than the one of non-financials. Furthermore, the identification, measurement and communication of risks within banks was an issue that supported the emergence of the financial crisis (Muelbert, 2010). This can be attributed to the models in use, which assume that all asset returns follow normality and try to predict future outcomes based on historical data (Sinha, 2013). On top, the models failed to account for correlations between the single products especially when it comes to CDOs and ABSs. Nevertheless, a major problem was also the communication of risks within the bank and to the top management as well as to the board (Muelbert, 2010). Reason were on the one side the insufficient Management Information Systems (MIS), which could not provide timely up-to-date information, and on the other side the lack of an enterprise-wide risk management, as risk management was focussed only on dedicated business lines rather than on bank-wide risk view (de Larosière et al., 2009).

From a regulatory perspective (BCBS, 2015) banks play a central role in the economy and society by providing their activities to savers as well as debtors and

therefore their stability is of utmost importance. Due to that, regulators and supranational institutions needed to introduce enhancements to the Corporate Governance of financial institutions under a Risk Governance perspective to make banks more robust in times of a financial crisis.

The proposals made for enhancing Corporate Governance can be divided into two approaches: the first approach is driven by the focus on shareholder value (e.g. Walker Report, 2009) and the second approach is focused on stakeholders (e.g. EC, 2010 and Basel Committee, 2010 as well as 2015). This is especially interesting keeping in mind that the author of this dissertation based his research on the enlightened Shareholder Theory, which tries to combine both views.

Walker (2009, p. 23) states in his report that: “The role of Corporate Governance is to protect and advance the interest of shareholders...” whilst the Basel Committee states (2010, p.10): “..., the board should consider the legitimate interests of shareholders, depositors, and other relevant stakeholders”.

Nevertheless, despite the difference in the objectives, the tools and setups that are proposed are the same for both views.

The main proposals of the analyses shown above were (BCBS, 2010; EC, 2010; de Larosière et al., 2009; Walker 2009):

- The board should set the risk strategy and objectives of the bank.
- The board should define and approve the risk appetite.
- An independent CRO function must be set up.
- A risk committee at board level should be introduced.
- The board members should be qualified to understand the risks and the business environment of financial institutions.
- The board should have a proper understanding of its role and should be able to challenge management.
- The board should implement clear responsibilities and accountability within the organisation.
- The board should use the internal audit function as well as external auditors to get independent information.
- The board should know the structure of the bank.

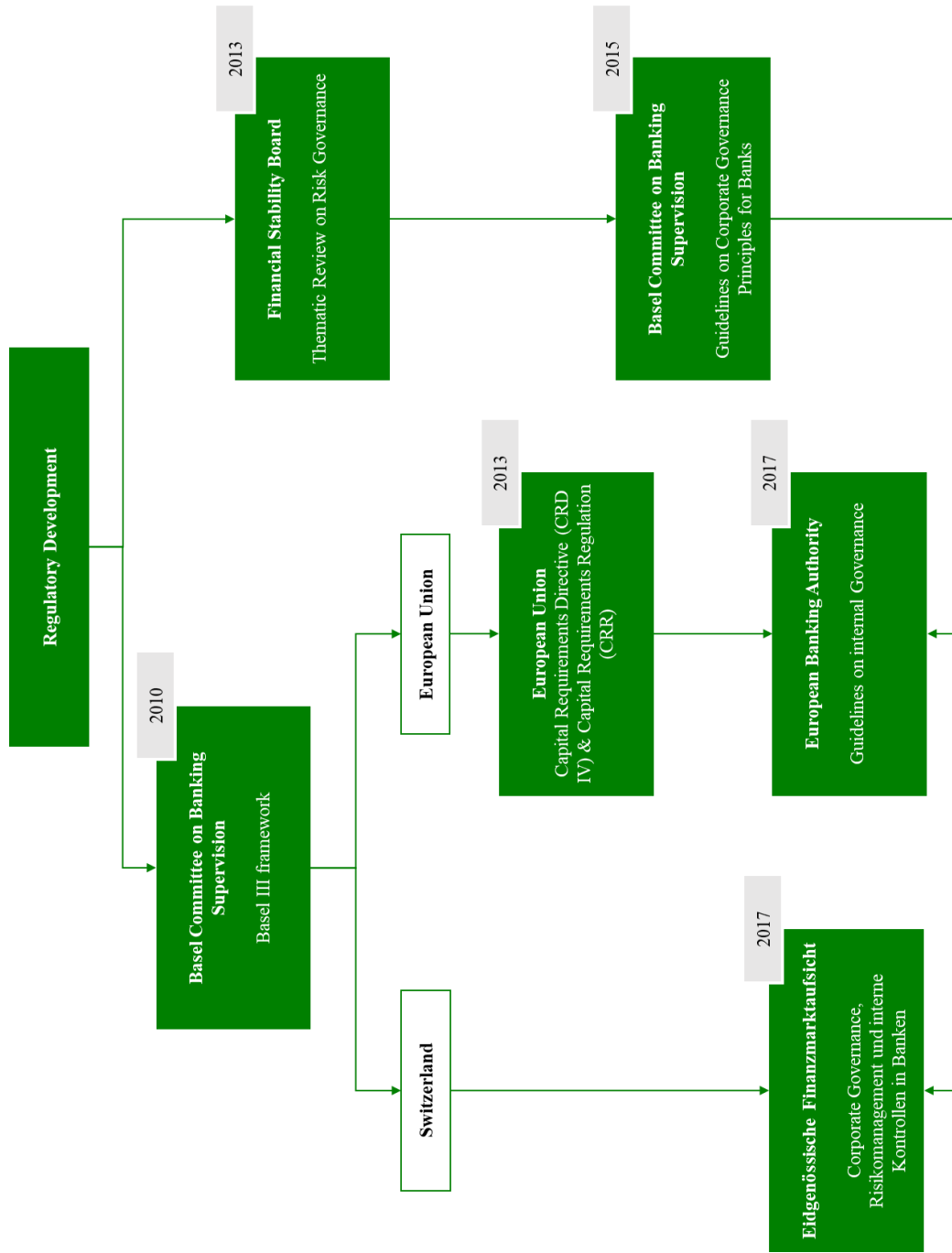
- Non-executive board members should have enough time to perform their duty in a good manner.
- Board performance should be evaluated from time to time.
- The remuneration of the management must be aligned with long-term objectives and should prevent excessive risk-taking.

Even though numerous recommendations and proposals were set up and introduced by the reports, they do not provide an answer on how to bring those proposals to life. For example, what is the right level of risk for a bank, what is the correct risk strategy and how should a compensation scheme be designed to mitigate excessive risk-taking? Furthermore, they do not provide any empirical or practical evidence that the raised proposals do have the intended impact on the stability of banks and the financial system. However, this study aims to answer these questions as indicated in Chapter 1.3 on the research questions.

4.1.1 Analysis of Regulatory Development

Following the conducted analyses and the thereon following reports issued by supranational institutions and regulators, they globally reacted and began to issue new specific guidance and regulations focussing on Corporate Governance or better-said Risk Governance, which has been identified as one of the weakest spots of financial institutions. Therefore, the newly issued guidance and regulations will be further assessed to provide ground for the empirical analysis as well as the to be conducted interviews with experts on Risk Governance. This will be done by identifying and comparing Risk Governance relevant variables. As stated in Chapter 1, this study focuses on the EU28 and Switzerland. Only changes and enhancements of Risk Governance for these countries are analysed and discussed in the following. The overview depicted below illustrates the changes relevant to the countries in scope.

Figure 27: Regulatory Development of Risk Governance



Source: Own development.

As observable in the figure two strands emerged, the first one driven by the Basel Committee on Banking Supervision (BCBS) which in the aftermath of the crisis fastened the finalisation and publication of the Basel III (BIS, 2010) regulations. The second one starting in 2013 published by the Financial Stability Board (FSB) focusing on Risk Governance overall, followed half a year later by further guidelines on the Risk Appetite Framework. The changes of the FSB were in consequence adopted in 2015 by the Basel Committee and have meanwhile been considered on a European level by the FINMA in 2016 and the EBA in 2017. However, it has to be considered that the introduction of hard coded regulations by the EBA (2017) and especially FINMA (2016) were not completely positively welcomed. Certain experts argued that the for banks specific hard coding contradicts market based self-regulation as for example the Swiss Code of Best Practice for Corporate Governance. It impacts the voluntary implementation of measures, which are either complied with or explained (economiesuisse, 2016). Nevertheless, the details of the new regulations along with their main similarities and differences are outlined in the following.

4.1.1.1 Basel III

In 2010 as the first standard-setting body to respond after the financial crisis the Bank for International Settlements (BIS) issued its “global regulatory framework for more resilient banks and banking systems”, which is also known as Basel III. It aims (BIS, 2010) to build a foundation for a sound banking system and focuses on strengthening the regulatory capital that must be held by the institutions, the capital framework in general including components for market and counterparty risk and minimum leverage ratio specifications. However, Basel III (BIS, 2010) does not include regulations on Risk Governance but opens the door for further regulatory actions that are fulfilled by the relevant local regulators, which need to translate the new requirements into local laws. These regulators will, as further outlined below, act on Risk Governance during the overhaul of their regulatory programme in the context of the introduction of the local Basel III framework.

4.1.1.2 Financial Stability Board

The “Thematic Review on Risk Governance” was published by the Financial Stability Board in 2013, which they initially decided to conduct in October 2011. This publication is the turning point from analysing the crises along with its roots and outcomes to articulating clear and precise recommendations for legislators around the world. The review focused on three main areas:

- Board and its composition e.g. risk committee and independence of the members;
- Company-wide risk management responsibility e.g. via CRO at board level and risk management tools;
- Independent assessment of the corporation’s Risk Governance framework performed by the internal audit department or external third parties.

The review contained 36 financial institutions out of which 17 were globally systemically important financial institutions. Banks reviewed were from across the world and based in 24 countries which contained 10 emerging markets.

As a result, the review (FSB, 2013b) found that banks have widely improved their Risk Governance since the crisis based on the implementation of reforms stipulated by regulators and supranational institutions. Especially, the setup of dedicated risk committees and the time devoted by committee members to their tasks has improved. Overall, the review (FSB, 2013b) found that systemically important financial institutions (SIFIs) are more advanced than the rest of the reviewed institutions.

SIFIs are financial institutions, which in case of a breakdown, would cause based on their size and their connectedness in the financial market a large impact on the global economy according to the FSB (2019). Such financial institutions have to follow therefore stronger capital, liquidity as well as reporting obligations. This is based according to the FSB (2019) on a request of the Group of 20 leaders in 2009, which asked the FSB to find a solution for the in Chapter 2.4 shown too-big-to-fail issue. The methodology for the assessment, which bank belongs into the group of SIFIs and especially into the group of global SIFIs is published by the BCBS (2013).

However, the FSB (2013b) found next to the improvements for SIFIs that significant gaps still exist regarding Risk Governance. More must be done on the national and supranational level to establish effective Risk Governance frameworks as well as enhance the independence and authority of Chief Risk Officers in banks (BCBS, 2015). Moreover, it is inevitable to have a holistic view of an institutions Risk Governance framework in order to understand how all aspects interlock and work with each other. To further strengthen the Risk Governance, the FSB (2013b) defined five recommendations to their member jurisdictions (Group of 20) as well as the relevant standard-setter e.g. Basel Committee on Banking Supervision (BCBS), International Association of Insurance Supervisors (IAIS) or International Organization of Securities Commissions (IOSCO):

1. Member jurisdictions should toughen their guidance and their assessments of Risk Governance frameworks;
2. The principles of Risk Governance should be reviewed by the respective regulators;
3. An FSB working group must analyse ways on how to assess risk culture;
4. National authorities must define minimum requirements regarding Risk Governance for their supervised financial institutions;
5. FSB should consider a follow-up review.

In addition to the recommendations, the review of the Financial Stability Board (2013b) includes 10 best practices of sound Risk Governance drawn from the research results. They include guidance on the Board of Directors, the risk and audit committee, the CRO and the risk management function in general, the Risk Governance framework and third parties. Many of the included characteristics regarding Risk Governance are pioneering and meanwhile included in many other regulations (e.g. FINMA, 2016; EBA, 2017). This includes, for example, the stand-alone risk committee that should consist of a majority of independent members including the chair. The chair moreover should neither be the chair of the board nor the head of another committee and the risk committee should discuss

the institution's risk strategy on an aggregate level as well as by risk category (FSB, 2013b). This rather broad approach was later followed by the BCBS in the 2015 “Guidelines on Corporate Governance Principles for Banks” and the 2017 “Guidelines on internal Governance” from the EBA which provided further details. Both (BCBS, 2015; EBA, 2017) state that the risk committee should review the strategies and their implementation including credit, market, reputational and operational risks. Consequently, the risk committee should assess the adequacy of strategies including different risk types with the bank’s risk appetite and advise the board accordingly. The FSB (2013b) recommendations, furthermore, mention that the board should introduce an adequate risk culture groupwide. Just like before BCBS (2015) and EBA (2017) further detailed this recommendation and require a Code of Conduct to be incorporated in order to reduce risks and promote ethical standards throughout the firm.

Guidelines on the risk appetite were published by the FSB in November 2013 in a separate paper, i.e. “Principles for an Effective Risk Appetite Framework” and are considered in Chapter 5.3 of this study.

4.1.1.3 CRD IV

The Capital Requirements Directive (CRD IV, EU, 2013a) along with the Capital Requirements Regulation (CRR, EU, 2013b) transfers the Basel III legislation to European law. Different from Basel III the Capital Requirements Directive includes three years later requirements regarding Corporate Governance and introduces via Article 74 of the CRD IV (EU, 2013a) that,

“...institutions shall have robust governance arrangements, which include a clear organisational structure with well-defined, transparent and consistent lines of responsibility, effective processes to identify, manage, monitor and report the risks they are or might be exposed to, adequate internal control mechanisms, including sound administration and accounting procedures, and remuneration policies and practices that are consistent with and promote sound and effective risk management. (...) EBA shall issue guidelines on the arrangements, processes and mechanisms” (CRD IV, Article 74, Paragraph 1 and 3, p. L176/378, EU, 2013a).

In terms of Risk Governance, the Directive (EU, 2013a) states in Article 76 (3) that "...institutions that are significant in terms of their size, internal organisation and the nature, scope and complexity of their activities need to establish a risk committee". When it comes to further requirements of the risk committee, however, the guidance is not that detailed. In terms of organisation, the majority of members may not perform an executive position. Neither CRD IV (EU, 2013a) nor CRR (EU, 2013b) set guidelines regarding the composition of the risk committee including details of further positions of the chair or independence of members and chair. The tasks and responsibilities of the risk committee extend to the advice of the management board concerning risk appetite and the review of asset and liability prices offered to clients and their alignment with the strategy and business model. This (EU, 2013a) is a unique formulation compared to the other regulatory papers in scope as it is different from the others, and neither includes a general description of the tasks and responsibilities nor a reference to risk categories that should be reviewed. Although not detailed in the organisational set-up, the risk committee should review at least annually the institution's risk policies. Overall the CRD IV (EU, 2013a) includes only a broad and general approach to Risk Governance on the European level. The accompanying Capital Requirements Regulation does not include Risk Governance regulations at all.

4.1.1.4 BCBS

The Basel Committee on Banking Supervision published its enhanced "Guidelines on Corporate Governance Principles for Banks" in July 2015 following the initial principles published back in 2010 (i.e. BCBS Principles for enhancing Corporate Governance). The primary objectives of the revision (BCBS, 2015) were to account for the results of the Financial Stability Board review (FSB, 2013b) and to further clarify the collective oversight as well as the responsibilities regarding Risk Governance of the boards of financial institutions. Furthermore, the revision clarified and intensified the guidance on Risk Governance components such as Risk Appetite Framework, risk culture and risk committee.

The developed framework (BCBS, 2015) does not account for jurisdictional differences e.g. one vs. two-tier system as the changes proposed do not interfere with these differences and so does this study as well, as described in Chapter 2. Furthermore, the standards should be applied meaningfully in terms of the size, complexity and risk profile and, therefore, advocating for a proportionality principle. Nevertheless, the standards should also be applied to state-owned or supported banks, making it very clear that primarily such banks that failed the crisis (Hau & Thum, 2009) e.g. German Landesbanken are explicitly part of this framework.

The revised guidelines now contain 13 principles (BCBS, 2015), which mainly address the board's overall responsibilities, its qualifications, structure, composition and practices, the executive management, the risk management structure and practices including a group-wide approach as well the compliance and audit function. Furthermore, the principles (BCBS, 2015) also address room for improvement on the side of the local regulators.

In line with the other reviewed regulations, risk committees that are distinct from audit committees are required for systemically relevant banks. The separation should also be considered for other institutions taking into account their size, complexity and profile, addressing by this proportionality principle. In terms of organisational structure, the (BCBS, 2015) guidelines follow the FSB (2013b) approach and emphasise that the chair of the risk committee should not be the chair of the board or of any other committee. The majority of the members, as well as the chair, should be independent and according to BCBS (2015) the chair should be a non-executive member, moreover. More detailed than the initial FSB (2013b) guidelines are the tasks and responsibilities of the risk committee. The committee should advise the board concerning risk appetite and oversee the implementation of the Risk Appetite Statement (BCBS, 2015). Moreover, risk categories like credit, market, reputational and operational risk and the risk strategy integration should be reviewed (BCBS, 2015). Like in CRD IV (EU, 2013a), risk policies need to be reviewed annually by the risk committee and going further it must be evaluated whether the bank's processes are in line with the risk policies. As a first standard setter, the BCBS (2015) includes Code of

Conduct requirements and states that the board should define conduct risk and develop a respective code.

4.1.1.5 European Banking Authority

In September 2017 and effective from 30 June 2018, the European Banking Authority (EBA), which should promote a single-rule book on banking regulation within the EU, in accordance with the Capital Requirements Directive (EU, 2013a), published its reviewed and revised “Guidelines on Internal Governance”. The guidelines (EBA, 2017) also consider the guidance given by the BCBS published two years before in 2015. In line with Article 76 (3) of the Capital Requirements Directive (EU, 2013a), all significant institutions need to establish a risk committee. Taking up the BCBS (2015) requirements the chair of the risk committee should not be chair of the management body or another committee and a non-executive director. Different from BCBS (2015) most of the members of the risk committee and the chair should only be independent in systemically relevant institutions (EBA, 2017), which again shows that regulators are worried about proportionality. Equality is reached by EBA (2017) again for the tasks and responsibilities of the risk committee referring to strategy implementation including credit, market, reputational and operational risks. Additionally, the risk committee should review relevant financial products and services against the business model as well as the strategy (EBA, 2017). Different from CRD IV (EU, 2013a), FSB (2013b) and BCBS (2015) are the requirements for the review of risk policies as EBA (2017) does not include guidance on the written framework. The Code of Conduct, however, is again included in the risk culture section and is considered a key element to Risk Governance from EBA’s perspective (2017). This code should from their (EBA, 2017) point of view promote high ethical standards while considering the institution’s characteristics.

4.1.1.6 FINMA

The Basel III (BIS, 2010) regulations are implemented via several circulars into the Swiss regulatory framework. The one referring to Corporate Governance and relevant for this study is the “Rundschreiben 2017/1, Corporate Governance – Banken” (FINMA, 2016) which also considers to a certain extent, the Guidelines

on Corporate Governance Principles for Banks by the Basel Committee. The previous version is the 2008 circular “Überwachung und interne Kontrolle” and does not include any guidance on Risk Governance (FINMA, 2008).

In general, FINMA (2019, para “Categorisation of banks and securities dealers”) groups financial institutions into five supervisory categories, i.e.:

- “Category 1: extremely large, important and complex market participants. Very high risk.
- Category 2: very important, complex market participants. High risk.
- Category 3: large and complex market participants. Significant risk.
- Category 4: medium-sized market participants. Medium risk.
- Category 5: small market participants. Low risk.”

According to the new guidance (FINMA, 2016), institutions with assigned supervisory category one, two or three need to implement a stand-alone risk and audit committee. In terms of organisational structure, the FINMA (2016) is less strict than FSB (2013b), BCBS (2015) and EBA (2017). Although the chair of the supervisory board should also not be chair of the risk committee the circular (FINMA, 2016) does refer to further positions of the chair of the risk committee. Furthermore, the majority of risk committee members should be independent, whereas the independence of the chair is not discussed explicitly in contrast to EBA (2017). The risk committee’s tasks include the review of the overall risk framework relevant to the institution and the provision of recommendations to the supervisory board according to the FINMA (2016). Moreover, the risk committee must oversee the implementation of a, to a Risk Appetite Framework comparable, risk management framework, the risk strategy especially regarding to risk tolerance/appetite and risk limits according to the risk management framework of the institution. Distinct risk categories are not mentioned in the guideline; however, it is referred in this context to the “Eigenmittelverordnung” (ERV) published by the Suisse Federal Council (Schweizerischer Bundesrat, 2019). The ERV (Schweizerischer Bundesrat, 2019) provides more clarity around the single risk types to be covered by the risk committee, which are at a minimum credit, market, real estate and operational risks. In contrast to the EBA (2017) reputational risk is not explicitly covered by the FINMA (2016) as a relevant risk

type. A further area of responsibility of the risk committee according to the regulator (FINMA, 2016) are capital- and liquidity planning along with the review of an appropriate procedural risk management framework. The FINMA (2016) refers to corporate culture to a much smaller extent than the other regulators. Although provided by the BCBS (2015) guidelines, Code of Conduct or similar is not part of the guideline (FINMA, 2016) and hence not regulatory required; however, the management should introduce guiding principles regarding corporate culture.

4.1.1.7 Relevant Risk Governance Measures

Based on the analysis of the before discussed regulations and especially the guidance from BCBS (2015), as it is from the author's perspective the broadest guidance given from all regulatory bodies, the author identified 20 measures, which are relevant to the Risk Governance of banks based on the recent regulatory guidance (EU, 2013a; EU, 2013b; FSB, 2013b; BCBS 2015; FINMA, 2016; EBA, 2017). In order to facilitate the analysis of the measures and the usage in the interview section as well as in the empirical part a further grouping was needed. Therefore, the author grouped the measures into three areas of Risk Governance:

- Risk Governance Structure – Measures that relate to organisational settings at board level
- Risk Committee Oversight Quality – Measures that influence the overall quality of the risk committee's oversight
- Risk Governance Tools – Measures that account for specific instruments used to gather and influence the risk profile of a bank

In the following the 20 different measures according to the above groups are analysed for the five relevant regulators for the EU28 and Switzerland, namely the guidance of the EU (2013a), the FSB (2013b), the BCBS (2015), the FINMA (2016) and the EBA (2017). Especially, their view on as well as specific requirements for the single measures should be found. However, it has to be noted that the measures not only include specific recommendations that might positively influence the Risk Governance as for example the introduction of a dedicated risk committee, but also measures that might negatively influence the Risk

Governance as for example the dual-hatting of the board and the risk committee. The alleged negative measures are included in order to assess the regulatory guidance on these, the views of experts on them and to test them in the empirical part.

Table 6: Comparison of Different Regulatory Bodies with Respect to Risk Governance Structure-Measures

No.	Measure	CRD IV / CRR (EU, 2013a;b)	FSB (2013b)	BCBS (2015)	FINMA (2016)	EBA (2017)
1	Board has a stand-alone Risk Committee	According to article 76(3) “...institutions that are significant in terms of their size, internal organisation and the nature, scope and complexity of their activities [need to] establish a risk committee”.	V, 2.a: The risk-committee has to “be stand-alone”.	Paragraph 71: Yes, is “...required for all systemically important banks and strongly recommended for other banks...” (considering risk profile, size, complexity). “...should be distinct from the audit committee”.	Paragraph 31: Institutions with assigned supervisory category 1-3 need to implement a risk committee.	Paragraph 39: In line with Article 76(3) (EU, 2013a) all significant institutions need to establish a risk committee. The risk committee needs to advise the supervisory body.
2	Board has a stand-alone Audit Committee	No guidelines regarding audit committees included but refers to European Directive 2006/43/EC. Accordingly, all institution with public-interest shall have an audit committee.	V, 3. a: The audit-committee must “be stand-alone”.	Paragraph 68: Yes, is “...required for all systemically important banks and strongly recommended for other banks...” (considering risk profile, size, complexity). “...should be distinct from other committees”.	Paragraph 31: Institutions with assigned supervisory category 1-3 need to implement an audit committee.	Paragraph 63: Reference is made to the European Directive 2006/43/EC (EU, 2013a). Accordingly, all institution with public-interest shall have an audit committee.
3	Board has a combined Audit and Risk Committee	Allowed according to article 76(3) which is referring to Article 41 of Directive 2006/43/EC.	The FSB recommendations do not refer to a combined committee.	The guidelines do not explicitly refer to that, but the board should make use of appropriate board committees (Paragraph 63).	Paragraph 31: It is permitted for institutions with assigned supervisory category 3 to implement a combined audit / risk committee.	Paragraph 64 and 65: Possible for non-significant institutions

No.	Measure	CRD IV / CRR (EU, 2013a;b)	FSB (2013b)	BCBS (2015)	FINMA (2016)	EBA (2017)
4	<i>Chair of Risk Committee is also Chair of the Board</i>	No guidelines regarding the composition of a risk committee or any other committee. This includes the staffing of committee chair positions.	V, 2. b: The chair of the risk committee should avoid being chair of the board.	Paragraph 71: Chair of the risk committee should not be the chair of the board.	Paragraph 33: The chair of the supervisory committee should not be chair of the risk committee.	Paragraph 53: No, in all institutions the chair of the risk committee should not be chair of the management body.
5	<i>Chair of Risk Committee is also Chair of another Committee</i>		V, 2. b: The chair of the risk committee should avoid being chair of another committee.	Paragraph 71: Chair of the risk committee should not be the chair of any other committee.	The circular does not refer to further positions of the chair of the risk committee.	Paragraph 53: No, in all institutions the chair of the risk committee should not be chair of another committee.
6	<i>Chief Risk Officer at board level</i>	No guidelines regarding Chief Risk Officer.	V, 4, a: A “CRO should have a direct reporting line to the CEO”, however, is not part of the board.	Paragraph 108, 109: CRO (or equivalent management position) required for” large, complex and internationally active banks”. CRO is responsible for the overall risk function. CRO should support the board, however, is not part of it. Paragraph 72: CRO interacts with the risk committee, which also oversees her/him.	Paragraph 68: Institutions that are systemically relevant appoint a CRO, who is a member of the management board.	No reference to CRO in the guidelines.

Source: Own development.

Table 7: Comparison of Different Regulatory Bodies with Respect to Risk Committee Oversight Quality-Measures

No.	Measure	CRD IV / CRR (EU, 2013a;b)	FSB (2013b)	BCBS (2015)	FINMA (2016)	EBA (2017)
1	<i>Chair of Risk Committee is independent</i>	Neither CRD IV nor CRR set guidelines regarding the composition of the risk committees or any other committee. This includes the staffing of committee chair positions.	V, 2.b: The chair of the risk committee is independent.	Paragraph 71: Chair of the risk committee should be an independent director. Paragraph 67: Chair should also be a non-executive board member.	No explicit rule that the chair should be independent and only mentions that the majority of members should be so (see below).	Paragraph 53: Yes, for globally and other systemically important institutions. Paragraph 45: the chair should be a non-executive member
2	<i>Majority of Members of the Risk Committee independent</i>	According to Article 76(3) of CRD IV members may “not perform any executive function”. The Directive does not elaborate the independence.	V, 2.c: The risk committee includes independent members.	Paragraph 71: The majority of the members of the risk committee should be independent.	Paragraph 33: The majority of the members of the risk committee should be independent.	Paragraph 53: Yes, for globally and other systemically important institutions.
3	<i>Meeting Frequency of the Risk Committee per Year</i>	Neither CRD IV nor CRR refers to the meeting frequency or organisational requirements of (risk) committees.	V, 8: The risk committee meets periodically, however not necessarily annually.	No requirements included on meeting intervals. However, according to paragraph 64 committee should establish working procedures.	No requirements included on meeting intervals or working procedures.	No requirements included on meeting intervals. However, regular communication with risk management and “institutions internal control functions” required (paragraph 61) and adequate working procedures need to be established (paragraph 43).

No.	Measure	CRD IV / CRR (EU, 2013a;b)	FSB (2013b)	BCBS (2015)	FINMA (2016)	EBA (2017)
4	Risk Management and Banking Experience is available in the Risk Committee	According to Article 76(3) of CRD IV “...members need to have appropriate knowledge, skills and expertise to fully understand and monitor the risk strategy and the risk appetite of the institution.”	V, 2, d: The risk committee consists of experienced members regarding risk management and practice.	Paragraph 71 Members of the risk committee should “have experience in risk management issues and practice”.	Paragraph 33: The committees as a whole have to have adequate knowledge and experience according to the tasks and topics covered by the committee.	Paragraph 54: Members “should have individually and collectively, appropriate knowledge, skills and expertise” regarding risk management and controls.
5	Risk Committee discusses Risk Appetite Statement	According to Article 76(3) of CRD IV, the “...risk committee shall advise the management body on the institution's overall current and future risk appetite and strategy”.	V, 2, g: The review or back-testing of the Risk Appetite Statement is not mentioned.	Paragraph 71: Risk committee should discuss risk strategies and advise the board on risk appetite accordingly. Paragraph 72: risk committee supports and advises management regarding “...current and future risk appetite, overseeing...” the implementation of Risk Appetite Statement	Paragraph 41: The risk committee discusses the overall risk framework relevant to the institution and provides recommendations to the supervisory board.	Paragraph 60a: risk committee supports and advises management regarding current and future risk appetite Paragraph 60f: The risk committee should “review a number of possible scenarios, including stressed scenarios, to assess how the institution’s risk profile would react to external and internal events”.
6	Risk Committee makes Back testing of Risk Appetite Statement		However, the risk committee should discuss all strategies and oversee whether processes are in place that ensures the bank's adherence to risk policies.		Paragraph 45: The risk committee has to oversee the implementation of the risk strategy especially regarding risk tolerance and risk limits according to the risk framework of the institution.	

No.	Measure	CRD IV / CRR (EU, 2013a;b)	FSB (2013b)	BCBS (2015)	FINMA (2016)	EBA (2017)
7	<i>Risk Committee covers Credit Risk</i>	Neither CRD IV nor CRR refer to the risk categories directly.	V, 2, e: Risk categories are not named explicitly, but the risk committee discusses risk strategies on an aggregated level and by risk type.	Paragraph 73: Risk committees oversee implementation "... of the strategies for capital and liquidity management..." and other risks, i.e. "credit, market, , operational, and reputational". The adequacy of risks against risk appetite should furthermore be assessed.	Yes, according to ERV (FINMA, 2019)	Paragraph 60c: Risk "...oversee the implementation of the strategies for capital and liquidity management" and other risks, i.e. "market, credit, operational (including legal and IT risks) and reputational risks". The risk committee furthermore assesses the adequacy of risks against risk appetite. Paragraph 60g: risk committee should moreover review "alignment between all material financial products/services, (...) business model and risk strategy". Assess the associated risks and align with prices and profits.
8	<i>Risk Committee covers Market Risk</i>	Article 76(3) of CRD IV only states that "...the risk committee shall review whether prices of liabilities and assets offered to clients take fully into account the institution's business model and risk strategy. Where prices do not properly reflect risks in accordance with the business model and risk strategy, the risk committee shall present a remedy plan to the management body."			Yes, according to ERV (FINMA, 2019)	
9	<i>Risk Committee covers Operational Risk</i>				Yes, according to ERV (FINMA, 2019)	
10	<i>Risk Committee covers Reputational Risk</i>				No, not explicitly mentioned in the ERV (FINMA, 2019)	
11	<i>Risk Committee revise new bank's Risk</i>	Neither CRD IV nor CRR refer to the written framework or organisational	V, 2, f: The institution's risk policies need to	Paragraph 71: The risk committee should "review the bank's risk policies need to be	Paragraph 43: At least annually the overall framework for risk management needs to be	Review of written framework not included.

No.	Measure	CRD IV / CRR (EU, 2013a;b)	FSB (2013b)	BCBS (2015)	FINMA (2016)	EBA (2017)
	<i>Policies annually</i>	requirements of (risk) committees.	be reviewed annually.	reviewed at least annually”. Moreover, the risk committee should oversee whether processes in place are in line with risk policies.	reviewed. The review of policies is not included explicitly.	

Source: Own development.

Table 8: Comparison of Different Regulatory Bodies with Respect to Risk Governance Tools-Measures

No.	Measure	CRD IV / CRR (EU, 2013a;b)	FSB (2013b)	BCBS (2015)	FINMA (2016)	EBA (2017)
1	<i>Code of Conduct in place</i>	No guidance on the topic of culture or Code of Conduct.	V, 1, f: The Code of Conduct is not mentioned explicitly, but the board is responsible for the introduction of adequate risk culture throughout the institution.	Paragraph 14: Code of Conduct should be implemented and define (un-) acceptable behaviour. Paragraph 72: Risk committee oversees the reporting on risk culture.	Paragraph 10: The circular does not refer to a Code of Conduct but states that the management should introduce guiding principles regarding corporate culture.	Paragraph 94: “Sound and consistent risk culture should be a key element” of Risk Governance. Paragraph 99: Code of Conduct needs to be implemented to reduce risks, promote high ethical standards by considering institutions characteristics.
2	<i>Risk Appetite Framework in place</i>	No stipulation of the implementation of a Risk Appetite	V, 1, h & V, 5, c: Risk appetite Framework and Risk	Paragraph 26: The board should establish the bank’s risk appetite.	The FINMA does not specify the implementation of a Risk Appetite Framework or Statement.	Paragraph 23: The EBA guideline refers to the general risk appetite that

No.	Measure	CRD IV / CRR (EU, 2013a;b)	FSB (2013b)	BCBS (2015)	FINMA (2016)	EBA (2017)
3	<i>Risk Appetite Statement in place</i>	Framework or Risk Appetite Statement. CRD IV refers to risk appetite in the context of risk committee responsibilities (see no. 7 of “Table Risk Committee Oversight Quality”)	Appetite Statement are incorporated by the board and need to be reviewed periodically by the risk management function.	The BCBS adopts the definitions of risk appetite framework and statement of the FSB as of their “Principles for an effective Risk Appetite Framework” from November 2013 (FSB, 2013a).	However, following paragraphs 52 and 53 the institution’s management has to develop the foundations of the bank’s risk management, which is approved by the supervisory board. Such foundations regulate the handling with major risks, risk tolerance and resulting risk limits for major risks. Documentation of named aspects has to be conducted in the appropriate form. Moreover, appropriate documentation has to be in place allowing for adequate review of risk tolerance and risk limits (paragraph 58).	needs to be set by the governing body.

Source: Own development.

4.1.1.8 Comparison of Risk Governance Measures

In order to summarize the before shown analysis the author will mainly focus on the latest regulations introduced by the FINMA (2016) and EBA (2017) as these are the ones the banks in scope of this study have to follow since 2018.

When it comes to the Risk Governance Measures both regulators (FINMA, 2016; EBA, 2017) follow FSB (2013b) and BCBS (2015) guidance asking for the implementation of a stand-alone audit committee together with a stand-alone risk committee; however, accounting for proportionality the setup of a combined committee is possible for less complex and smaller financial institutions. In terms of dual-hatting the regulation differs between the two. Whilst EBA (2017) requires that the chair of the risk committee is neither the chair of the board or another committee at board level, the FINMA (2017) only requires that the chair of the risk committee is not the chair of the board at the same time. A diverse picture is also derived with regard to the CRO. For CRD IV (EU, 2013a) and EBA (2017), the CRO does not play a role at all in the context of Risk Governance. FSB (2013b), BCBS (2015) and FINMA (2016) require a CRO who is responsible for an institution's Risk Management function overall. For FSB (2013b) and BCBS (2015), the CRO needs to have an independent reporting line to the CEO but is not part of the board. Only in Switzerland is it required for systemically relevant institutions that the CRO is installed at board level (FINMA, 2016).

With regard to the Risk Committee Oversight Quality measures, the views and regulations of both regulators (FINMA, 2016; EBA, 2017) do not vary much. The independence is for both (FINMA, 2016; EBA, 2017) an important topic. However, whilst EBA (2017) specifies that the chair of the risk committee as well as the majority of its members should be independent, the FINMA (2016) only explicitly mentions it for the majority of the members but not for the chair. In terms of qualification of the committee members, adequate knowledge and practice concerning risk management is required (FINMA, 2016; EBA, 2017), however, no more detail is given with this respect. The meeting frequency is not specified at all from FINMA (2016) and EBA (2017). Only the FSB (2013b) states that the risk committee should meet regularly but does not specify the frequency. The role of the risk committee with regard to a Risk Appetite Statement as well

as the Risk Appetite Framework is clear for both regulators (FINMA, 2016; EBA, 2017) as the committee should support by the establishment and the monitoring of both tools as well as advising the board on it. In terms of risk type coverage, however, views are contrasting. EBA (2017) sees the coverage of credit, market, operational and reputational risk as necessary. FINMA (2016) refers with this regard only to the ERV (Schweizerischer Bundesrat, 2019), which states that relevant risk types are credit, market, real estate and operational risks. Therefore, reputational risk is not explicitly covered by the FINMA (2016) as a relevant risk type. The last measure in this group refers to the annual review of the bank's risk policies and FINMA (2016) asks explicitly for this, whilst EBA (2017) is not referring to it at all.

Risk Governance Tools is the last group of measures covered. Whilst FSB (2013b) and BCBS (2015) explicitly ask for the implementation of a Risk Appetite Framework as well as a Risk Appetite Statement, both regulators (FINMA, 2016; EBA, 2017) do not specifically ask for the two tools. However, EBA (2017) asks for the setting of the Risk Appetite by the supervisory body and the FINMA (2016) requires the setup of a risk management framework, which is comparable to a Risk Appetite Framework. When it comes to the Code of Conduct, the FINMA (2016), although suggested by the BCBS (2015) guidelines, does not require a Code of Conduct or similar. However, the FINMA (2016) refers to guiding principles for corporate culture that the management should introduce. Nevertheless, EBA (2017) specifically requires the implementation of such a code.

Based on the before discussed comparison one can say, even if exaggerated, that FINMA (2016) in contrast to BCBS (2015) and EBA (2017) puts its focus for regulation rather on organisational structures as well as processes instead of soft factors like reputational risk or a Code of Conduct. Following the theoretical discussions of Chapter 2.2.6 and 2.4 especially the Code of Conduct or reputational risk are the factors, where one would expect that these account for the interests of stakeholders, which is especially important for banks as they have a lot more stakeholders than non-financial corporations. Furthermore, the

theoretical base of this study accounts as well for stakeholder next to shareholder interests.

4.1.2 Further Use of the Risk Governance Measures

The tools and procedures, as well as the organisational structures, regarding Risk Governance, compiled based on the regulatory analysis, will be used by the author in three ways. Firstly, they will be used to determine if academic research can already prove the effectiveness of these in practice, next to the assessment if academia covered the other main stance of weaknesses identified, namely the compensation issues. Secondly, whether practitioners do judge the measures as useful as well or if they do see other measures that should be implemented. Thirdly, in the empirical part of this study, the author will use the measures as independent variables and will test their effectiveness based on empirical methods.

4.2 Academic Analysis

As described before, failures within the Corporate Governance mechanisms and institutions have led to excessive risk-taking of banks, which contributed to the rise of the global financial crisis according to relevant supranational organisations as well as regulators. Several proposals and requirements were made or setup by those organisations, which were shown in the previous chapter. Nevertheless, those proposals and requirements are of theoretical nature and empirical evidence for their effectiveness is not ensured or proven by the respective institutions yet. To assess the current status of empirical research on the effects of the proposals/requirements on the robustness and the risk-taking behaviour of banks the author tried to find answers in studies focussing on Corporate Governance or Risk Governance of financial institutions.

4.2.1 Sample Definition of Relevant Studies

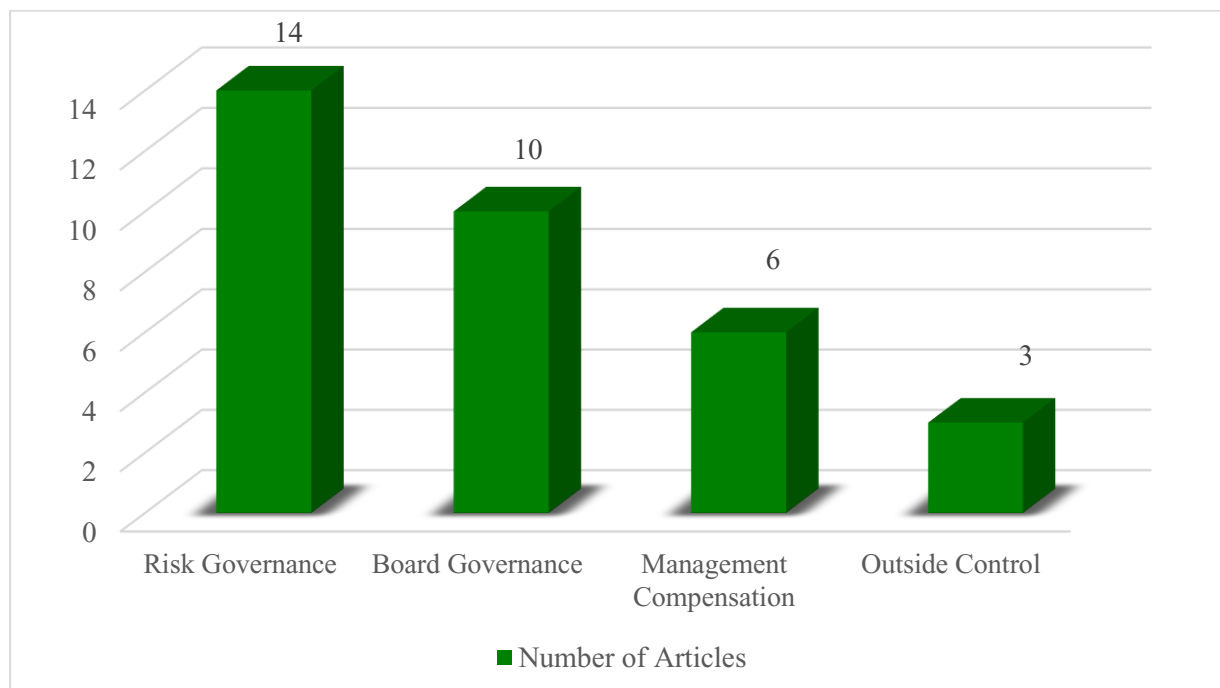
As the main data base for the search of relevant literature the online database “EBSCOhost” was chosen. Keywords used for the search of relevant literature were: “Corporate Governance”, “bank”, “financial institution”, “risk-taking”, “risk management”, “compensation”, “board” and “Risk Governance”. This led to a numerous number of articles, of which just the ones with qualitative or quantitative research approaches were kept in the sample in the first step. In a second, step the time horizon was adjusted from 2008 to 2019 to find studies that tackle risk-taking behaviour and Corporate Governance from a current 21st century perspective and, furthermore, take the recent financial crises into account. In the third step, only those papers that focus on top-level governance in banks and not purely on risk management practices on lower management levels were kept in the sample as the focus of this study is at board level governance. This led to a sample of 31 papers that represent, as to the author’s knowledge, the current state of research in this area. Nevertheless, not only published journal articles were included in the sample, but also articles from working paper series of reputable Universities and one regulator, namely the FEDs of New York, as well as a doctoral thesis.

In the next step, the papers were coded by the author to assess which of the proposals and requirements before shown were tested so far by the studies and which methodologies were used by the respective paper to assess the research questions.

The coding scheme was divided into four groups (coding could lead to double counting, as some papers tested two groups of proposals):

- Risk Governance, which includes the risk management at board level proposals assessed in the chapters before,
- Board Governance, which assesses standard Corporate Governance mechanisms also used in non-financial corporations such as overall board qualification, diversity, meeting frequency of the board and its size,
- Management Compensation, which includes the proposals to better align interests of management and shareholders through compensations schemes, and
- Outside Control, which covers the influence of institutional and governmental investors on banks.

Figure 28: Research Focus Literature Review Papers



Source: Own development.

Note: Double counting in two cases.

The most studied phenomenon is Risk Governance, as 14 of the relevant studies focused on risk management practices at board level in financial institutions. Furthermore, 10 papers focussed on common overall board characteristics to assess the excessive risk-taking or its influence on the performance of banks. The third most studied phenomenon is management compensation, which has been analysed by six articles. Lastly, three papers focussed on the implications of outside investor groups on the risk-taking behaviour of banks. Out of the last group, two studies analysed the influence of institutional investors and one study focussed on the influence of governmental ownership. Furthermore, the author analysed also the unit of analysis of the studies. There are three units within the papers reviewed: the top management team (TMT), the Board of Directors as well as the investors. Compensation papers focussed exclusively on TMT and outside control articles just on the investors. The board governance papers as well as the Risk Governance papers have their focus on the interplay between TMT and board and therefore analyse both units. However, there are also papers in that group that take ownership and its influence on this interplay into account as well.

The theoretical foundation of most papers lays more or less exclusively on Agency Theory enriched by some Property Rights Theory. Other Corporate Governance theories like the Stewardship Theory (Donaldson, 1990) or Resource Dependency Theory (Pfeffer, 1972 and 1973) were almost not observable as a theoretical foundation of the studies. However, the Risk Governance papers written by Hines, Masli, Mauldin and Peters (2015) as well as Hines and Peters (2015) applied the Institutional Theory. Furthermore, some of the newer Risk Governance papers e.g. Dupire and Slagmulder (2019) show a shift in focus from purely on shareholders to stakeholders as well. This is also based on the discussion in Chapter 2 of this study comprehensible, as this has shown when regulating and managing banks the variety of stakeholders has to be accounted for to prevent negative effects. Therefore, the author of this study follows the new emerging research string and bases his analysis as well on the enlightened Shareholder Theory, which tries to combine shareholder and stakeholder interests.

One notable fact of the literature analysis is the development of literature covering Risk Governance over time. While the papers right after the crisis mainly focused

on compensation and general Corporate Governance mechanisms the coverage of Risk Governance topics increased clearly over the last years. This is also in line with regulatory developments shown in the previous chapters, which focused on Risk Governance starting with the 2013 FSB analysis on Risk Governance and ending in Europe with the new requirements set by the FINMA (2016) and the EBA (2017).

4.2.2 Methodologies of the Relevant Studies

In the next, step the methodological approach of the articles has been analysed in-depth and coded. The following represents a summary of the results and the detailed analysis of the relevant studies itself will follow in the next chapter.

All studies were empirical in nature and based on quantitative archival data. Frequent data sources were Execucomp for Compensation, BoardEx for Governance information as well as Compustat, RiskMetrics and Centre for Research in Security Prices for financial and risk management data. Furthermore, the data sets were in most cases enriched by manually collected data from annual account statements of the relevant financial institutions.

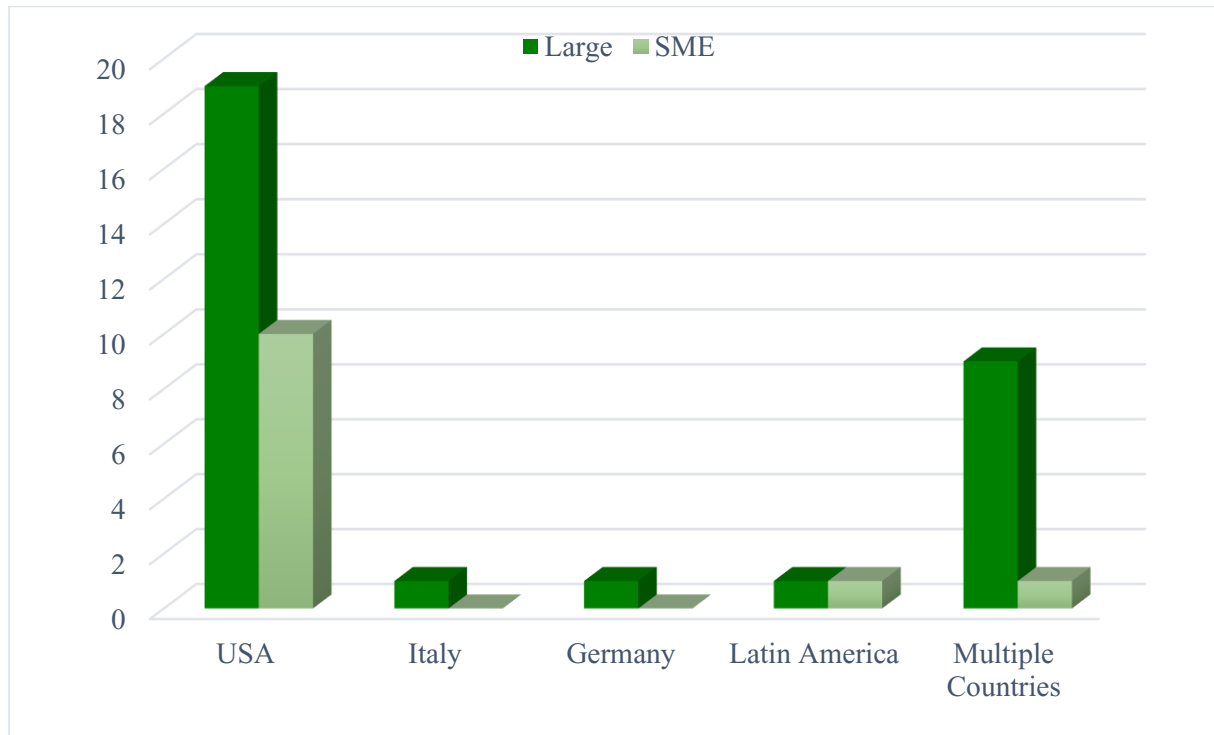
All studies were cross-sectional with the longest time span from 1990 to 2014 and the shortest from 2007 to 2008. The data consisted mainly of large public financial institutions from the US, as these were used in 19 of the 31 studies.

When it comes to the size of the financial institutions, all had large banks in the sample, but 10 of the studies also included small and medium enterprises and were, therefore, double-counted in both categories.

In terms of geography, nine studies focussed on a broader geographical horizon and included data from 17 to 48 countries. One study in the sample focussed only on Germany to assess the influence of governmental ownership on risk-taking. A further study focussed solely on Italy to assess the relevance of Risk Governance measures for local banks and a last study focussed on the Latin American market, here specifically on Mexico. The rest of the studies solely focussed on the US market, which is therefore the main researched geography.

The sample sizes of the studies vary from 21 to 3,980 companies. Two studies did not provide a figure of the actual sample size. Remarkable is that US studies tend to have larger sample sizes, which might be driven by better data availability in form of specific company as well as governance databases.

Figure 29: Sample Geography and Company Size



Source: Own development.

The definition of banks and financial institutions is widely diverse within the sample. Some authors used banks and insurance companies within their sample and defined these as financial institutions. Others focussed on banks but included a diverse subset of banks within this group; as for example commercial banks, broker and dealer, mortgage banks or insurance companies with a banking licence, even though those companies could differ hugely in their business model, regulation, risk-taking behaviour as well as governance. A clear strategy or rule of thumb, which companies to include and which not was not observable.

Two main groups of dependent variables were used within the studies: either the risk a bank carries or the performance of a bank. Table 9 below shows the most frequently used variables in these two categories:

Table 9: Dependent Risk and Performance Variables

Risk Variables	Performance Variables
<ul style="list-style-type: none"> - Downside Risk (measured as mean implied volatility of put options on FI) - Aggregate Risk (measured as standard deviation of FI weekly excess returns over stock index) - Z-score (default probability) - Long-term credit rating of FI - Beta - Loan Loss Provisions - Cumulative write-downs - TARP funds - Tier – 1 capital ratio - Total losses/assets 	<ul style="list-style-type: none"> - Excess return over stock index - ROA - ROE - Buy and hold return - Firm value in % changes of Tobin's Q - CAR (cumulative abnormal return) - Different income measures (provisions, interest etc.)

Source: Own development.

Dependent variables used for the empirical parts of the study were mainly related to Risk and Performance. Performance variables were used by 20 studies in the sample, thereof 12 used risk variables additionally to get more robust results for their studies. However, seven studies used purely risk variables as dependent variables. One study, focussing on auditing, used audit fees as a dependent variable and another assessed the influence of ownership structure on Risk Governance setups. Two of the studies in the sample did not use empirical tests to assess their data and are therefore not included in the analysis described before. The results indicate that the focus of the studies in the sample is on the effects of governance topics on the performance of banks rather than on the risk profile of financial institutions.

The choice of the independent variables depends on the focus of analysis as shown in figure 28. The six studies focussing on management compensation used all data of executive compensation as their independent variables. Nevertheless, the spectrum is diverse, as it consists of cash bonuses, granted options (e.g. vega, delta) on equity as well as assets and equity pay. Studies focussing on overall board characteristics used common governance measures such as: board size, independent directors, shareholder rights, staggered boards, poison pill, CEO

duality, internally hired CEO or qualification of board members (e.g. chartered accountant, experience in banking, educational background etc.). Institutional ownership, governmental ownership and ownership control over cash flow as well as voting rights were used by outside investor studies. The articles focussing on Risk Governance applied in some cases own risk management indexes, which are composed e.g. out of: CRO presence, CRO Top 5 in Payment, CRO centrality determined through CEO vs. CRO payment, board committee experience, active board risk committee, or single variables such as risk committee presence, size of the risk committee, and meeting frequency of the risk committee as an independent variable. Furthermore, some of the studies assessed single Risk Governance measures as for example CRO and risk committee presence.

All studies, besides the two not applying empirical tests, control for common characteristics like size, Return on Assets (ROA), Return on Equity (ROE), different asset ratios, bank capital, M&A etc.. The ones focussing on Risk Governance also controlled for common governance mechanisms as for example CEO duality or size of the board. Furthermore, cross country studies applied controlling for country and bank-level traits as for example per capita GDP, capital regulations, activity restrictions, deposit insurance, shareholder protection rights and concentration in the banking sector.

When it comes to the estimators used in the studies to assess the before described relations, the analysis conducted by the author faced certain difficulties as not all authors properly reported and described their models and estimators. However, the author came to the following results of his analysis and it must be noted that double counting is possible as some of the authors used more than one technique. The most used technique are Fixed Effects estimators, which can account for unobserved heterogeneity being present in Corporate Governance and these were chosen 12 times in the papers analysed. Ordinary Least Squared estimators were with 10 applications the second most used technique. However, most of the authors used lagged variables to control for endogeneity concerns. In seven cases the authors decided to use Generalized Methods of Moments estimators, which are able to account for different sources of endogeneity. Nevertheless, the

application of these estimators became more frequent in the last years. Lastly, four studies applied logistic regression estimators in their research.

4.2.3 Main Findings of the Relevant Studies

In this chapter, the main findings of the sample studies are explained and analysed. To do so the above-described coding into board governance, management compensation, outside control and risk management is followed.

4.2.3.1 Board Governance

As described before, the sample includes 10 studies that focus on the impact of overall board governance characteristics on the risk profile or performance of financial institutions. The first working paper in scope was published after the financial crisis issues by Beltratti and Stulz in 2009 and later in 2012 as Journal Article covering governance, who wanted to know why some banks had a better performance during the crisis than others? Their main hypothesis is that banks with good governance performed better in the crisis. Moreover, they take country-level governance and regulatory strictness into account to assess the performance during the crisis. As independent variables the authors use the Regulation Index of Laeven and Levine (2009), Country Level Indicators of Kaufman, Kraay and Mastruzzi (2009) and the CGQ (Corporate Governance Quotient) score from Risk Metrics for Bank-Level Governance. The dependent variable in their regression model is the buy and hold return of 98 deposit-taking banks out of a worldwide sample, which has an US overweight of 19%, and the sample period is 2007 to 2008 (Beltratti and Stulz, 2012). The main findings, after controlling for a different size and asset measures, are that banks with better Corporate Governance and banks in countries with stricter legislation performed worse during the crisis. The latter is explained by mandatory capital raising actions according to the authors (Beltratti and Stulz, 2012). Furthermore, banks in countries with better country-level governance also performed poorly during the crisis. All in all, the study shows that good Corporate Governance, under common assumptions, leads to poor performance during the crisis and is therefore statistically significant negatively correlated with performance (Beltratti and Stulz, 2012).

The second paper in scope is a working paper from Adams (2009), who conducted a comparative analysis of financial and non-financial firms with regard to their governance structure. Her (Adams, 2009) main hypothesis is that financial firms have poorer Corporate Governance compared to non-financials, which is based on common sense prevalent in newspapers at that time. The sample data consists solely of US firms and includes 86 public financial institutions as well as 106 large non-financial firms with data points from 1996 to 2007. The research of Adams (2009) concludes that the Corporate Governance of financial firms is not worse than the Corporate Governance of non-financials according to common Corporate Governance characteristics. As good governance in this sense, the paper defines boards with small size, many independent directors and a low number of directorships in other companies (Adams, 2009).

Also, in 2009 Pathan analysed the effects of CEO power as well as the board structure on the risk-taking of banks during the global financial crisis. The key hypotheses are that strong boards, which are smaller and have more independent directors, will encourage higher risk-taking and also that banks with a high CEO power, measured by CEO duality and internally hired CEOs, will have lower risk characteristics. The dependent variables used in this study are total risk and systematic risk. Furthermore, the sample consists of 212 large bank holding companies from the US and covers a time period from 1996 to 2004 (Pathan, 2009). The main findings of Pathan (2009), after controlling for size, M&A and other bank characteristics, are that strong boards positively influence risk-taking and in contrast to that, CEO power negatively influences risk-taking of bank holding companies.

Erkens, Hung and Matos published a journal article in 2012 and tried in their study to discover the effect of good governance, measured by board independence and institutional ownership, on the performance of banks during the global financial crisis. As a dependent variable, the study used the buy and hold returns from 2007 to 2008, cumulative write-downs and the expected default probability and, therefore, assessing the impact on performance as well as risk measures (Erkens et al., 2012). 269 financial firms with an asset size of over 10 billion USD from 30 countries in the world were the base for the sample. The tested hypotheses are

whether financial institutions with more independent directors and larger institutional ownership perform poorer during times of financial distress (Erkens et al., 2012). The main findings based on their (Erkens et al., 2012) regression analysis are that firms with a larger stake of independent directors and institutional investors performed worse during the crisis. This is due to excessive risk-taking prior to the crisis and higher capital raises during the crisis, which negatively impacted the share performance (Erkens et al., 2012).

In 2013 Pathan together with Faff analysed the influence of the board structure criteria on the performance of banks. Different to Pathan's study from 2009 the authors focussed this time on the board size, gender diversity as well as independence of the directors (Pathan & Faff, 2013). The author's (Pathan & Faff, 2013) hypotheses are that smaller and more gender diverse boards as well as a lower ratio of independent directors increase the performance of banks due to an improved oversight quality. The sample to test the hypotheses is based on 212 large US bank holding companies covering a time period from 1997 to 2011 and the author's (Pathan & Faff, 2013) are using Pre-Tax operating income, return on average assets, return on average equity, net interest margin, Tobin's Q as well as stock returns as dependent variables, whilst controlling for bank size, capital, total risk as well as M&A activities. Pathan and Faff (2013) find based on their panel data analysis that banks with larger boards as well as more independent directors performed worse over the time period covered. Another aspect identified by Pathan and Faff (2013) is gender diversity, which they find mixed results for. Whilst for the time period from 1999-2002 positive influence on performance is observable, the results diminish afterwards, leading to the assumption of the authors (Pathan & Faff, 2013) that purely increasing the gender diversity does not improve the performance of a bank. Especially the findings relating to the independence of directors, show that a higher proportion of them leads to excessive risk-taking, which is in line with shareholder requirements, as discussed before in the bank governance section. However, this is impacting the stakeholders negatively, supporting the theory that banks need different governance settings than non-financials to not only favour shareholders but stakeholders as well.

Fernandes and Fich (2013) wanted to explore in their working paper, what impact financial experience in boards of banks has on risk-taking and performance of banks. They (Fernandes & Fich, 2013) define a person with financial expertise as someone who actually works or has worked in banking as well as having served in a board of a bank. The main two hypotheses are (Fernandes & Fich, 2013), that on the one hand banks with more financially experienced independent directors have a monitoring advantage over other banks and on the other hand a higher amount of those directors could lead to moral hazard under Federal Deposit Insurance Corporation (FDIC) rules. The moral hazard theorem has been discussed as well in Chapter 2.4 of this study. As dependent variables for the regression analysis the Tier 1 capital ratio, the loan to assets ratio, Troubled Asset Relief Program (TARP) funds and the standard deviations of return as risk measures and the cumulative abnormal return as a performance measure were used. 479 US banks under FDIC regulation from small to large size and data points from 2002 to 2008 built the sample (Fernandes & Fich, 2013). The main findings are that banks with a larger number of financial experts, which are independent, decreased their risk exposure before the crisis, had a better stock performance, earned higher cumulative abnormal returns and received fewer TARP funds (Fernandes & Fich, 2013). The findings support the hypothesis that banks with qualified independent financial experts on their board have a monitoring advantage, which leads to less risk and better performance. The second hypothesis could not be confirmed by the authors.

The journal article published by Minton, Taillard and Williamson (2014) aimed also to explore the influence of financial expertise of board members as well as their independence on risk-taking and performance of banks. Their (Minton et al., 2014) main hypothesis is that a higher amount of independent financial experts in the Board of Directors in financial institutions leads to higher risk-taking and poorer performance in times of a financial crisis. Independent variables are the independence of a director as well as the financial expertise, which is assumed, if the director has worked in a financial institution, had a finance role in a non-financial firm, and is an academic in the field of finance or a professional investor. This definition is broader than the one used by Fernandes and Fich (2013). The dependent variables were nominal cumulative stock return and firm value in %-

changes of Tobin's Q as performance measures; TARP, total risk (standard deviation of daily stock returns), Tier 1 capital ratios and real estate exposure as risk measures (Minton et al., 2014). Their (Minton et al., 2014) sample consisted of 119 commercial and savings & loans banks in the US covering a time period from 2003 to 2008. The main findings of their (Minton et al., 2014) regression analysis are in contrast to Fernandes and Fich (2013) that financial expertise of independent directors of banks negatively affects changes in firm value as well as cumulative stock performance. In contrast, it increases risk-taking in banks.

A further journal article to be discussed in the context of overall board governance of this dissertation has been published in 2015 by Zagorchev and Gao and assesses the influence of overall board characteristics on performance as well as risk taking of 820 US financial institutions from 2002 to 2009. Their (Zagorchev & Gao, 2015) key hypotheses are that banks with a better governance, measured by the Risk Metrics' Corporate Governance index and four further variables, including director's ownership, board committees, board independence as well as classified boards, take less risk, perform better and tend to more smoothen their returns. As dependent variables they (Zagorchev & Gao, 2015) used non-performing assets to total assets, Tobin's Q as well as provisions and reserves for bad loans to measure the income smoothing hypothesis. Based on the before described research setup the authors (Zagorchev & Gao, 2015) find empirical proof for their risk taking as well as performance hypothesis and further support for their income smoothing hypothesis. The results are interesting from the authors point of view as the index that has been used in this study is not specific to banks but rather based on general Corporate Governance measures, defined in the non-financial industry context, but still leading to significant results for a good governance according to this index. These findings somehow contradict the theory that banks are special animals and do need specific governance settings, as discussed several times before in this dissertation. However, as the index used consists of over 41 measures (Zagorchev & Gao, 2015) and it could be the case that such a large number of criteria are in the end important for banks as well and therefore diminish the effects of criteria that are different for banks.

In 2017 a further journal article covering board governance in the sample was published by Faleye and Krishnan. This study focused on the effect of Corporate Governance on the lending practice of commercial banks. Their hypotheses are that on the one hand effective boards are less likely to lend to riskier borrowers and on the other hand effective boards are less likely to lend to riskier borrowers in times of distress. Effective boards as an independent variable are defined by smaller size, a larger share of independent directors, staggered boards and no CEO duality (Faleye & Krishnan, 2017). The dependent variable, which should measure risk, was, in this case, the long-term credit rating of borrowers of the relevant bank. This means that the authors had to rely on data for syndicated loans and borrowers for which an external rating was accessible. Their sample consists of 80 banks from the US and data of 6,099 borrowers over a time horizon from 1994 to 2008. The main findings of Faleye and Krishnan (2017) are that banks with more effective boards are less likely to lend to risky borrowers. Nevertheless, they also find that this strategy is just observable in times of financial distress and significantly higher for banks with credit committees on the board level.

The last journal article to be analysed in this context has been published in 2018 by Anginer, Demirguc-Kunt, Huizinga and Ma and assesses whether shareholder-friendly boards lead to higher risk of banks. Therefore, adding a further study to the stream of papers, which are assessing if overall Corporate Governance of banks is different and if bank boards should account for stakeholders as well. Moreover, the authors (Anginer et al., 2018) wanted to assess if banks due to their safety nets provided by deposit insurances tend to take more risk than non-financial firms. To test their research questions Angier et al. (2018) constructed two data sets: an international one containing international banks from 22 countries including the US together with data on safety nets in the respective countries for a time period from 2004 to 2008 and additionally a second one containing data on US banks and non-financial firms from 1990 to 2014. The number of firms in the sample has not been disclosed, but the number of observations is appended to the study and is showing over 1,000 observations for the first sample containing the international banks and over 30,000 observations for non-financial corporations together with over 6,000 observations for US banks in the second sample (Anginer et al., 2018). By using six dependent risk variables

including a distance to default measure, the leverage of the firm, the asset volatility, the average stock return and the conditional Value at Risk the authors (Anginer et al., 2018) wanted to assess the influence of the Risk Metrics Governance Index with 44 variables together with an entrenchment index and a further measure of board independence, while controlling for typical firm variables, such as size, and macro variables, as e.g. GDP growth and the strength of the financial safety net in the respective country, on the risk carried by a bank or non-financial corporations. Based on that Anginer et al. (2018) find empirical evidence, as other authors (e.g. Pathan & Faff, 2013) before, that banks with boards which are more shareholder-friendly carry a higher risk, also compared to non-financial firms and ,furthermore, that banks in countries with stronger safety nets also carry a larger amount of risk, which is thereby shifted to the society in the respective country. The results of Anginer et al. (2018) seem to contradict the findings of the study from Zagorchev and Gao (2015) discussed before, especially as both use the same Risk Metric's Corporate Governance index, which found that banks with more shareholder-friendly boards performed overall better. However, when assessing risk measures, as Angier et al. (2018) did, the picture seems to be different and supports the results of other papers (e.g. Pathan & Faff, 2013) discussed before on specific Corporate Governance issues of banks as well. Therefore, the results further underpin that Corporate Governance mechanisms for banks need to consider that banks do not need to only serve their shareholders but their stakeholders as well.

As a conclusion, after introducing the single studies of the sample that focus on board governance, it can be stated that those studies support the theory that independent directors positively influence the risk-taking as desired by the shareholders, which leads to the problem of a conflict of interest between shareholders of a bank and the group of stakeholders. Therefore, the findings also support the hypothesis that Corporate Governance for banks is in this point different to that of non-financial corporations. However, there are two studies with contrasting results. One is from Faley and Krishnan (2017), which in contrast finds that effective boards, measured with the same methods as by the other studies, have a positive effect on risk-taking. However, the study is focussed on lending activities only and even more just in the sub-segment of syndicated loans,

which are most of the time, due to their exposure size and therefore higher approval level necessity, decided at board level. All other credit risk management decisions as well as processes and frameworks outside of the pure board decision and their influence on the risk of a bank are not considered but are captured by other studies that take bank-wide risk or performance measures into account. Therefore, the studies are from the author's point of view not comparable. The second study is the one from Zagorchev and Gao (2015) which finds that banks with a better governance, measured by the broad Risk Metric's Corporate Governance index and four further variables take less risk, perform better and tend to more smoothen their returns. However, as the index used, consists of over 41 measures, it could be the case that is such a broad number of criteria that are in the end important for banks as well and therefore diminishing the effects of criteria that are different for banks. Furthermore, Angier et al. (2018) find based on the same index empirical evidence that boards which are more shareholder-friendly carry a higher risk also compared to non-financial firms.

The picture on the qualification of board members is mixed. By applying the same regression analysis on US banks Minton et al. (2014) and Fernandes and Fich (2013) come to other conclusions due to a different definition of financial expertise. The author of this proposal personally prefers the narrow definition of Fernandes and Fich (2013), as this focuses on banking experience rather than just on a broad finance experience.

Nevertheless, the studies show that applying common measures of good Corporate Governance for non-financials could lead to excessive risk-taking and based on the systemic importance of banks to negative implications for society. Furthermore, the studies show that qualified and independent directors perfectly acted in favour of the shareholders as they prefer as shown in Chapter 2.4 of this study higher risk. Therefore, other than regular non-financial firm governance measures are needed to overcome these problems. One solution could be the implementation of the recommendations made by regulators and supranational organisations as shown in Chapter 4.1 to improve the robustness of banks. Focusing on implementing and improving only the common tools would lead,

based on the studies seen before, to higher risk-profiles banks and therefore higher risk for societies if too-big-to fail prevails

4.2.3.2 Management Compensation

The second group of studies in the sample of the academic analysis focusses on management compensation. The first article to be analysed is a New York FED working paper published by Mehran and Rosenberg in 2008, who investigate, what effects stock options have on the risk, the capital and leverage of a bank. The main hypotheses of the authors are: Stock options forced CEOs into riskier investment decisions, stock options reduce the level of leverage of banks and stock options granted result in higher capital ratios for banks (Mehran & Rosenberg, 2008). To measure the stock options as an independent variable the stock portfolios, the stock option Vega and Delta of CEOs are considered. As dependent variables the authors (Mehran & Rosenberg, 2008) chose equity return volatility (total, residual, systematic) and asset volatility as risk measures; interest expense/assets and Federal Funds borrowed/assets as leverage measures, Tier 1 capital ratio and total capital ratio as capital measures. The sample focused on US financial institutions and was composed of 549 small to large public financial institutions. The time period of the sample is from 1992 to 2002 (Mehran & Rosenberg, 2008). Main findings are that granted stock options stipulate CEOs to make riskier investments, a higher level of granted stock options increases the level of equity as well as the asset volatility, and moreover, a higher amount of granted stock options decreases borrowings (Mehran & Rosenberg, 2008).

The next study to be analysed was already partly presented in the preceding chapter and was conducted by Adams in 2009, who wanted to assess if Corporate Governance of banks is poorer compared to the one of non-financial corporations. An additional aim of the study was to find out if executive compensation in financial firms is different from the one in non-financial firms. The comparative analysis was performed on the same sample of banks as introduced before. Adams (2009) concludes that executive compensation does not differ significantly, based on her sample, between financial and non-financial firms. Both industries show the same trend of increased salaries and after controlling her sample for size, banks have less executive pay and lower percentage shares of incentive pay.

The third study of this group was conducted by Balachandran, Kogut and Harnal, in 2010 and published as a working paper, who also investigated the influence of executive compensation on risk-taking as well as on the default probability of the respective bank. Their (Balachandran et al., 2010) key hypotheses are that a higher proportion of equity pay increases the probability of default of a bank during a financial crisis and a higher proportion of non-equity pay decreases the probability of default of a bank during a financial crisis. As independent variables, the proportions of equity pay, and non-equity pay, as well as the overall pay, were used. The dependent variables were Credit Default Swap (CDS) spreads to measure default probability and implicit risk measures as for example put options of the relevant institutions (Balachandran et al., 2010). In this study the US was used for sampling and data of financial institutions from 1995 to 2008, including brokerage houses and exchanges, ending up with 117 financial institutions. The findings of the authors (Balachandran et al., 2010) are that the higher the equity-based pay is, the higher is the riskiness and the default probability of a bank, furthermore the higher the non-equity pay share is, the lower is the risk profile as well as the default probability.

Fahlenbrach and Stulz conducted a study in 2011 which aimed to find out, whether CEO incentives led to the credit crisis in 2007. The hypotheses of the authors (Fahlenbrach & Stulz, 2011) are on the one hand that the better the interests of the CEO and shareholders are aligned through compensation the better was the performance of the respective bank in the crisis and on the other hand that CEOs have reduced their equity holdings in their institutions before the crisis as they anticipated the downturn. To investigate this, they (Fahlenbrach & Stulz, 2011) set up a regression model with buy and hold return as well as received TARP funds as dependent variables to measure performance and risk. The dependent variables for assessing different payment schemes and equity holdings were the cash and bonus proportions of salary as well as the sensitivities of the optional pay and the equity ownership in percent. Fahlenbrach and Stulz (2011) also used a US sample with 89 financial institutions, but excluded brokerage and insurance companies, and covered a time period from 2006 to 2008. Main findings of their regression analysis are that banks with CEOs that were better aligned with shareholder interest performed worse and banks with CEOs that received a higher

proportion of cash pay performed better. Furthermore, they found no evidence that CEOs anticipated the downturn and sold their shares.

A further study covering management compensation and its influence on the risk level of banks was conducted by Chesney, Stromberg and Wagener in 2012 and they were particularly interested in how compensation incentivised asset risk-taking. Behind asset risk-taking stands the theory of risk shifting which is connected to leverage as introduced in the chapter about bank Corporate Governance. Nevertheless, there should be according to the authors (Chesney et al., 2012) an optimal level of debt, before it is value-destroying through its agency costs from the bondholder's side. Therefore, shareholders should align their interest in firm value growth with the one of managers by granting stock options, which should prevent a debt level that is too high. This could be modelled according to the authors (Chesney et al., 2012) by assuming that stock options work as options on the underlying asset value of the company. Therefore, the hypotheses of the authors (Chesney et al., 2012) are that asset volatility (Vega) is positively associated with asset risk-taking, that asset delta is negatively associated with asset risk-taking and that the asset incentive ratio (ratio of total Vega and total Delta) is positively associated with asset risk-taking. The independent variables in their regression model were therefore asset volatility, asset delta and the asset incentive ratio. Total write-downs as well as write down asset ratios were employed as dependent variables. Their sample was composed of US financial institutions and covers a time period from 2003 to 2008. Nevertheless, the authors do not provide a figure for the sample size. The study (Chesney et al., 2012) finds by taking asset risk measures into account, that the incentives to take asset risk are larger than the incentives to increase firm value. Furthermore, the authors argue, based on their regression, that stock holdings and options incentivise risk-taking, which could also be a root cause for the increased asset risk-taking of banks before the crisis.

In 2013 DeYoung, Peng and Yan published a journal article, which investigates how CEO compensation influenced risk decisions in banks and vice versa. The independent variables in their (DeYoung et al., 2013) research setting were the pay risk sensitivity of the CEO option portfolio (Vega) and the pay-performance

sensitivity (Delta) of the relevant compensation portfolio. The main hypotheses are that executive compensation contracts are systematically associated with excessive risk-taking and that bank boards adjusted the compensation schemes of executives to counter such excessive risk-taking (DeYoung et al., 2013). The dependent variable for the regression model were total, systemic and idiosyncratic risk measures based on market information and several balance sheets as well as loan ratios chosen. Based on the sample of 134 commercial banks from the US from 1994 to 2006 and after controlling for size and payroll measures the authors (DeYoung et al., 2013) found that bank CEOs took excessive risk due to contractual risk-taking incentives and that bank boards adjusted CEO compensation in a manner to exploit new growth opportunities, which aligned shareholders with managements interests.

As a summary of the studies seen before, it can be stated that they all found evidence that the executives of the major US banks were aligned to shareholder interests over their compensation schemes. This led to major risk-taking of the banks measured with different variables covering risk from several perspectives. Companies with executives best aligned to shareholder interest performed worse during the crisis, due to their high-risk levels. Therefore, the studies support the view that applying standard Corporate Governance schemes to banks, as in the cases seen before by the alignment of management with shareholders interest through compensation schemes, leads to negative outcomes for the stakeholders of these banks as described in Chapter 3 of this study.

4.2.3.3 Outside Control

The third group of papers covers the influence of outside control on the risk and performance of banks. Outside control is understood in this context as the influence of large institutional or governmental shareholders on private financial institutions.

Laeven and Levine conducted in 2009 a study that analysed the risk level of banks taking into consideration shareholder structures and local bank regulations. The key hypotheses of the authors (Laeven & Levine, 2009) are that on the one hand diversified owners should have stronger incentives to increase risk, which means

that banks with powerful and diversified owners are riskier than widely held banks, and on the other hand bank regulation affects risk-taking behaviour of owners differently to the one of managers, therefore the impact of regulations on risk-taking depends on the comparative power of shareholders compared to managers. To assess this the authors (Laeven & Levine, 2009), applied a regression model with ownership control over cash flow and voting rights as independent variables. As dependent variables, Z-scores and volatility of ROA as well as of ROE were applied on bank level, and capital requirements, deposit insurance and restrictions on activities are applied on the country level. The sample consisted of 250 banks out of 48 countries. These banks account for roughly 80% of the banking assets in the respective countries. The main findings of Laeven and Levine (2009) are that the country level relation between risk and capital requirements, deposit insurance as well as restrictions is related to the shareholder structure, which means that strong owners with large rights could not just influence the risk level of a bank, but also influence the effect of regulation on the single banks.

In 2009 Hau and Thum conducted a study on German public and private banks to find out, what effect the large shareholding by the German government had on banks before and during the financial crisis. The study has five key hypotheses (Hau & Thum, 2009, p. 9):

- “Board competence matters for the quality of a bank's investment strategy.
- Banks with a viable business model reflected in poorer operating performance pursue riskier investment strategies.
- Board competence matters indirectly through selection and appointment of a capable CEO and top management.
- State-owned banks are under pay constraints for the CEO and top management.
- Even in the absence of pay constraints, better-paying institutions might be able to attract better managers.”

They also conducted a regression analysis, where total losses and total losses to assets from 2007 to 2008 were used as dependent variables and constructed an own index as an independent variable that takes the educational, financial and

managerial experience of board members into account. The sample consisted of 29 German banks with index data on 593 board members. The main finding of their (Hau & Thum 2009) regression is that board expertise is directly linked to the performance of the banks measured by the losses. Furthermore, the study (Hau & Thum 2009) shows that the expertise and the knowledge of board members in state-owned banks, which membership is mainly driven by political processes or the party the respective person belongs to, have a relevant lower number of points in the expertise indices, constructed by the authors, than the boards of private banks. This leads in turn to bad investment decisions, poorer operating performance and higher losses in the crisis for state-owned banks in Hau and Thum's model (2009).

The latest study, which covers ownership as a topic was already partially introduced before in the board governance chapter and was conducted by Erkens et al. in 2012, who wanted to discover the effect of good governance, measured in board independence and institutional ownership, on the performance of banks during the financial crisis. The second hypothesis of their study is that firms with a higher stake of institutional ownership performed worse during the crisis. They applied the same dependent variables and used the same sample to test their hypothesis as introduced in the board governance chapter. Only the independent variable was adjusted, as the share of institutional ownership was considered as such. Based on this the authors (Erkens et al., 2012) found that banks with a higher institutional ownership share performed worse during the crisis and that those banks took more risk prior to the crisis.

The three studies described before show the influence of outside investors on the risk-taking behaviour of banks before and during the global financial crisis. They also support the fact that shareholders prefer higher risk as this leads to higher returns for them and as they can diversify their investments. Furthermore, the studies support the view that the riskiness increases the higher the influence of the shareholder is in terms of control of cash flows and voting rights is. Nevertheless, also the fact that the state is not the better banker is supported by the study of Hau and Thum (2009) as they show that the underperformance of state-owned banks could be attributed to state control. One could argue that the board members sent

into the banks were just acting in favour of their shareholders, but as it is the state and the state receives profits as well as carries also the losses this does not apply in this case. Therefore, the authors see the negative performance linked to low index of experience of the political board members.

4.2.3.4 Risk Governance

The last group of papers was coded as “Risk Governance”. The literature search in the sampling phase lead to 14 relevant studies that covered risk management practices at board and executive management level. The first and for the Risk Governance topic ground-breaking paper was published by Ellul and Yerramilli in 2010 as a working paper and then in 2013 as a journal article. The authors (Ellul & Yerramilli, 2013) wanted to investigate whether banks with independent and strong risk management structures had lower risk profiles during the global financial crisis. In order to assess this Ellul and Yerramilli (2013) created a risk management index, which covered the following criteria: a Chief Risk Officer (CRO) is present, the CRO is an executive, the CRO is under the top 5 pay in the bank, CRO centrality (ratio of CRO pay to CEO pay), board committee experience (banking background), board committee activity and reporting to the board from risk management. This index was used as the independent variable to test their key hypotheses, which state that banks with better risk management functions, according to their index, have a lower risk profile compared to other banks, that banks with a higher risk profile use improved risk management practices and, furthermore, that the risk culture of a bank is the driver of the risk profile as well as the risk management practices employed (Ellul & Yerramilli, 2013). As dependent variables, the authors used as risk measures the downside risk and the aggregate risk as well as the excess return over the S&P 500 as a performance measure. Both risk measures were also successfully used by other authors as shown above. Besides that, they also tested the influence of assets on several bank holdings for example mortgage securities or trading assets. The sample used in the model consists of 75 bank holding companies from the US, which represent according to Ellul and Yerramilli (2013) roughly 78 % of the assets in the US banking market in 2007, moreover, the study captured a period from 2000 to 2008. The main findings of the study are that banks with a higher

risk management index had lower mortgage holdings and less trading activities. Moreover, they find that financial institutions with a better governance index experienced lower risk based on both variables as well as better performance.

The study of Ellul and Yerramilli (2013) supports the view of regulators and supranational institutions that weak risk management practices could have exacerbated the financial crisis and furthermore it supports the monitoring advantage hypothesis that better-informed boards could be able to decide faster and better in situations of financial distress.

The second study focussing on Risk Governance was conducted by Aebi et al. in 2012. They (Aebi et al., 2012) investigated whether Risk Governance mechanisms, e.g. a CRO at board level or a risk committee established, are leading to a better performance of banks during the financial crisis 2007-2008. The financial crisis was in this case defined to have lasted from July 2007 to December 2008 and Risk Governance variables have been collected for the year 2006. According to the authors (Aebi et al., 2012), the latter is influenced by the assumption that Corporate Governance mechanisms need a certain period of time to develop their full capabilities. This is in line with other papers analysed before e.g. Fahlenbrach and Stulz (2011). In contrast to Ellul and Yerramilli (2013), the authors (Aebi et al., 2012) did not construct an index but rather chose to use single independent variables to test their hypotheses. Two sets of independent variables were used. For a broader sample of 372 listed US banks the authors (Aebi et al., 2012) collected data on CRO presence at board level, risk committee present at board level, the board size, board independence and directors with experience in banking or finance. For a smaller sample of 86 listed US banks manually collected data was used relating to the meeting frequency of the risk committee, number of directors in the committee, number of independent directors in the committee, whether the CRO reports to the board and whether CRO reports to the CEO. The independent variables, therefore, do not purely cover Risk Governance topics, but also regular Corporate Governance mechanisms such as board size or board independence.

Aebi et al. (2012) focused in their study purely on bank performance, which is in line with their research question, and therefore, only collected data related to

performance as dependent variables, namely ROA, ROE, buy and hold returns. They (Aebi et al., 2012) controlled for lagged ROA, ROE and buy and hold returns as well as market/book ratio, Tier1 capital ratio, deposit/asset ratio and loan/asset ratio.

The study of Aebi et al. (2012) finds based on the variables introduced before and by applying a regression analysis that the standard Corporate Governance mechanisms had no impact or even negative impact on the performance of banks during the financial crisis, whilst one of the Risk Governance mechanisms (CRO reports to the board or CEO) had a significant impact on the bank performance. Banks with such a setup implemented had stronger returns and, in this case, less negative returns during the financial crisis.

The results support the hypothesis of Mehran et al. (2011) as well as Macey and O'Hara (2003) that Corporate Governance mechanisms needed in banks are different than the ones used in non-financial firms and that therefore, standard Corporate Governance tools are not useful to be applied in banks.

Furthermore, the results support the proposals described before made by regulators to strengthen the Corporate Governance of banks by installing a CRO either at board level or with direct access to the board.

In 2012 Lingel and Sheedy published a study on Risk Governance mechanisms in international banks and their impact on the risk profile of such banks. The authors hypothesise that stronger Risk Governance leads to lower firm-wide risk. Like Ellul and Yerramilli (2013) the authors (Lingel & Sheedy, 2012) also construct a Risk Governance index based on data derived from international banks in 17 countries for a time period from 2004 to 2010. The timeframe was used according to the authors (Lingel & Sheedy, 2012), to not just cover the financial crisis, but also times without financial stress and the Eurozone crisis as well. The 60 largest financial institutions of the 17 countries were chosen as a basis for the study and 30 of those were headquartered in Europe.

The index (Lingel & Sheedy, 2012) is built upon manually collected data covering the following variables: CRO at board level, CRO Top 5 paid, risk committee meeting frequency, risk committee experience. As dependent variables, the

authors (Lingel & Sheedy, 2012) used the standard deviation of the weekly excess returns over the MSCI world index (aggregate risk) and the worst negative weekly excess return (tail risk) as a measure of risk. Furthermore, performance measures were considered as well by collecting data on annual return and ROA. Controlling for other bank characteristics has been conducted and considered for example bank size, deposits/assets, Tier 1 capital, non-performing loans/assets, as well as certain compensation measures. However, controlling for country effects has not been conducted in the study.

Lingel and Sheedy (2012) find that their hypothesis is supported and that stronger Risk Governance, based on their self-constructed index, leads to lower risk across the overall time period. However, the impact during the financial crisis is very limited and no significant effects could be found.

The findings of Lingel and Sheedy's study (2012) support the view of regulators that stronger Risk Governance, in this case, limited to CRO and the risk committee, could lead to lower risk. Nevertheless, the study does not support the view that it leads to less risk for banks or more robustness during times of financial distress.

In 2014 Sheedy published together with Magee and Schilling a further paper on Risk Governance, but this time with a focus on the insurance sector during the financial crisis of 2007/2008. The aim of the study was to investigate whether Risk Governance measures have an impact on the risk and performance of insurance companies during times of financial distress. Also, this time a Risk Governance index was applied, however, this time with a specific focus on Solvency II measures (Magee et al., 2014). Sampling included 107 insurance companies from 18 countries and covered the time period from 2004 to 2012.

The Risk Governance index is constructed based on five variables (Magee et al., 2014): CRO at board level, risk committee setup, risk committee independence and risk committee experience. Even though the authors (Magee et al., 2014) link those measures to the Solvency II framework, they are in line with regulatory proposals for banks as well.

As dependent variables, the authors (Magee et al., 2014) used the worst negative weekly excess return (tail risk) as a measure of risk as well as Moody's expected default probability. Performance measures are considered as well by collecting data on annual return and Tobin's Q. Furthermore, risk-adjusted measures were applied as well, namely cumulative abnormal returns and the risk-adjusted ROA. Controlling for other certain insurance characteristics has been conducted and considered for example insurance type, financial leverage, reserve adequacy, liquidity and gross premium growth, size, deposits/assets, Tier 1 capital, non-performing loans/assets, as well as certain compensation measures. This time the authors (Magee et al., 2014) included a controlling for country effects and used for this the Worldwide Governance Indicators, Anti-director Rights as well as two Hofstede measures (uncertainty avoidance and long vs. short-term) as control variables.

The study (Magee et al., 2014) finds that firms with a better index had experienced a lower risk and a lower probability of default. However, the study (Magee et al., 2014) cannot support the hypothesis that Risk Governance has a risk-reducing effect in general but can support that performance measures taking risk into account as well as the Tobin's Q are positively influenced by the measures. The results are mainly in line with the results from Ellul and Yerramilli (2013) as well as Aebi et al. (2012) regarding Risk Governance in banks. That leads to the assumption that Risk Governance is not just important to be considered in banks but should also play a role in management of non-bank financial institutions, which have similar risk profiles such as insurance companies.

Hines, Masli, Mauldin and Peters (2015) based their study on the emergence of risk committees in the United States following the inauguration of the Dodd-Frank Wall Street Reform and Consumer Protection Act (DFA) in 2010, which requires large banks to setup risk committees at board level. The authors (Hines et al., 2015) wanted to investigate whether risk committees have an impact on external audit service pricing and used audit fees as a proxy. From a theoretical perspective, higher audit fees would mean that the clients have a higher desire for more independent audits to get a clearer view on the process and procedures as well as certain issues in the company (Hines et al., 2015). A further, interesting

feature of this study is the theoretical background applied as the authors used the Institutional Theory to ground their work in instead of the mainly applied Principal-Agent Theory.

Their (Hines et al., 2015) sample consisted of 3,980 listed US banks for a time period from 2003 to 2011 and risk committee presence was collected as an independent variable. For a smaller sample of 458 banks (all of which had a risk committee) the authors (Hines et al., 2015) also collected information on risk committee characteristics such as independence, audit committee overlaps, size of the board as well as size of the risk committee compared to board size.

A controlling for bank characteristics has been conducted and considered size, security investments, efficiency, non-performing assets, net charge-offs, Tier 1 ratio, intangible asset ratio as well as certain measures regarding the audit committee (Hines et al., 2015).

Hines et al. (2015) find that the presence of risk committees leads to higher audit fees. However, higher risk committee independence and audit committee overlaps lead to lower audit fees. Higher risk committee size relative to board size leads to higher fees. The results, considering higher audit fees as a proxy for increased monitoring from the board, support the regulatory requirement to install a risk committee as a measure to strengthen board oversight on risk-related matters.

Hines and Peters (2015) expanded the research on risk committees further in 2015 by not just investigating the impact on audit fees but also on risk and performance measures. The aim of the study (Hines & Peters, 2015) was to investigate whether a risk committee formation has a substantive effect on short term risk outcomes and performance. The overall regulatory and theoretical background did not change compared to the study assessed before.

Sampling now included 47 listed US banks that have voluntarily installed a risk committee at board level and a control sample of 47 listed US financial institutions that have not voluntarily set up a risk committee during the sample period from 1994 to 2008. Therefore, the independent variable was, whether a risk committee was established.

As dependent variables, the authors (Hines & Peters, 2015) collected data on hedging derivatives, trading derivatives, risk-adjusted ROA. Control variables include CEO duality, CEO turnover, board independence, board size, asset and liability committee setup, international activity, auditors change, big 4 auditor, non-performing assets, leverage and charge-offs.

Hines and Peters (2015) find no evidence that the setup of a risk committee leads to lower short-term risk or higher profitability. Instead, the authors (Hines and Peters, 2015) conclude that risk committees are just of symbolic value and substantiate legitimacy regarding risk oversight, which is in line with their theoretical framework, the Institutional Theory. However, the study finds as well that banks with international activities, higher leverage, big 4 auditor, larger and more independent boards as well as M&A activities are more likely to form a risk committee.

In 2015, Cavezzali and Gardenal investigated in a working paper the influence of best practices in risk management on the performance as well as the risk profile of listed Italian banks. The authors (Cavezzali & Gardenal, 2015) did not construct a Risk Governance index; however, they follow Ellul and Yerramilli (2013) in terms of relevant independent variables that could be used as proxies for good Risk Governance. Namely, they (Cavezzali & Gardenal, 2015) used CRO presence, CRO centrality, risk committee experience, risk committee activism and Board of Directors independence as independent variables. Sampling on those variables was done for 21 listed Italian banks for the time period from to 2005 to 2013. The authors (Cavezzali & Gardenal, 2015) chose performance as well as risk measures, specifically ROE, ROA, risk-adjusted ROA and Z-Scores for all banks in the sample as dependent variables. Controlling was conducted for certain standard measures: net interest margin, cost-income ratio, bank size, equity to asset ratio, total capital ratio, loans, deposits as well as derivatives exposure.

Cavezzali and Gardenal (2015) find mixed results with regard to their hypothesis. The CRO presence has no effect or negative effects (risk-adjusted ROA) on the dependent variables, which contrasts with the studies discussed before, which found based on cross-country or US samples a significant relation between the

CRO setup at board level and risk as well as performance measures (Aebi et al., 2012; Lingel & Sheedy, 2012; Ellul & Yerramilli, 2013).

For the risk committee the study also derives mixed results as the experience of members does not influence the risk profile of the banks and the activism of the committee leads to higher instead of lower risk. This is as well not in line with most of the studies analysed before (Aebi et al., 2012; Lingel & Sheedy, 2012; Ellul & Yerramilli, 2013). However, board independence is positively related to bank performance in the sample. The results are also not in line with what regulators propose and what other studies have found based on their empirical research. One of the contributing factors can be that the authors focused on Italian banks and that certain country specifics e.g. local banking regulation or governance environment could lead to contradicting effects for Risk Governance. Nevertheless, the authors (Cavezzali & Gardenal, 2015) did not investigate further what could have led to conflicting results.

Battaglia and Gallo assessed in 2015 the impact of Risk Governance variables on banks during the global financial crisis, but with a focus on listed Chinese as well as Indian banks. The sample consisted of 36 banks, with 21 Indian and 15 Chinese banks, for a time period from 2007 to 2011. The authors (Battaglia and Gallo, 2015) used standard measures as well as Risk Governance measures as independent variables, specifically board size, number of independent directors, frequency of board meetings, frequency of risk committee meetings as well as the size of the risk committee. In contrast to other studies e.g. Aebi et al. (2012), the CRO and his influence on the bank's performance was not assessed in this study. ROA, ROE, Tobin's Q and the price-earnings ratio were used as dependent variables. Controlling has been conducted for bank size, loans-total assets ratio, Tier1 capital and price-book ratio. Country specifics have not been considered.

The authors (Battaglia & Gallo, 2015) find a positive relation between the size of a risk committee and ROA as well as ROE, whilst, the market valuation, as well as Tobin's Q, are negatively linked to the size of the risk committee. The frequency of risk committee meetings is positively related to both market measures. According to Battaglia and Gallo (2015), this means that the markets favour smaller and more active boards. These findings are mainly in line with

regulatory proposals and most of the other studies focusing on US banks analysed before.

Furthermore, in line with Aebi et al. (2012) the authors (Battaglia & Gallo, 2015) find based on their empirical analysis that standard Corporate Governance mechanisms or variables have no significant influence on the performance of a bank as soon as Risk Governance variables are added.

In 2016 Iselin published in the course of her dissertation project a working paper focusing on the impact of a risk committee required by the Dodd-Frank Act (DFA) on capital ratios of large US bank holding companies. The sample of Iselin (2016) contained 69 banks at the beginning of the study in 2004 and 54 at the end of the study in 2010, the difference is linked to the banks meeting the DFA total asset threshold for implementing a mandatory stand-alone risk committee.

As an independent variable, the author (Iselin, 2016) used the presence of a risk committee and as a dependent variable the Tier 1 capital ratio. Therefore, the study is rather simplistic compared to the setup of the studies described before, which relied on larger samples and more complex research settings as well as on manually collected data. Controlling has been conducted for bank size, Beta, cash reserved, trading assets, securitised assets, book-market ratio, institutional owners, loan loss reserve, Tier1 capital, idiosyncratic returns, non-performing loans, the board size, independent directors, board meetings held, CEO/chair duality (Iselin, 2016).

Iselin (2016) finds that risk committees are linked to increased capital ratios during times of financial stress. However, the study (Iselin, 2016) finds as well that risk committees are associated with decreased capital ratios during stable economic conditions. The author (Iselin, 2016) detected furthermore, that the decrease in times of stable economy is linked to the denominator of the capital ratio, which is risk-weighted assets and concludes that risk committees seem to focus on credit policies and asset quality rather than on the issuance of new equity or the bank's dividend policy.

The findings are in line with regulatory proposals or newly introduced laws stipulating the setup of stand-alone risk committees to make banks more robust in

times of financial distress (Iselin, 2016). Furthermore, the findings are in line with the other studies on US banks (Aebi et al., 2011; Lingel & Sheedy, 2012; Ellul & Yerramilli, 2013), which also find a positive influence on risk and performance measures driven by risk committees.

Next, to her 2012 and 2014 papers Sheedy conducted further research on Risk Governance and published in 2017 a paper together with Griffin investigating the perception of bank employees of the effectiveness of Risk Governance and risk culture as well as how those two measures influence risk-taking of bank employees.

The study applied a survey method and focused on seven Australian and Canadian banks. Within these banks, the authors (Sheedy & Griffin, 2016) surveyed 30,126 employees. The questions mainly related to risk Culture, risk behaviour and perception of risk structures. Based on the survey, the authors (Sheedy & Griffin, 2016) find that risk structures as such were perceived as effective by the employees, except management compensation, which was judged as being ineffective. For risk culture, the results were mixed and were dependent on country, bank, business unit and managerial level. Specifically, managers perceived risk culture as stronger than the rest of the employees. Furthermore, Sheedy and Griffin and (2016) detect that a strong risk culture, as well as effective risk structures, are being linked to higher levels of desirable risk behaviour and lower levels of undesirable risk behaviour.

The value that this study added (Sheedy & Griffin , 2016) to the field of Risk Governance research is the insight being gained in financial institutions. Whilst all papers described before focused on Risk Governance measures being observable by collecting either data from open-source data banks or from annual accounts, the research by Sheedy and Griffin and (2016) was based on company insights and found that Risk Governance and culture can have an impact on risk-taking which is the core of what regulators try to reach with their policy changes and proposals.

Andries and Brown published a paper in 2017 focusing on credit cycles in emerging markets. Their aim was to discover how risk management and

Corporate Governance drives banks involvement in these cycles with a special focus on Central and Eastern Europe (CEE). The study assessed 156 commercial banks in 17 countries in the CEE region over the period from 2005 to 2012. To test their (Andries & Brown, 2017) hypotheses that better risk management and Corporate Governance lead to smaller loan growth before the global financial crisis and lower losses during the crisis the authors construct a Risk Management as well as a Supervisory Board Index. The indexes are constructed in the following way (Andries & Brown, 2017):

- Risk Management Index (CRO present, Risk Committee, RC reports to the board)
- Supervisory Board Index (Board Size, Board Expertise, Board Independence, Board foreign)

As dependent variables, Andries and Brown (2017) used several measures related to the risk profile of banks, namely credit growth, credit drop (pre-crisis to crisis development of credit growth) and non-performing loans ratio. For controlling purposes bank size, the foreign holding of bank shares, asset structure, capital structure, funding structure as well as the Vienna initiative on bank-level, meaning if a bank has committed to the aims of the initiative, were used (Andries & Brown, 2017).

Furthermore, the authors (Andries & Brown, 2017) wanted to assess if any interaction between the independent and dependent variables exist with external governance mechanisms and assessed therefore for each country based on a 2003 and a 2007 World Bank Survey of Bank Regulation and Supervision if a lax regulation exists and if banks are listed or if banks are subsidiaries of larger groups.

Andries and Brown (2017) find that a better risk management prevents exaggerated loan growth before the global financial crisis but is not linked to smaller loan losses during it. Regarding Corporate Governance, the study (Andries & Brown, 2017) finds that a larger share of foreign supervisory board members is linked to smaller loan growth before the global financial crisis as well as this time also to smaller loan losses during it. According to the study (Andries

& Brown, 2017), external governance mechanisms do not influence the interaction between the two indices as well as the loan growth of banks.

The results of Andries and Brown (2017) show that risk management practices and certain experience in the board could lead to more robust banks in the context of CEE banks during the financial crisis, which is in line with studies from the US. However, the focus of the authors (Andries & Brown, 2017) was on credit risk only. Other risk and performance measures for banks were not assessed and this could lead to misleading results regarding the overall influence of Risk Governance measures on banks robustness in times of financial crisis.

In 2016 Gontarek assessed the impact of Risk Governance on performance and risk measures on US banks in his doctoral thesis. The author (Gontarek, 2016) especially focused on the emergence of risk committees in the US banking industry following the implementation of the Dodd–Frank Wall Street Reform and Consumer Protection Act (DFA) that stipulates the setup of a stand-alone risk committee as well as other risk management mechanisms for large bank holding companies with total consolidated assets crossing a ten-billion-dollar threshold (12 CFR §252.22, DFA, 2010). The author (Gontarek, 2016) collected data for 140 listed US bank holding companies from 2012 to 2015.

Gontarek (2016) used three measures to test if Risk Governance has an impact on performance and risk of bank holding companies, that is: the existence of a risk committee, the financial experience of its members and the presence of a Risk Appetite Framework.

ROA, net income margin, efficiency ratio, buy and hold return were used as dependent variables and non-performing loans, actual net losses, Tier 1 capital as well as tail risk as risk measures were used as performance measures.

For controlling purposes, the author (Gontarek, 2016) collected data on total assets, loan to asset ratio, deposit to asset ratio, institutional shareholding, international activities and as Corporate Governance variables, the author used: board size, board meeting frequency, board meeting attendance quota, busyness of the board, CRO centrality, CEO education, CEO duality, CEO shares, CEO's

years on Board of Directors, CEO's years in the bank, executive age for CEO and CRO, non-inside directors percentage and risk committee chair's gender.

Gontarek (2016) finds that bank holding companies that apply risk appetite frameworks have experienced improved performance as well as lower loan losses. However, the study did not find significant influence of the risk committee on performance or risk measures.

The results are contrary to the ones of e.g. Ellul and Yerramilli (2013), Hines et al. (2015) or Iselin (2016) who all found evidence that a risk committee has a significant influence on risk or performance measures. One cause for this could be that Gontarek (2016) only used data where the US economy was trending upwards (2012-2015), which may lead to the fact that Risk Governance mechanisms e.g. setup of a risk committee might not show significant effects as most effects would be expected in times of financial crisis from a theoretical perspective.

Nevertheless, the results regarding the risk appetite framework are in line with regulatory expectations as not just the DFA (12CFR, DFA, 2010) but also the BCBS (2015) advocate for the installation of such a framework to make banks more robust. However, the same criticism as with the risk committee holds true as Gontarek (2016) did not use data that consists of the time of financial stress.

In 2019 Dupire and Slagmulder published a paper assessing how the shareholder structure and the independence of the boards of banks influences the Risk Governance settings of European financial institutions with a focus on variables regarding the CRO e.g. presence, expertise and board level and variables on the risk committee e.g. presence, independence, expertise as well as variables on the Risk Appetite Framework. The authors (Dupire & Slagmulder, 2019) used manually collected data from 54 banks and 33 insurances companies covering two distinct years, namely 2007 as pre-crisis- and 2014 as a post-crisis-measure, from a time period perspective as well as from a country perspective the EU15 countries plus Switzerland and Norway due to their economic importance for the area.

Dupire and Slagmulder (2019) find two results, first that financial institutions with stronger owners, in terms of percentage of ownership, have less CRO as well as

risk committee presence, and secondly that financial institutions that are state controlled or have more independent boards tend to have risk committees that are more independent.

The results add additional value to the stream of Risk Governance research as the authors (Dupire & Slagmulder, 2019) assess the drivers for different setups of financial institutions instead of focusing on the influence of the Risk Governance measures on other variables as other authors e.g. Gontarek (2016) or Andries and Brown (2017).

The last paper analysed in this context has been published in 2019 by Chavarín and assesses the effect of Risk Governance measures on the profitability of Mexican banks between 2007 and 2015 with specific focus on their ownership structure, namely whether they are part of a business group or owned by a foreign bank. Chavarín's (2019) sample included 24 Mexican banks as well as seven Risk Governance variables that mainly related to the size, independence of the risk committee as well as if a CRO is present, however, without assessing his level in the bank. Furthermore, the author (Chavarín, 2019) collected data on the ownership structure and ROE as well as ROA, each averaged, as depended variables together with seven control variables on firm level that account e.g. for size, capital, liquidity and credit risk.

Chavarín (2019) finds only limited influence of the Risk Governance measures on the profitability of the banks in the sample independently from the ownership structure. The study (Chavarín, 2019) adds value to the stream of research as light is shed on banks in Latin America and the specific influence of Risk Governance measures on banks in this market as well as focusses on specific parts of the risk committee instead of assessing a broader index of Risk Governance as e.g. Ellul and Yerramilli (2013).

Concluding it can be stated that the relevance of Risk Governance in academic research has increased which can be clearly seen in the recent increase of papers published that are dedicated to this topic. Researchers recognise that Corporate Governance for banks is different from the Corporate Governance in non-financial corporations. The studies find that Risk Governance practices based on

a governance index (e.g. Ellul & Yerramilli, 2013) or specific tools such as a CRO being present on board-level or a dedicated risk committee at board level (e.g. Battaglia and Gallo, 2015) have a positive impact on the risk profile or performance of financial institutions during those times. However, the studies do not focus on dedicated tools of Risk Governance as proposed by regulators, especially the standards set recently by FINMA (2016) and EBA (2017). For example, the introduction of a Risk Appetite Statement or specific tasks the risk committee should perform are not properly tested within the studies.

Country wise the focus of the studies is clearly on the US banking system and just a low number of cross-country studies and no study with exclusive European focus, even though from an academic perspective especially Europe with the Eurozone crisis following the financial crisis of 2008 would have been a good playground to test the hypotheses of the regulators setup after the global financial crisis. Furthermore, most of the studies focused on the before mentioned global financial crisis as well as the period shortly before and after it.

Therefore, to the best of the knowledge of the author, European banks on a broader scale as well as a special focus on specific governance mechanisms suggested by the BCBS in 2015 or the EBA (2017) and FINMA (2016) were not yet in the scope of academic research on a broader level.

4.3 Expert Analysis

As already stated in the introduction of Chapter 4 not only regulatory and academic perspectives on Risk Governance should be gathered, but the perspective of experts should be considered as well. This is in line with the methodological approach the study takes as it tries to follow the pragmatism approach proposed by Saunders et al. (2009) and enriches quantitative data with qualitative data derived from interviews with experts. In the following, the methodology itself will be described and then the outcome of the interviews based on the three groups of Risk Governance variables analysed. The results will be used in the Chapter 5 to define the hypotheses, which will be tested based on quantitative data.

4.3.1 Methodology

To answer the research questions, in this case especially the first sub-question, it is relevant to not only analyse regulatory and academic outcomes to derive hypotheses, which can be tested based on quantitative data, but to gain an insight into a third perspective as well, the one of experts. Therefore, the author decided to use triangulation with qualitative data as a means to further validate the views expressed by regulators as well as researchers as discussed in the two sub-chapters before. This meant that fieldwork had to be conducted by the author, who carried out interviews with experts on Risk Governance. The triangulation should help to gain further understanding or new perspectives on the research questions, from the real world, which Yin (2011) states as one of the integral parts of qualitative research. Conducting interviews further leads to the fact that the researcher must interact with the real world and real people (Yin, 2011), which should help to create more robust and relevant outcomes of the study for practice as well as theory. However, there is also heavy criticism of using interviews as a technique for academic research as they are thought to be inappropriate. Denzin and Lincoln (2000) state that they are not objective but are impressionistic or even more, nothing else than everyday conversations. Nevertheless, the author understands as described in the introduction that there are two poles in academia depending on the philosophy of science the researcher follows, where one pole favours quantitative over qualitative data to test theory and the other pole seeing it the

other way around favouring qualitative data to develop theory. However, the author decided to apply this mixed-method approach as it makes sense from his point of view to enrich the study by a view into real-life in order to produce outcomes that matter in practice.

The first question, when it comes to the use of interviews as a mean of research is which kind of interview to apply. According to Dumay and Qu (2011) and Yin (2011), there is a continuum with two main poles when it comes to interviews. One pole is the unstructured interview and the other pole is the structured interview with the semi-structured one in the middle (Longhurst, 2010). Structured interviews follow a strict script of predefined questions, which the interviewer asks the interviewees (Dumay & Qu, 2011). This happens in all interviews for one study in the same fashion, meaning order and content of the question, and the questions are structured as closed questions in order to achieve more accurate data and to make data easy to analyse (Yin, 2011). In contrast, unstructured interviews have no script, which is followed, and assume that the researcher does not know all questions in advance that are necessary to lift the relevant information in the interview (Dumay & Qu, 2011). According to Berg (1998), the aim should rather be to observe the inner life of the interviews and to make sure the interviewee feels relaxed and comfortable. The semi-structured interview is somehow located in the middle of these two poles, meaning that the interviewer prepares a set of questions, which frame the interview, but the interviewee can discuss topics he assumes as being relevant for the research topic (Longhurst, 2010). Therefore, this setting can be understood as a conversation of the two participants, which is based on open-ended questions but requires the interviewer to interact and react to topics brought up by the interviewee during the conversation (Yin, 2011). Due to these specifics, the use of unstructured as well as semi-structured is in contrast to structured interviews more time consuming when it comes to the analysis of data. However, they provide the opportunity to gain a deeper understanding of the topic from the interviewees perspective as both approaches open the room for a conversation that could lift new topics the researcher has not thought about before. Due to this and the fact that the qualitative study should just provide a new perspective on the research question in the context of the triangulation instead of being the main mean of

research method, the author decided to conduct semi-structured interviews, which allow to incorporate the results of the academic as well regulatory analysis conducted so far in the previous chapters of this study.

To conduct semi-structured interviews means on the one hand, following a specific process from preparation to analysis of the interviews and on the other hand, following protocol on how to conduct the interviews.

The process begins with the preparation of the interviews. As the author needs to be able to provide a framework for the interviews as well as being able to react to the interviewee's statements during the conversation, the author, therefore, needs to conduct intensive research on the topic in advance (Yin, 2011). The author of this study has done this in the context of the academic and the regulatory analysis explained in the previous chapters and sub-chapters of this study. Based on this the author developed a set of questions that ask for definitions as well as opinions on regulatory and academic proposals or theories as well as best practice being applied by the practitioners. The basic framework, used in the interviews, is built upon the 20 measures developed under Chapter 4.1 and is attached to this study under annex G.

Following the setting of the framework and the questionnaire, the author needs to recruit the interviewees for the study, who can provide useful insights and relevant information for the study (Longhurst, 2011). In the context of this study, which tries to research the processes around Risk Governance at board level of European banks the relevant interviewees would come out of the group of board members of these banks or executives having interfaces to the board in the context of Risk Governance e.g. the Chief Audit Executive. Therefore, the author tried to gain access to relevant persons via his academic and business network or by simply approaching the banks via official company channels and asking for support of the study. In the end, the author was able to speak to 10 interviewees from seven European banks. As the aim of the qualitative part of the study is to gain another perspective on the research topic and not being the sole mean of research, the number of participants is from the point of view of the author as well as based on views from other authors (e.g. Yin, 2011; Longhurst, 2011) sufficient. Whilst studies relying on unstructured interviews, most of the time, end up in case studies

of one or two persons and settings with structured interviews aim to achieve a large set of data, semi-structured interview settings usually rely on a smaller group of interviews (Dumay & Qu, 2011). In terms of confidentiality the author agreed with the interviewees to not openly disclose their names as well as banks in the context of the study, but would be allowed to use the content of the conversations and make reference to their position in the bank as well as the specifics of the banks they are working for in terms of geography, shareholder structure, business model as well as asset size.

The following table shows the positions of the relevant interviewees in the context of Risk Governance. Since some of the participants had multiple roles within the Board of Directors a double counting is possible.

Table 10: Interview Participants

Position	Chair of the Board	Chair of the Risk Committee	Member of the Risk Committee	Executive with an interface to the Risk Committee
No of Interviews	6	3	4	2

Source: Own development.

Note: Double counting possible.

As one can observe based on the table, the interviewees are all actively involved in the Risk Governance at board level and the majority, eight out of 10 are part of the board, with diverse positions providing multiple views on the topic and therefore increasing the possibility to gain a broader understanding of the topic. Six of the interviewees were chair of the board and two out of the six were at the same time also chairing the risk committee, whilst two others were members of the risk committee at the time of the interviews. The dual-hatting setting would since 2018 not be possible anymore in Switzerland (July) as well as in Europe (March) based on recently published guidelines, which prohibit the chair of the risk committee to be the chair of the board at the same time (FINMA, 2016; EBA, 2017). However, in terms of multiple hatting a continuum with two extremes could be observed in the interview sample: On the one hand one chairman was not allowed to chair or even be a member of another board committee based on

the bank's governance rules, whilst on the other hand a chairman of another bank was hatting five out of six committees the bank had installed at board level. The latter of the two extremes is interesting in the context of the Risk Governance rules described before as it does not follow what would be understood as good governance from a regulatory point of view (e.g. FINMA, 2016; EBA, 2017). However, it must be pointed out that the interviews happened at a time when the regulations were fairly new (BCBS, 2015) or had not yet been introduced (EBA, 2017). Furthermore, the author interviewed one person that just chaired the risk committee and was not part of any other committee but did so not only on global or better-said, holding level but also on local levels in the main subsidiaries. Moreover, for one bank the chair of the audit committee who was at the same time a member of the risk committee was interviewed. To further broaden the scope of perspectives on Risk Governance in one case the head of internal audit, as well as the head of the supervisory board office, was interviewed as well, of which both had a direct interface to the risk committee as well as the board and, therefore, a good understanding of the work that is being done by the board in the context of Risk Governance. Nine out of 10 interviewees were men and between 55 and 75 years old at the time of the interviews. Only one woman was part of the interviews and she was the head of the supervisory board office of one of the banks in the sample.

The banks in the sample were all based in Europe and the 10 interviewees came out of seven banks. The composition of banks in terms of ownership, as well as asset size, was diverse in order to further broaden the horizon of perspectives on Risk Governance. Four out of the seven banks were listed on stock exchanges, whilst two were privately held and one was under governmental ownership. From a business model perspective, five out of the seven banks were commercial banks whilst the other two focussed purely on wealth and asset management. In terms of geography, the banks had their headquarters in Switzerland, Germany as well as in the United Kingdom. From an asset perspective, the listed banks in the interview sample were also part of the sample being used in the Chapter 5 for qualitative analysis and stand for 17.74% of the total assets of the sample at the end of the sample period in 2015. Three banks out of the group were defined as global systemically important banks (G-SIBs) according to the Financial Stability

Board (2015). Moreover, all the banks had at the time implemented a stand-alone risk committee next to an audit as well as a remuneration committee. Further other committees have also been established at these banks ranging from nomination to compliance committees.

The next step that is relevant in the context of conducting interviews for qualitative research is the setting and framing of the interviews (Longhurst, 2011). All interviews have been carried out in 2015 and 2016 and therefore providing valuable insights into the topic covering the timeframe of the quantitative part as well. The interviews were conducted in the offices of the interviewees and took between one and a half up to two and half hours depending on the topics that had been intensified, which is one of the advantages of a semi-structured interview as it provides room for active discussion in the interview setting (Dumay & Qu, 2011).

Following, recruiting for as well as setting the interviews the researcher must conduct the interviews (Longhurst, 2011). In order to do that authors (Longhurst, 2011; Yin, 2011) agree that one must follow a certain protocol as the researcher himself will become part of the research setting and could bias by undermining the outcome of the interviews. According to Yin (2011), six points should be considered during the interview:

1. The researcher should not do all the talking, but keep the conversation going and listen carefully.
2. The researcher must be as non-directive as possible to prevent giving guidance into the direction of a desired outcome.
3. This follows the advice, to stay neutral as the interviewer and not to start to argue for or against certain points brought up in the interview.
4. The researcher maintains rapport, meaning to make sure that the interviewee feels comfortable.
5. The researcher needs to have a basic protocol with questions that provide a framework during the interview and is based on the research questions as well as research having been conducted in the preparation for the interview.

6. The researcher needs to start analysing during the interview in order to make sure that topics of interest or with critical nature are discussed in more depth.

The author of this study strictly followed the recommendations from Yin (2011) to prevent pitfalls during the interviews. The framework and broader questionnaire being used during the interviews can be found under annex G. Furthermore, the author did not record the interviews but rather took extensive notes. However, due to the interview setup and the active involvement of the author in the interviews, based on the semi-structured setting, flaws whilst taking notes might occur. Therefore, a second person accompanied the author in each of the interviews to take notes as well. The person had no active role in the interviews, but rather a pure observer role that should provide further robustness to the notes being taken during the interviews. Directly after the interviews, the notes were transcribed based on the notes of the interviewer as well as the observer as the memory of the interview is still fresh at this point.

The last part of conducting interviews is the analysis of the content in the context of the research setting and the relevant research questions (Schmidt, 2004). Part of the analysis is the intense reading of the transcripts and to introduce categories based on the interview content as well as the research framework, which help to code the interviews (Yin, 2011). The last step of the analysis process is then to quantify and to analyse the results of the interviews (Schmidt, 2004). The author used as reference categories the research framework he used as a preparation for and during the interviews. Interesting sub-streams that are not necessarily linked to Risk Governance itself but add value in the broader context will be reported separately or as side notes.

4.3.2 Semi-Structured Interviews

The author decided to follow Schmidt's (2004) advice and grouped the findings in three main categories, which have been used already as a framework for the questionnaire and which were derived from the regulatory proposals as outlined in Chapter 4.1: Risk Governance Structure, Risk Committee Oversight Quality as

well as Risk Governance Tools. Next, to these three main categories, findings that are not directly linked to those will be reported as well.

In following Yin (2011) the author used a grand tour question to open the discussions, which was, in this case, asking about the main challenges for risk management at board level. Doing this does not just open the field for the interviews but helps the author as well to answer his first research question.

Three participants argued that the increasing regulations and the compliance with them especially in an international context is one of the main challenges. Especially the speed of new regulations coming up as well as internationally diverging regulations on the same topic are obstacles in effective management of regulatory risks. A common theme across all interviews was the missing level playing field for banks across Europe but as well with the USA and the main markets in Asia.

Another challenge that two of the interviewees brought up is to create a healthy risk culture, which is needed as a basis for the risk framework in order to achieve effective risk management. This hypothesis is supported by three other interviewees that claimed that banks need to have a strong three lines of defence model to cope with challenges in risk management. One chairman said that particularly the first line of defence needs to be more pro-active and take ownership when it comes to risk and he further added that the common principle that the salespeople only acquire assets and the risk is then carried by the second line of defence across the portfolio needs to be overhauled. This had from his perspective supported the magnitude of the financial crisis in 2008. Even more, the chairman of a privately held wealth management bank added to that, emphasizing that there needs to be risk-taking by the first line and that taking the wrong risk needs to be reflected in the remuneration. According to his understanding that is one of the main and oldest principles in banking. Dismissing this relationship in the early 2000s by underwriting the portfolios of sales managers against defaults promoted the up rise of financial crises.

The next topic which has been raised across two grand tour sections is IT and Cyber risks, which have entered the field of risk management just recently. From

the interviewees perspective the more a bank becomes information technology-driven and digital the more it can be harmed by infrastructure blackouts as well as by cyber-attacks. Therefore, modern risk management must make sure that the risks are identified, analysed and understood.

The last topic which came across in the initial phase of two interviews was that risk management must change in terms of the direction it takes, as it should be rather forward than backwards-looking in order to understand upcoming risks and their impact on the organisation. This view is in line with what the regulators (FSB, 2013b; BCBS, 2015) state as one of the main attributes of a risk committee, which should in contrast to an audit committee have a forward-looking perspective on the risks a bank is facing.

After having opened the door with the grand tour question the author tried to first get an impression of what the interviewees understand under Risk Governance and why it does matter from their perspectives. The result is that all of the interviewees understand somehow under Risk Governance, the use of a framework which provides tools, processes and procedures which ensure that risk is steered effectively in a bank. That means that Risk Governance itself is nothing uncommon in the banking industry and that the definition of the regulators (FSB, 2013b; BCBS, 2015) is meeting the definition of practitioners as well. Furthermore, one of the interviewees, a chairman of a global systemically important bank, explicitly referred to the at that time newly published Corporate Governance principles of banks (BCBS, 2015) and saw these as explicitly value-adding from his perspective.

Two of the interviewees added to this that Risk Governance does also mean, in the context of a bank holding company, the groupwide steering of risk according to uniform standards. Both of them oversee global active bank holding companies with complex group structures and by their statement support the view that has been expressed in the section of bank governance, which made clear that especially complex company structures hamper the effective steering from a risk perspective. Based on the statement of the two it can be assumed that practitioners also prefer mechanisms that prevent risk arbitrage by different levels of maturity of risk management practices across a banking group. On a side note, it has to be

stated that one of the interviewees supporting that view is chairing the risk committee on a holding level, but is also doing the same in major subsidiaries of the group ensuring that these committees apply the same thoroughness when it comes to risk oversight at board level. This view is explicitly supported by the recently published guidelines for internal governance from the EBA (2017), which ask for groupwide risk standard and argue in this context against company structures that are too complex which might give rise to regulatory arbitrage.

A further theme expressed by the chairmen of the two privately held wealth management banks was related to what should be achieved by such a framework as they expect through this, an alignment of the organisation on long-term rather than short-term goals, which would in the long run favour stakeholders but shareholders the most.

The introduction of the shareholder value theme brings another point up, which has been discussed in the regulatory analysis part as well as the theoretical part of this study, which is related to the questions if banks should, through a Risk Governance framework, be aligned with shareholder or with stakeholder interests? In theoretical terms as discussed in the theory part, the Principal-Agent Theory and the Stakeholder Theory are two conflicting theories with different foci on the two interest groups. However, the analysis of bank governance is different from the one applicable to corporates showed that a pure alignment on shareholder interest was one of the contributing factors leading to the financial crisis 2008. Nevertheless, regulatory proposals as outlined in the preceding chapters are not clear which of the groups should be in the focus of bank governance, whilst one group (e.g. Walker, 2009) puts the shareholder in the focus, the other group (e.g. BCBS 2010; 2015) puts all stakeholders into scope. Nevertheless, the author of this study decided as outlined before to base his research on the enlightened Shareholder Theory and, therefore, a combination of both worlds.

All interviewees commented on which group should be in focus from their point of view and all shared the view that they serve the shareholders first as well as making clear that achieving value for the shareholders should be the priority for the board. However, all agreed as well that this should be sustainable value, meaning that long-term value should be favoured over short-term gains, which

might not be achieved by excessive risk-taking or non-proper conduct. Moreover, the interviewees made clear that they are aware of the special role a bank has regarding the society and what impact the breakdown of a bank would have on it. Therefore, a common line of argumentation was that when sustainable returns and long-term over short-term goals are ensured it automatically supports value creation for stakeholders. Employees will have safer jobs and the overall society would not have to face the impact of bailouts of banks which are too big-to-fail. However, all admitted as well that this was not the case in the 2008 crisis and by not aligning oversight as well as incentives to these long-term goals the impact of the crisis might have been heightened. The view of interviewees on the shareholder vs. stakeholder interest topic aligns with the view of the enlightened Shareholder Theory as well, as the generation of long-term success should be the aim that aligns shareholder with stakeholder interest.

A special situation arose in the case of the chairmen of the privately held wealth management banks, who made clear that from their perspective, an agency-problem does not exist in their companies as management is at the same time owner of the bank and each and every loss is directly attributable to the management. This prevents from their point of view at the one hand agency problems and on the other, it leads to positive effects for stakeholders as well as it prevents excessive risk-taking behaviour. The view of the two chairmen of the privately held banks with manager-owners is shared by the Basel Committee via Basel III (BIS, 2010) and European regulators in CRD IV (EU, 2013a), which have adjusted the remuneration rules of so-called “Risk Takers” to that extent that they have to bear any losses occurred by their behaviour as well. This has been modelled via claw-back rules and long-term incentive plans for these employees. The standards have been introduced in Europe via the new CRD IV (EU, 2013a) regulation and further enhanced by more detailed guidance by the EBA in 2016 and since then European Financial Institutions must follow these guidelines.

4.3.2.1 Risk Governance Structure

The first Risk Governance theme, according to which the coding has been done, is related to the board structure and in the following the results of the interviews

should be summarised and set into the context of the recent regulation and theoretical background.

Under this category, the first question is if a stand-alone risk committee is needed? All 10 interviewees believed such a committee is required and to say it in their words, there is need for a room where specialists can intensively discuss forward-looking risk management topics. However, one participant added that the committee itself does not help to foster risk management, it rather needs to be filled with life otherwise it is just window dressing and making sure that the regulators are satisfied. This point is an interesting remark that holds true for the whole study, just that certain things are being followed on the paper does not mean that they are effectively implemented and filled with life and results especially of the statistical part must be interpreted whilst having this remark in mind. However, what two of the interviewees made very clear is that this committee should not just be understood as being forced to be put into practice, but it makes economic sense as well. Therefore, the committees have been there since the early 2000s in the banks that the two are chairing the board and were just adjusted in certain terms to follow the newer recommendations. Furthermore, one interviewee chairing the board as well as the risk committee argued that the committee increases transparency on risk management in the bank and that this leads to a better understanding of the risk management framework as well as the risk appetite by the supervisory board. However, what has been pointed out as well by one of the responders was that it is important to clearly delineate the task and responsibilities between risk and audit committee to ensure that inefficiencies are prevented. Nevertheless, what three respondents serving G-SIPs made clear is that interconnection between the risk committee and the audit committee is needed in every case as both touch upon the same topics, and whilst one focuses on backwards-looking topics the other is more forward-looking. According to the interviewees, there are different possibilities to reach that goal, either by having members in one of the committees also being part of the other committee or by having, as one of the institutes practising it, some of the yearly committee meetings as joint meetings between audit and risk committee. An interesting observation is that neither of the respondents brought up nor argued for or against a combined audit and risk committee as it is possible to be set up according to the

proportionality principle which has been laid out by both the FINMA (2016) as well as the EBA (2017). In summary, all of the respondents shared the opinion that a risk committee, as required by regulators (FSB, 2013b; EU 2013; BCBS, 2015; FINMA, 2016; EBA, 2017), shall be set up in addition to an audit committee as it will add value to effective Risk Governance.

Another component of the structural group is the question of who should chair the risk committee. Regulators are quite clear when it comes to the question of whether the chair of the board should be the chair of the risk committee, as all the relevant regulators for this study (FSB, 2013b; BCBS, 2015; FINMA, 2016; EBA, 2017) require the chair of the risk committee to not simultaneously be the chair of the board. However, when it comes to the question of whether the chair of the risk committee can be the chair of another committee at the same time, the regulations differ. Whilst BCBS (2015) and EBA (2017) argue clearly for no dual-hatting, meaning that the chair of the risk committee should not be the chair of another committee at the same time, the FINMA (2016) does not rule it out in its regulation on the Corporate Governance of banks. As already indicated in the introduction not all interviewees did at the time of the interviews in 2015 and 2016 follow these rules, however, one has to take into account that the regulations were only published in 2016 and 2017 respectively (FINMA and EBA) and that the CRD IV (EU, 2013a) were not specific on the role of the chair of the risk committee.

As stated at the beginning of this chapter three out of the six chairmen interviewed were also simultaneously chairing the risk committee. When it comes to the rationale of the group of board chairman not chairing the risk committee, they argued that the time which is needed to chair the risk committee in an effective manner is not possible to be dedicated next to the point that this would create an unbalance of power in the direction of the board chairman, which could lead to a lower quality of oversight by the board due to less diverse views on risks, carried by the bank. One chairman of the board, who just stopped hatting the risk committee in 2015, referred to the new BCBS standards (2015) and said that he thinks that the requirement makes sense from his point of view, as it is too much work to effectively manage both positions based on his experience. The

information exchange that he has seen until that time as one of the major advantages could also be reached and this has been implemented this year in his bank, by a number of joint meetings between the different committees that are related to risk like the remuneration as well as the audit committee. This practice is supported by the EBA (2017) as well, which explicitly asks for tight collaboration between the committees. Information exchange, however, is also one of the main arguments that has been brought up by two other board chairmen being the chair of the risk committee as well, who see the efficiencies that are created by the dual-hatting as favourable. As the information gained in other committees can be used in multiple ways leading to less time needed for the oversight as well as better informed decisions from their point of view. This view is supported by the member of the risk committee of the same bank of one of these respondents, who applies the same setting in the Non-Bank Financial Institution (NBFI), where he is chairing the board as well as the risk committee.

A further topic discussed in this context was the question of whether the chair of the risk committee should be the chair of another committee at the same time. All respondents shared the view that the chair of the risk committee should not concurrently be the chair of the audit committee for independence reasons. When it comes to other committees the respondents did not agree with EBA (2017) and all despite two respondents see efficiency gains by dual-hatting when it comes to the remuneration or nomination committee as information flow between the committees is increased and could lead to better decisions. Which aligns with FINMA's (2016) view on the topic. It must be noted that the two respondents were chairing the risk committee as well as a board of a G-SIP without having any other role in board committees and the banks are located in the UK as well as Switzerland.

The last topic covered in this group is related to the presence of a CRO at board level. All banks in the interview sample had a CRO present at board level at the time of the interviews. For all interviewees the presence of an independent CRO at board level is an integral part of the Risk Governance in financial institutions, which is therefore supporting regulatory views on it (FSB, 2013b). The CRO is especially important as she or he acts from the expert's perspective as a gate

keeper for the institution and makes sure proper risk management structures and processes are implemented within it. Furthermore, the CRO ensures that the relevant tools and models to properly manage risk are developed and implemented. Independence of the CRO is crucial from the interviewee's perspective as she or he acts as a second line of defence, who needs to have the last word on the decision if a bank is willing to take a certain risk by conducting a business transaction or a whole business model. The conflicts arising from this and the related role of the risk committee in this context will be explained in the next sub-chapter.

4.3.2.2 Risk Committee Oversight Quality

In the next part, the author will shed some light on to the opinions of interviewees when it comes to the oversight quality of the risk committee. Under this category fall at the one hand questions on independence of the chair as well as the members, the qualification of members and the scope or better said coverage of the risk committee.

The starting point of this part is whether the chair of the risk committee should be independent and whether its members should be on a majority independent. EBA (2017) is clear on both points and require in its latest publications to have an independent risk committee chair as well as the majority of members being independent. FINMA (2016), however, is only concrete with regard to the majority of the members but does not explicitly advocate for the chair to be independent. The interviewees were on both points fully supporting the EBA (2017) view and see independence almost as the holy grail of good governance as just based on this, oversight can be effectively performed from their perspective. Therefore, the topic has not been intensively discussed as it seemed to be standard measure to all interviewees.

Another topic that matters in the context of oversight quality is the question of the scope of the risk committee. Regulators, as outlined before, do see several types of risk in the focus of the committee, whilst the FINMA (2016) only refers to material risk types, which are further detailed in the ERV (FINMA, 2019) and are not including strategic as well as reputational risk, the BCBS (2015) outlines the

relevant risk types and mentions credit, market, operational and reputational risks as to be covered. EBA (2017) further specifies what must be understood under operational risks and explicitly mentions legal as well as IT risk as being part of the coverage. The experts all mentioned that the credit, the market and the operational risk have to be covered by the risk committee and that this is standard for years.

A further standard that evolved over the last years according to the experts is the coverage of reputational risk, which was clearly driven by the scandals that followed the global financial crisis as the fixing of interest rate benchmarks or foreign exchange rates. Furthermore, an increased environmental awareness on customer side as well as of the overall society further spurred the rise of this topic. From the interviewee's perspective it is important that reputational risk is covered by the risk committee as it might have devastating results for a bank if business is being done, where reputational risk is not manageable. This includes unethical, environmental unfriendly or illegal business. The view of practitioners is in line with EBA (2017) requirements; however, not explicitly required by the FINMA (2016) in their latest requirements.

Liquidity risk, was mentioned as well by all respondents and is important to be covered from the practitioner's point of view as it was one of the main risks that materialised during the crisis in 2008, where banks faced significant liquidity issues as described in the crisis section of this thesis.

IT risks were mentioned as well by all respondents in the context of infrastructure stability, which is as one of the interviewees stated key for the customers in the digital banking age. Furthermore, one respondent specified that not only infrastructure topics should be part of the discussion but cyber-crime topics as well, which are related to attacks on IT systems from out or inside the bank. This risk increases the more banks are digitalising their business model and comes more and more into regulatory focus, as for example, the ECB requires banks to report on cyber incidents (ECB, 2019c).

Two further themes in this context brought up by four of the 10 respondents can be described as regulatory and compliance risk. Whilst compliance risk speaks to

the risk that the organisation breaches rules and regulations and faces, therefore, claims by regulators or customers, regulatory risk speaks to the pace of new regulations arising and a missing level playing field, which might lead to compliance risks as well if banks are not able to adapt in time. Therefore, the two topics are interconnected based on the rationales as well as on the descriptions delivered by the interviewees. The main theme here was that from the practitioner's point of view after the 2008 crisis regulatory requirements have increased in a pace that banks are not able to follow and, furthermore, some of the regulations have not been entirely thought through and provide unnecessary burdens to banks without reducing risks. As one of the respondents had put it: "There needs to be a regulator of the regulators to make sure they are not overshooting the target."

Directly connected with the scope of coverage of the risk committee is the question of what the specific requirements are that a member of the risk committee must fulfil in terms of qualification? Regulators (BCBS, 2015; FINMA, 2016; EBA, 2017) are in their requirements rather vague pointing out that the members should have the relevant skills individually and as a committee, e.g. banking and finance experience, as well as the know-how to oversee risk management and control processes. What is meant specifically by that is not further outlined by the regulators. The experts on the opposite had all clear opinions on what skills are really needed to add value to a risk committee. All of them support the view of the regulators (BCBS, 2015; FINMA, 2016; EBA, 2017) that first of all qualified people are needed to effectively super- and advise management on risk management and that general banking and finance know-how should be required, but on top of that other skills are required as well. One respondent brought it to the point and said: "All that matters is experience!".

When it comes to general banking and finance skills the respondents typically said that it is important to have someone in the committee who has or had a higher management position in a financial institution as this will bring along the necessary knowledge of how banks are working, how their business models function and what type of regulations apply to them.

Furthermore, two respondents said that it is important to have people in the committee that understand global economics as well as politics in order to make sure that the committee will notice rising risk for the bank and can start to challenge management on those.

Next to that two further interviewees made clear that a thorough understanding of risk models is necessary, meaning statistical as well mathematical know-how, to be able to question the tools and formulas used by management to measure risk. As one of the respondents said, the inability to question the formulas and tools was one of the main shortcomings of the supervisory boards during the 2008 crisis, which aligns with Walker's (2009) findings.

Aligning with what EBA (2017) stated three of the interviewees see skills in the area of IT and Cybersecurity as mandatory for a risk committee as banks are nowadays more and more driven by IT and an aim of cyber-attacks. Without someone in the committee who can understand risks around these topics and being able to question management properly on these topics, it will be hard to effectively oversee risks in a bank from the perspective of one of the interviewees being the chairman of a G-SIP. The author, by taking into account the change in business models of banks in the digital age as well as the increasing focus of regulators on IT and cyber risk (ECB, 2019c) and by listening to the interviewees, who see IT as a relevant risk type, a future challenge and the need for skills in the risk committee, decided to take up a further Risk Governance measure. Next to the banking skills it should also be assessed if risk committee members have relevant IT-skills and if this has an influence on risk and performance of a bank. Therefore, the study will from now on have 21 Risk Governance measures as a research basis.

Next, to the pure business-related skills, all the respondents said that it is relevant that the committee is staffed with diverse people in order to create an environment with open discussions. However, to the surprise of the author not a single respondent mentioned or started to discuss the gender question in the context of specific skills and the diversity of the committee. Nevertheless, in order to be fair to the interviewees, the point has not been specifically being stressed by the interviewer.

When it comes to diversity, a specific point brought up by the interviewees supervising German banks is on whether supervisory board members representing the employees in the body should be part of the risk committee or not. All, but one respondent, agreed that someone out of the group of employee representatives should be part of the risk committee as well in order to make sure that transparency across the body is ensured and that there is no block building. However, it is according to the interviewees sometimes difficult to find a person with appropriate skills. The only respondent arguing against the participation of the group representing the employees stated that especially the missing experience and know-how is the main driver, why he sees it as not being useful to have someone belonging to that group in the committee. However, this does not seem to be a bigger problem to the other group of the respondents, as this is only a question of training as one of the respondents said. In case of his bank, all supervisory board members receive training, which is tailor-made to the specific person and the function. Therefore, it is no problem to provide training on risk management. Furthermore, the committee work itself is from his point of view creating an experience and will further enhance the capabilities of the committee members. Whilst this might be right from the interviewee's point of view, the author thinks that if the rest of the committee has weak skills as well, the person who should be trained will not gain any specific further relevant knowledge and the oversight quality itself will also not improve by that. Therefore, the argument itself is from the author's point of view a weak one and is not aligning with the principles of good governance.

Furthermore, all the interviewees agreed that a fundamental skill would be to speak English fluent as banks are more global than before and key regulations are most of the time only available in English. All members of G-SIP institutions added that their supervisory board meetings are always conducted in English as they have international members in the body. Furthermore, the persons in the committee should have personal skills that promote teamwork as well as open discussions according to the interviewees and they must be able to clearly and easily express themselves especially on complex and difficult topics in order to make sure that the board as a whole is kept informed and able to make proper decisions based on the advice of the committee.

The next theme that arose in the context of the oversight quality was around the role of the risk committee in the context of the overall supervisory body and the executive management. One of the main topics here was how active is the role of the risk committee and is it a purely advisory role or is it also executing decisions on its own discretion? All respondents unrelated to unitarian or two-tier board argued for a hybrid function. When it comes to the overall supervisory body and the setting of the Risk Appetite Framework including the risk strategy as well as the risk appetite the role is clearly an advisory role from the interviewees' perspective as the overall decision should be carried out by the whole supervisory body. However, when it comes then to the oversight of the active implementation of the specific framework and the compliance with it in terms of limit breaches, it should be executed by the risk committee and the supervisory body needs to be informed about it frequently. This view of the interviewees is in line with the proposals and requirements of the recent regulations of FINMA (2016) and EBA (2017), which see for strategic points on the risk framework as well as the definition of the risk appetite the risk committee in an advisory function to the supervisory function of the board and from an oversight perspective only an information on the work of the risk committee to the supervisory function is required. Interlinked to this discussion is the question of whether the risk committee performs the main part of the risk management at board level when it comes to the supervisory function. The respondents had here as well a shared view on the topic and see the overall responsibility with the board and the risk committee as the space where risk management topics can be intensively discussed, but it does not mean that the board overall does not need to engage in risk discussions at all. It is rather the case that the committee work through the management information in the committee meetings and then inform and advice the overall board about the relevant risk management topics, which is in line with the discussion around the role of the committee within the board. It aligns as well with the regulatory view that the overall responsibility stays with the board (FINMA, 2016; EBA, 2017).

When it comes to the interaction of the risk committee with management and operative tasks all respondents made it very clear that the day-to-day risk management is part of the executive management's job description and that the

committee, as well as the whole supervisory body, would lose its independence if the committee engages in active risk management.

In the context of the interaction with the executive management, a further topic evolved focusing on independent access to information, to internal as well as external audit and the CRO of the bank. All the respondents said that it is of utmost importance for the risk committee to have direct and independent access to risk information as well as the CRO and the auditors, be it internal or external, at any time. This is from the interviewees' point of view important for an independent assessment of the risk situation without having information being filtered by management. As a key function where access is needed from a risk committee perspective is clearly the CRO as she or he is the one actively driving the risk management in the bank. However, it is not just that the committee needs support from the CRO to receive the relevant information on risks, but the CRO needs in some situations, where difficult business decisions must be made the support of the committee as well. This might be in situations, where the CRO does not approve a transaction or business, but the deal seems to be favourable from a front office perspective (incl. the other executive board members) as one of the interviewees stated. Furthermore, all respondents mentioned in this context the auditors as an important interface as well, as these provide an unbiased view on what the CRO and his or her risk management team are reporting, especially the information if the Risk Appetite Framework including the strategy is properly implemented from a design as well as operative effectiveness perspective. Also, in this case, the opinions of the practitioners do not deviate from what regulators are requiring in their latest publications (FINMA, 2016; EBA, 2017). Furthermore, all interviewees stated that they feel well informed and do not face governance issues when it comes to the delivery of requested data. However, one chair of a risk committee of a G-SIP stated that data availability is one of the core issues he faces when it comes to non-standardised reporting. According to him, sometimes it takes very long to retrieve data or in some cases, data is not available at all. He linked this to the fact that the bank has due to several acquisitions of other banks in the past a heterogeneous IT landscape, which makes it time-consuming and sometimes impossible to retrieve data. The interviewee stated further that he sees this as a risk itself, which perfectly interlinks with why some

of the respondents, as well as EBA (2017), see IT risk as one of the emerging risk topics.

The last topic which has been discussed in the interviews regarding the risk committee oversight quality is linked to the meeting frequency as well as the time which is needed to effectively fulfil the tasks as a chair or member of the risk committee. Based on the interviews the majority of banks, five out of seven, in the sample had at the time of the interviews a quarterly meeting frequency, which had been linked to the meeting frequency of the supervisory function of the board. In these banks, the meetings are carried out before the whole board meets in order to be prepared for providing information and advice during the board meetings. Furthermore, the committee meetings had a timespan between half a day to one day, with three out of the four banks having one-day risk committee meetings. The other two banks had meeting frequencies between 10 and 12 times a year, both being G-SIPs. The rationale for the high meeting frequency in contrast to the other banks provided by the interviewees was that the risk profile of the bank is that high and volatile that it makes sense to discuss the topics in a more frequent manner. Furthermore, two of the other interviewees, one chairman of the board of a G-SIP and the other one chairman of a large commercial bank added that they see the need for a higher frequency of meetings in order to stay on top of the developments of the risk profile of the banks. Regulators (FINMA, 2016; EBA, 2017) do not ask for specific meeting frequencies of the board. An interesting point which was raised during the discussions by the interviewees with the high meeting frequencies was that from their perspective the role as chair of the risk committee is a full-time job if it is performed in a proper manner. It aligns with the fact that the chair of the risk committee has no further specialised tasks in the supervisory body of both banks. This also supports the view of the regulators (FINMA, 2016; EBA, 2017), who state that the chair of the risk committee should not be the chair of another committee, which could be driven by a too high workload if two or more committees are chaired by the same person, which might influence the quality of work.

The last part of the discussion on risk committee oversight quality was around the stress testing as well as scenario analysis, which are being seen by the regulators

(FINMA, 2016; EBA, 2017) as a mean to assess in a forward-looking manner the risk situation of a bank, which is one of the main tasks of the risk committee in contrast to the audit committee from the experts point of view. Both the FINMA (2016), as well as the EBA (2017), require the use of both, the stress testing and the scenario analyses even on group level. However, also in this case the proportionality principle applies. All respondents have stated that at the time of the interviews their institutions applied both tools and that they are being discussed in the risk committee and the results are presented to the whole board. From the standpoint of some interviewees, these are the main tools that enable a proper oversight and to assume a forward-looking perspective as well as to understand how the bank reacts risk wise to certain stresses and scenarios. Furthermore, the chair of the risk committee of a G-SIP adds that this is the moment where the risk committee needs to provide expertise and to challenge the scenarios based on the understanding of the developments in global banking as well as the economy. Next, to that, the chairman of the board of a large German commercial bank added that here the committee needs to understand the risk model in order to understand and challenge not only the assumptions of the scenarios but the model itself as well.

4.3.2.3 Risk Governance Tools

The last theme of the interviews covered the tools that are used by the risk committee for oversight and tools which are part of the Risk Governance framework. The first tools discussed were the Risk Appetite Framework along with the Risk Appetite Statement. All interviewees are using the tools in their banks and see them as mean for effective risk management as they increase transparency on the risk management process and the ease the oversight on compliance with set limits, which is line with the latest regulatory requirements (FINMA, 2016; EBA, 2017). Two of the respondents made it very explicit and said that the overall Risk Appetite Framework is the core and the enabler of effective risk management in a bank. However, one of the interviewees said that the Risk Appetite Framework is very complex in his bank and that it binds a lot of internal resources and thereby becoming a risk of its own. Furthermore, another interviewee stated that the framework itself and the definition of the appetite alone

will not help a bank in the end to achieve or to carry less risk, but that it requires a change of mind in the first line of defence as well as a risk culture to really create an effective risk management within a bank, as rules and processes alone will not work.

This remark leads directly in over into a further topic the author wanted to discuss with the experts, which is the role of the risk culture and the use of a Code of Conduct as stipulated by some of the regulators (BCBS, 2015; EBA, 2017). None of the respondents argued that healthy risk culture is not needed in banks but rather to the opposite. The topic was immanent the whole time and was expressed by words like “The front office has to take ownership of their risks!” (chairman of the board of large investment banking driven bank) and “Risk management is part of the DNA of the bank” (chair of the board of a privately-held wealth management bank). Furthermore, all agreed to the fact that the board must be a living example for good risk management including an open discussion of failures or early warnings by members of the organisation. Furthermore, the role of the board to promote a good risk culture via the tone from the top was accepted by all participants of the interviews and all made it clear that this is actively being done in their organisations.

An integral part of the risk culture was for all participants the establishment of a Code of Conduct, which has been implemented in all organisations in the interview sample. The Code of Conduct is needed from the interviewees’ perspective to clearly communicate what the bank understands by acceptable and unacceptable behaviour of its employees including senior and executive management. However, only setting the standards does not help as one of the respondents remarked. The Code of Conduct needs to be enforced as well, which means that there should be zero tolerance for someone breaching the code. The breach of the Code of Conduct should lead to Human Resources measures from a written warning to dismissal in critical cases. A further interviewee added that the consequences of breaches have to be communicated within the organisation to show that it is not wise to breach any rule of conduct, that consequences come along with bad behaviour, to deliver lessons learned and to prevent rumours about dismissals which might not lead to the expected result of providing examples of

misconduct. Furthermore, an interviewee, being the risk committee chair of a G-SIP, stated that not only breaches should be communicated, but that good conduct needs to be incentivised and communicated as well. That is why in his organisation a campaign was rolled out, which frequently communicates examples of good governance across the organisation. Persons are being nominated by co-workers as well as management and a jury decides which person will be the winner of the conduct prize for the specific months or quarter depending on the frequency.

The main theme outlined before was supported by all respondents and none argued against risk culture being an integral part of the risk management or the setup and enforcement of a Code of Conduct. Furthermore, three of the respondents said that this is also why there should be at least once a year a shared meeting with the remuneration committee in order to make sure that there is a smooth transition of information of the risk limit breaches or unacceptable behaviour discovered through the enforcement of the Code of Conduct as well as the risk limit breaches in the context of the Risk Appetite Framework. Any breach should be accounted for in the compensations of the relevant risk-takers and their managers according to the three interviewees.

From a regulatory point of view, BCBS (2015) and EBA (2017) support the views expressed by the interviewees and are explicitly asking for a risk culture, which should be promoted via tone from the top as well as by the establishment of a Code of Conduct or a similar instrument. However, the FINMA (2016) in their latest publication on Corporate Governance does not require a Code of Conduct as a relevant mean to support sound risk management in institutions. However, in the context of the interviews, all representatives of Swiss banks argued for the implementation of such a code and have seen the instruments as being a Risk Governance standard.

4.3.3 Conclusion on the Expert Analysis

All in all, the interviews show, even if they took place before the latest enhancements of regulations (FINMA, 2016; EBA, 2017), which were published in 2016 and 2017 and came into force in 2018, that regulatory requirements and

best practices, applied by practitioners based on the expert interviews, are close to each other and common beliefs of good Risk Governance are shared. Furthermore, the interviews support the criticism (economiesuisse, 2016) that was brought up during the introduction of the new FINMA (2016) regulations as they show that practitioners had already before the introduction of the regulations a good understanding of Risk Governance drivers and implemented those to a high degree in their banks.

Critical points observed are only related to the dual-hatting scenario, which is strictly prohibited by regulators in case of the chair of the board (FINMA, 2016; EBA, 2017) and for the other committees only by EBA (2017), but was argued as being efficient as well as effective by some of the respondents of this study. However, it must be considered that these respondents were at that time the gravitation centre of the board by hatting the majority of the committees as well as the board.

Furthermore, IT risk and know-how of it have been identified as further Risk Governance drivers based on the interviews. Experts argued that banks nowadays are mainly driven and dependent on their IT systems and their stability. At the same time the IT-systems and -applications are the most critical entry channels for cyber-attacks, which could lead to devastating results for the bank. Therefore, the author added IT qualification of the risk committee members as a further measure of Risk Governance to his already developed set of measures. Therefore, the study will going forward use 21 Risk Governance measures.

Risk culture and a Code of Conduct have been an area of significant interest for the experts as well and were seen as main contributors to an effective risk management. Nevertheless, not all regulators (FINMA, 2016) ask for the implementation of a Code of Conduct or specific measures on risk culture. Therefore, the further assessment in the empirical part will show, if this to the experts important tool really influences the robustness of a bank through the economic cycle.

A further take away for the author is that the respondents referred to doing something just on paper. Meaning ticking a box on regulatory proposals, but not

executing it thoroughly in practice. From the interviewees' perspective, it really needs the board and the organisation to commit to practising Risk Governance diligently and not purely tick the checkbox that regulatory requirements are fulfilled. However, this is one of the weaknesses a quantitative study faces, as it is only possible to assess the organisational setup, the processes and tools based on public information provided by the companies e.g. annual account statements. Nevertheless, this means that the reality in the day to day work is not gathered by that research type. Therefore, the before described interview section adds value by gaining an understanding of the reality in Risk Governance work at board level, which cannot only be used to build up hypotheses but for the discussion of the empirical results of the study as well.

4.4 Summary

Chapter 4 of the study lays as described the foundations for the following part of the study, which will focus on the empirical analysis of the research phenomenon. This part has helped to do this by three distinct pieces. First, based on the regulatory analysis the author was able to identify 20 measures, which will be used in Chapter 5 of this study to test these based on quantitative data. Secondly, the author tried to understand how academic research has tested Risk Governance and the specific measures so far. As a result, the author is able to state that there is until today no in-depth analysis of the measures in a European cross-country study, especially not in a longitudinal setting. Thirdly, the author conducted semi-structured interviews with practitioners. This helped on the one hand side to understand their view on the Risk Governance regulations and in particular on the measures derived, which should be tested in the next stage. However, a further measure has been identified based on the interviews, which has been added to the measure set and leaving the author now with 21 measures. On the other hand, it helped to get an inside view on real-life Risk Governance applied in European banks, which enriches the research perspective and might help to further strengthen the research results.

5 Empirical Study

5.1 Overview of the Empirical Study

There is no fixed research approach to answer the research questions of this study as already discussed in the introductory part of this study. However, Zattoni, Douglas and Judge (2013) found in their study that the most commonly used approach to research Corporate Governance phenomena is to deductively test theory and in most cases the basis for this is the Agency Theory. According to the authors (Zattoni et al., 2013), this leads to the fact that most of the research is of empirical nature. Thus, in line with major approaches in the field of Corporate Governance research, the dissertation project focuses on quantitative data in order to answer the research question and to test existing theory as well as proposals by experts and regulators as outlined before. Based on that, the outcome of the study should provide a useful guide to practitioners and regulators on how to attain good Risk Governance in banks. Nevertheless, as outlined in the introductory part, the empirical study is enriched by the results that were gathered through a qualitative research approach by conducting semi-structured interviews with experts. Therefore, the author aims to follow Saunders et al. (2009) pragmatism approach as a research stance. Furthermore, in contrast to the from Zattoni et al. (2013) as a prevailing basis in Corporate Governance research determined Agency Theory, the author of this study is following the assumption that the interest of stakeholders have to be satisfied as well in order to achieve a good Risk Governance in banks.

Archival data of 157 European banks has been gathered as a basis for the empirical part. European banks are chosen as they are currently not in the focus of research as outlined in the research gap analysis in Chapter 4.2. Moreover, as outlined in literature review and the theoretical part of the study Europe has gone through three crises in last 20 years and the banking sector is still in recovery mode compared to the US American market. Furthermore, cross-country studies in Europe should be reliable from an accounting perspective as the financial statements of European financial institutions will be comparable as they share the same regulatory framework and since the introduction of IFRS in 2003 (EC, 2003)

more or less the same accounting rules. As Switzerland owns a significant proportion of banking assets in Europe and the regulatory requirements are based on CRD IV (EU, 2013a) as well as the latest regulation on Risk Governance (FINMA, 2016) is comparable to EU standards (EBA, 2017) as outlined in the regulatory analysis, the sample of banks used for this study should not only contain banks from the EU28 but from Switzerland as well. Therefore, European banks in this study are defined as banks headquartered in the 28 countries of the European Union and Switzerland. The focus is on publicly held commercial and universal banking firms. Excluded from the study will be non-public or state-owned banks and non-bank financial institutions, the first two are excluded as the study needs fully disclosed material on Risk Governance as well as market data to successfully answer the research questions and the latter due to the fact that banks are differently regulated than non-bank financial institutions, therefore, their inclusion would bias the results of the study.

The relevant time period in order to measure the implications of Risk Governance through the economic cycle will be from 1999 to 2015. Due to this the effects of Risk Governance measures can be tested through three economic cycles including the dot.com crisis, the global financial crisis as well as the Eurozone crisis.

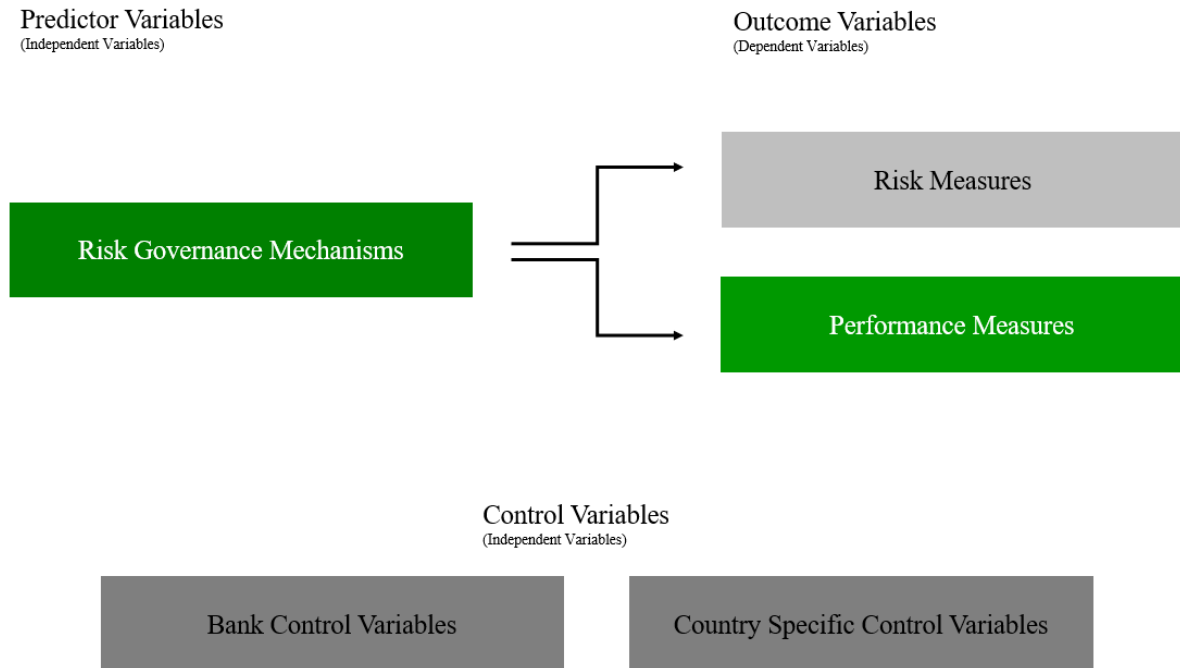
Data sources are common databases as Reuters, Bankscope and Bureau van Dijk for financial data as well as manually collected data from annual financial statements of relevant banks for Risk Governance measures.

Based on the criteria before, a unique database was created by the author, which includes data on the 21 Risk Governance measures at board level of European banks, which were proposed by regulators as well as practitioners to make banks more robust in times of financial crisis as for example introduction of a risk committee, increased knowledge and experience of the members, meeting frequency, etc. (BCBS, 2015; FINMA, 2016; EBA, 2017).

In order to analyse the data, descriptive statistics, correlation analyses and at the end panel data regression techniques will be applied. According to Bryman and Bell (2007), correlation techniques should help to detect relationships among independent, dependent as well as control variables respectively, while regression

analysis can also examine fundamental relationships between dependent and independent variables.

Figure 30: Research Model



Source: Own development.

The figure above shows the research model, which is being used in the context of this study. Independent or predictor variables are the 21 manually collected Risk Governance measures or more specifically said mechanisms, which are divided into three subgroups with respect to the risk governance structure, the risk committee oversight quality as well as the risk governance tools being implemented by the board. Outcome or dependent variables are different risk and performance measures, which include market as well accounting variables namely ROE, Loan Loss Provision of Average Loans, Tier 1 Risk-Adjusted Capital, Buy and Hold Returns, Beta as well as the Standard Deviation of Daily Returns. The author decided to not only use performance measures in the study but risk measures as well. This is based on the academic analysis of Chapter 4 of the study and the assumption that in order to assess the proper Risk Governance and the robustness of a bank the focus on performance measures would be too narrow, especially since Risk Governance mainly influences risks and only as a consequence of this the performance as well. Next, to that, the model will be

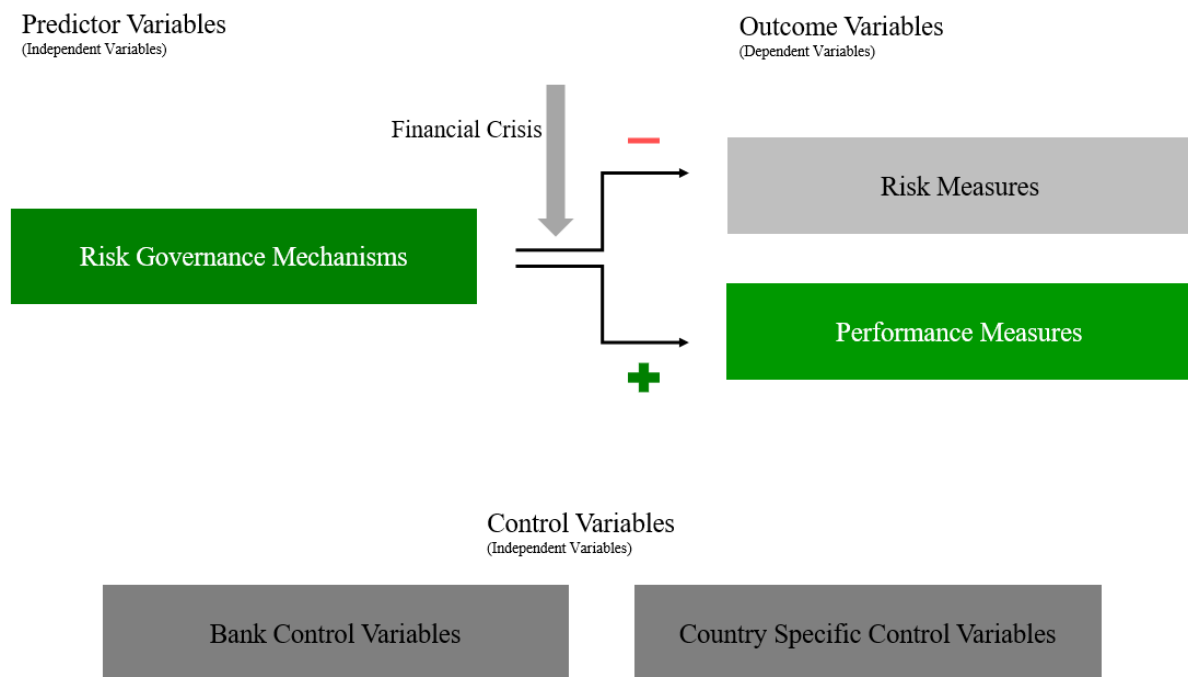
controlled for bank-specific characteristics as well as for country specifics to account for the cross-country study. All variables are being compiled per bank per year or for the country controls per relevant country.

5.2 Hypotheses for the Empirical Analysis

The hypotheses of the study are based on the main assumption, derived from theoretical chapters, namely Chapters 2, 3 and 4 of the study, that in order to effectively manage risks in a financial institution, a strong and good Risk Governance must be implemented and applied. Furthermore, the hypotheses are grounded in the research gap identified, which clearly shows that the theoretical framework of Risk Governance has evolved over the last years in Europe but has not yet been tested intensively in the context of a cross-country study of European banks.

Hypotheses will consider the three groups of Risk Governance mechanisms, as identified in Chapter 4 of the study, namely Risk Governance Structure, risk committee oversight quality as well as Risk Governance tools. Furthermore, as the study seeks to answer the question of how Risk Governance mechanisms impact the risk and performance situation of banks in times of financial crisis as well as in phases outside of these crises, this must be reflected in the hypotheses as well.

The first set of hypotheses will cover periods of the financial crisis and will focus on the three groups as well as risk and performance measures as shown in the figure below.

Figure 31: Crisis Research Model

Source: Own development.

Based on the research conducted so far, regulatory proposals (FSB, 2013b; BCBS, 2015) or requirements (FINMA, 2016; EBA, 2017), related to Risk Governance mechanisms, have been put in place, which should ensure that banks are not again taking to high risks and not causing again bailouts of the respective in times of financial crisis; therefore, putting taxpayers money at the brink. The result of the implementation of the regulatory proposals and requirements in the form of Risk Governance mechanisms should, therefore, in general lead to lower risks of these banks in times of financial crisis compared to other banks not having implemented the respective mechanisms. Specifically, the hypotheses can be expressed as:

H_{1a} = The existence of Risk Governance mechanisms related to the Risk Governance Structure in European banks at board level is negatively related to the risk profile of a bank in times of a financial crisis.

H_{1b} = The existence of Risk Governance mechanisms related to the risk committee oversight quality in European banks at board level is negatively related to the risk profile of a bank in times of a financial crisis.

H_{1c} = The existence of Risk Governance mechanisms related to the Risk Governance tools in European banks at board level is negatively related to the risk profile of a bank in times of a financial crisis.

These hypotheses will be tested against the null hypothesis that the implementation of Risk Governance mechanisms does not have a negative influence on the risk profile of a bank in times of financial crisis.

Still in the context of a financial crisis the assumption of regulators (FSB, 2013b; BCBS, 2015) is that the implementation of the Risk Governance mechanisms as explained in the theoretical part of the study do not only make banks less risky, in times of financial crisis but also makes them more robust in these times. Meaning that if this is the case the banks that have implemented the relevant mechanisms should also experience a higher performance in times of financial crisis than banks not that have implemented them. Higher profits are caused by the assumption that the banks carrying out less risky deals will have to face in downturns a lower ratio of impaired assets in times of a financial downturn. As this must be accounted for in the profit and loss statements of these banks (EC, 2003) the profits of them will be higher compared to banks with a larger size of impaired assets. The specific hypotheses in this context are shown below:

H_{2a} = The existence of Risk Governance mechanisms related to the Risk Governance Structure in European banks at board level is positively related to the performance of a bank in times of a financial crisis.

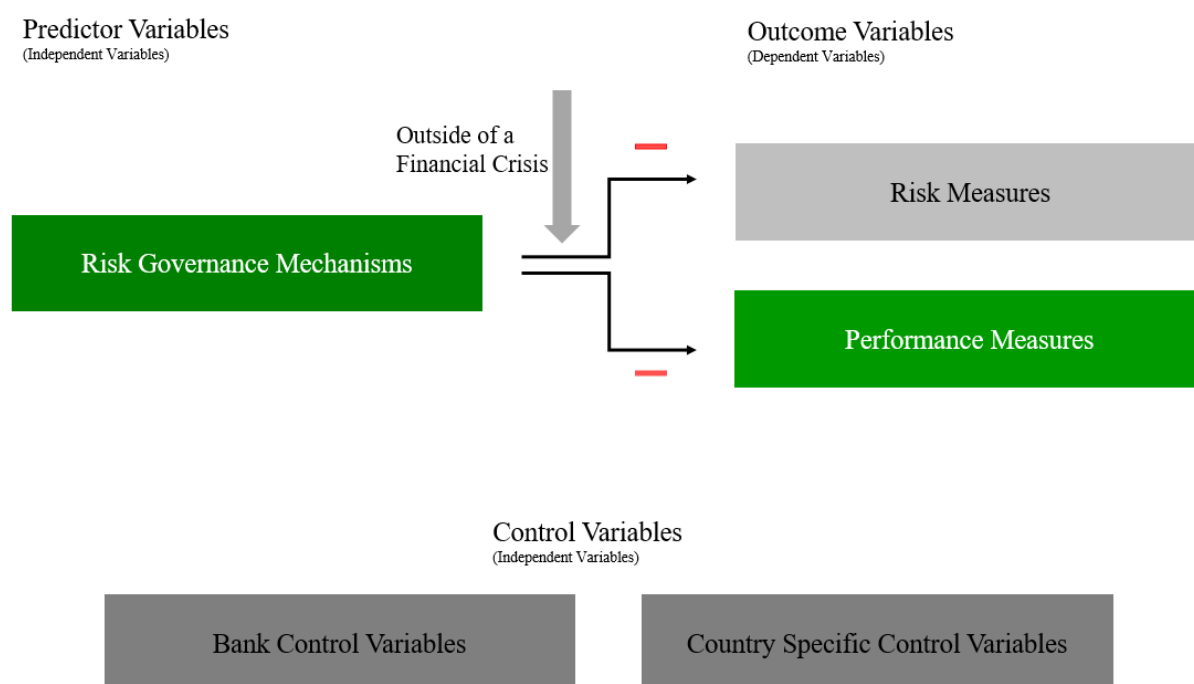
H_{2b} = The existence of Risk Governance mechanisms related to the risk committee oversight quality in European banks at board level is positively related to the performance of a bank in times of a financial crisis.

H_{2c} = The existence of Risk Governance mechanisms related to the Risk Governance tools in European banks at board level is positively related to the performance of a bank in times of a financial crisis.

These hypotheses will be tested against the null hypothesis that the implementation of Risk Governance mechanisms does not have a positive influence on the performance of a bank in times of financial crisis.

Whilst Risk Governance mechanisms have an effect in times of financial crisis, they are expected to have an influence as well in times outside of a financial crisis. The increased transparency and oversight quality as outlined in the theoretical part of the study should lead to lower risk-taking and more sustainable profits according to regulators (FSB, 2013b) and experts interviewed. This would mean that banks with Risk Governance mechanisms in place would invest less in riskier products leading to a lower risk profile of these banks and lower profits, based on the risk-return relationship during those times compared to their peers. The below figure shows the model used for building the relevant hypotheses outside of a financial crisis.

Figure 32: Non-Crisis Research Model



Source: Own development.

The first set of hypotheses in times outside of a financial crisis is related to risk and outlined before as well as shown in the picture above the impact of Risk Governance mechanisms on the risk profile of a bank should be negative. The respective hypotheses are shown below:

H_{3a} = The existence of Risk Governance mechanisms related to the Risk Governance Structure in European banks at board level is negatively related to the risk profile of a bank in times outside a financial crisis.

H_{3b} = The existence of Risk Governance mechanisms related to the risk committee oversight quality in European banks at board level is negatively related to the risk profile of a bank in times outside a financial crisis.

H_{3c} = The existence of Risk Governance mechanisms related to the Risk Governance tools in European banks at board level is negatively related to the risk profile of a bank in times outside a financial crisis.

These hypotheses will be tested against the null hypothesis that the implementation of Risk Governance mechanisms does not have a negative influence on the risk profile of a bank in times outside of a financial crisis.

The last set of hypotheses takes the influence of Risk Governance mechanisms on the performance of a bank into account. As outlined before based on the risk-return relationship one would expect a bank taking less risk in times of an economic downturn to also gain fewer profits than its peers. Therefore, the hypotheses will look at the following:

H_{4a} = The existence of Risk Governance mechanisms related to the Risk Governance Structure in European banks at board level is negatively related to the performance of a bank in times outside a financial crisis.

H_{4b} = The existence of Risk Governance mechanisms related to the risk committee oversight quality in European banks at board level is negatively related to the performance of a bank in times outside a financial crisis.

H_{4c} = The existence of Risk Governance mechanisms related to the Risk Governance tools in European banks at board level is negatively related to the performance of a bank in times outside a financial crisis.

These hypotheses will be tested against the null hypothesis that the implementation of Risk Governance mechanisms does not have a negative influence on the performance of a bank in times of financial crisis.

As stated in the chapters before, based on the hypotheses above, the aim of this study is to not only to test the Risk Governance effect as in other studies (e.g. Ellul & Yerramilli, 2013; Magee et al., 2013) based on a single measure or a broader index, but to assess specific parts of the Risk Governance framework and their impact, namely the Risk Governance Structure, the oversight quality of the risk committee as well as the tools used and installed by board for the Risk Governance. Therefore, the Risk Governance mechanisms must be understood as a set of variables that express the above-outlined categories rather than a single measure that stands as a proxy for the quality of the Risk Governance framework. The specific variables, as well as coding of their influence under the relevant hypotheses, will be detailed in the next chapter of the study.

Furthermore, the study does not only want to assess the design of the Risk Governance frameworks by measuring their existence by purely collecting data, but to test the effectiveness based on statistical methods in order to assess the regulatory proposals (FSB, 2013b; BCBS, 2015) and requirements (FINMA, 2016; EBA, 2017) as well as best practice expressed by the experts interviewed.

In the following chapters, the author describes the development as well as the content of the data set, which should be the basis for the testing of the above-introduced hypotheses.

5.3 Data and Variables

5.3.1 Sample Construction

As outlined before the main research focus is on European financial institutions and their behaviour through the economic cycle with respect to performance and risk variables due to certain Risk Governance mechanisms being implemented. To provide ground to answer the research questions and to test the hypotheses described before, archival data must be gathered. The research gap clearly shows that most studies focussed on US banks compared to European ones, which is basically because data on Corporate Governance for these financial institutions is more easily available than for European banks as databases are already in existence. Therefore, the governance data that must be gathered in the context of this cross-European study, needs to be manually collected by the author and is

dependent on the availability for the respective data. Due to that only listed public financial institutions are in focus of the study.

The author explained in the research gap as well as the hypotheses section that the behaviour of banks through the economic cycle is of interest. Therefore, a longer time period should be chosen for the data set to take not just one cycle into account. However, data needs to be publicly available and needs to contain information regarding the Risk Governance mechanisms in scope. Therefore, the author decided to choose a time period that covers three cycles including the financial crises described in the financial crisis section, namely the dot.com crisis, the global financial crisis as well as the Eurozone crisis. The time horizon of the data set is therefore set from 1999 to 2015.

From a country coverage perspective, the author did not just consider the banks domiciled in European 28 but expanded the scope to cover Swiss banks as described in the introduction of the empirical part of this study. This is because the Swiss banks account for nearly 10% of the total assets in the banking sector of the European continent (ECB, 2017; SNB, 2017). The inclusion is also in line with other studies assessed e.g. Dupire and Slagmulder (2019), which covered the European banking market. As outlined above the author will control as well for country specifics and cultural aspects relevant for risk-taking to ensure that the results are not impaired by these effects.

As a starting point, the Bankscope database was used to determine the relevant sample of financial institutions. The database was also used by other researchers to determine the sample and to gather further data, e.g. Battaglia and Gallo (2015), Cavezzali and Gardenal (2015) or Andries and Brown (2017). In the first step, all active banks in the database were selected leading to a set of 22,976 banks and, after the deduction of banks with very narrow and specialised business models, which could negatively influence the results of the study as they might behave differently through the economic cycle, a subset of 15,269 banks remained. In the third step, the scope was narrowed down to banks that are domiciled in the European Union and in Switzerland leading to a subset of 1,873 banks. The last step reduced the scope further to just include public-listed banks and resulted in a final set of 201 banks with Total Assets of 25 bn Euro in 2015. Based on that and

according to official studies of the ECB (2017) as well as the SNB (2017) the banks in the scope stand for roughly 70% of all banking assets in the countries in the scope.

To account for survivorship bias, the phenomenon that only the survivors are considered when analysing certain longitudinal data sets (Schermer, 2014), in the sample the author chose to also include inactive banks in the study. Therefore, a new search pattern has been applied again with the same strategy, but this time for inactive banks. In the first step, all inactive banks, including banks that have merged with other banks or ceased business, in the database were selected leading to a set of 9,659 banks, and after the deduction of banks with very narrow and specialised business models, a subset of 6,789 banks remained. In the third step, the scope was narrowed down to banks that domicile in the European Union and in Switzerland leading to a subset of 1,304 banks. The last step reduced the scope further to just include public-listed banks and resulting in a final set of 138. Out of these 6 have been inactive already before the year 2000 and have been therefore excluded from the sample.

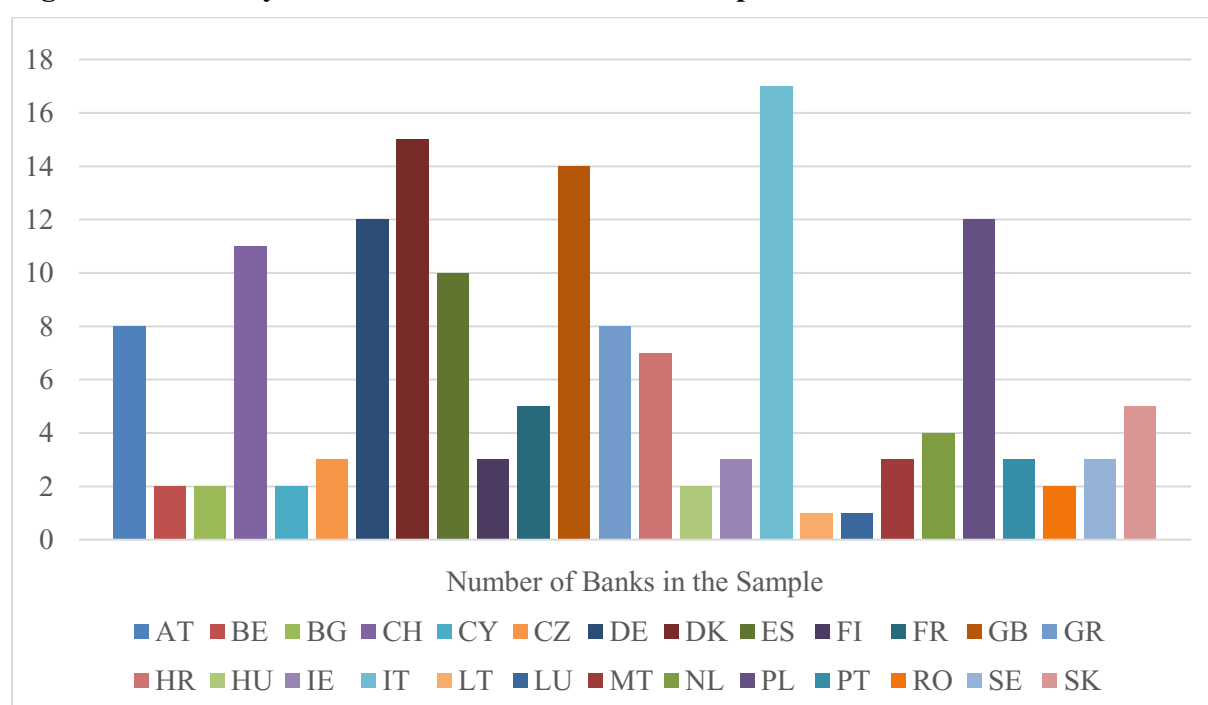
The two-step approach led to a final sample of 333 public listed banks that were or are active during the time-period from 1999 to 2015 in the EU 28 and Switzerland. Because the sample contains banks that have ceased business or merged with other banks the data set must be described as unbalanced, where data is missing for some of the banks (Baltagi, 2015).

For the 333 banks, the author tried to collect certain types of data on risk, performance, Risk Governance, bank specifics and country specifics. The specifics of each of the variables will be explained in more detail in the following chapters. However, the author was only able to gather reliable data on 157 of these banks. The banks still stand for roughly 23 bn EUR Total Assets in 2015, as the data collection issue arose mainly for smaller banks. This leads in the view of the author still to a good degree of representativeness for the banking sector, as the final sample covers approximately 63% of all banking assets as of 2015 compared with official statistics from ECB (2017) and SNB (2017). Furthermore, the final data set only contained banks from 25 European countries plus Switzerland as data on banks was not available for three European countries, namely Estonia,

Latvia and Slovenia. However, as the sample obviously offers a significant number of banks in terms of total assets the sample is from the author's point of view still representative.

From a country perspective, the study covers, therefore, banks from 25 European countries and from Switzerland. The figure below shows the distribution in terms of countries and banks in the data set. By pure numbers, banks out of Italy, Denmark, Great Britain, Poland, Germany, Switzerland and Spain scored highest, with Italy being the high scorer followed by Denmark.

Figure 33: Country Distribution of Banks in the Sample in Numbers

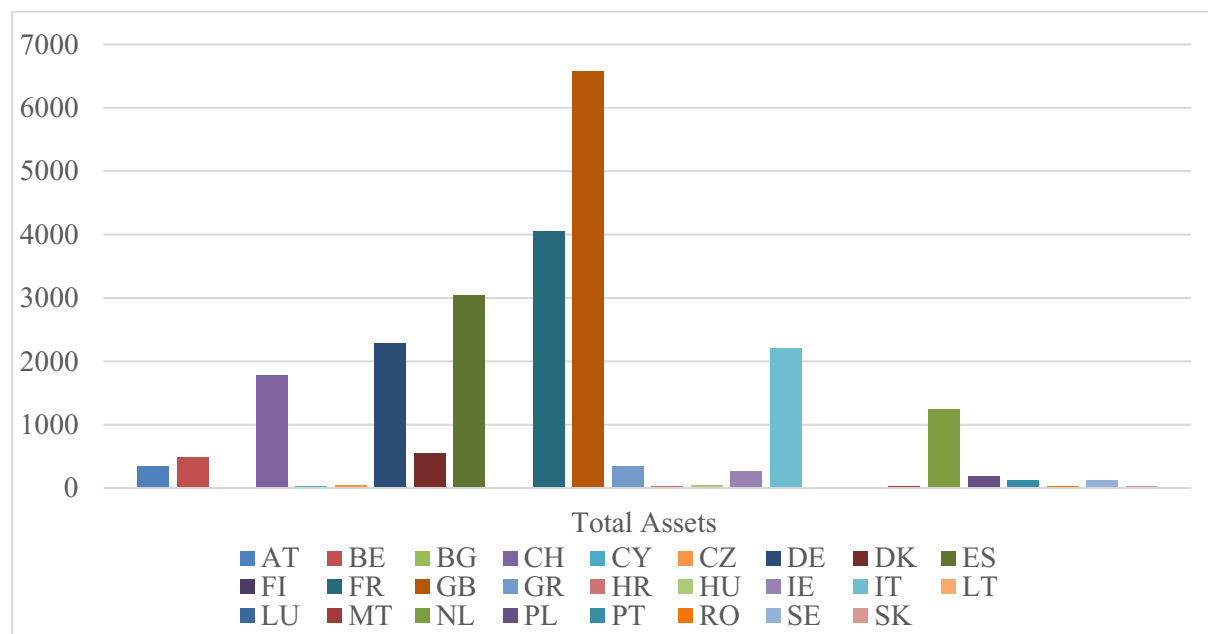


Source: Own development.

As total assets and their distribution across the countries varies over time, the author decided, for the ease of the purpose of providing an overview on the distribution of the respective asset numbers across countries in the data set, to use the total assets at the end of 2015 in billion Euro. From a total assets' perspective, as at the end of 2015, the picture looks slightly different. The top scorer is by far Great Britain followed by France, Spain, Germany, Switzerland and Italy. Therefore, the model used in the panel data analysis should not only control for country specifics, but also for size measured in total assets to prevent a too large

influence of the higher assets carrying banks on the outcome variables of the study.

Figure 34: Country Distribution of Banks in the Sample in Total Assets



Source: Own development.

Out of the sample of the 157 European banks determined in the previous chapter, the author collected several variables. On the one hand, for variables measuring the performance as well as the risk of a bank data were collected from Thomson Reuters and refined by the author. Here variables based on financial accounts as well as variables based on market data were considered. On the other hand, the author manually collected Risk Governance variables, which are the 21 mechanisms identified in the regulatory analysis as well as during the expert interviews, from annual account statements of the respective banks. Next, to that, the author collected further data which should be used as controls for bank specifics from Thomson Reuters as well as data on country and culture specifics based on the World Governance Index and from Hofstede's IBM study (2011).

All in all, the author gathered 73,689 unique data points for the 157 banks during the time period from 1999 to 2015. The next chapter will outline the relevant variables and their quantities as well as their distribution in more detail. First, the dependent variables and then the control variables will be explained. In the last step, the independent variables will be shown and explained.

5.3.2 Measures of Bank Performance and Risk

To measure the impact of Risk Governance mechanisms of a bank, several studies tested these against performance and risk variables e.g. Ellul and Yerramilli (2013), Lingel and Sheedy (2012) or Cavezzali and Gardenal (2015) as outlined in the literature review section of this study. Therefore, for testing the above-shown hypotheses proxies for the performance as well as the risk of a bank needed to be gathered. The author chose six proxies that are grounded in theory and have also been used in academic articles analysed in the literature analysis chapter of this study. Not only accounting data-driven proxies were chosen, but market data-driven ones were considered as well in order to achieve a diverse set of measures. The table below contains all six proxies and shows the main characteristics of the variables.

Table 11: Coding Table of Dependent Variables

No.	Name	Data Type	Coding	Source	Calculation	Notes
1	<i>Buy and Hold Return</i>	Real Number	Actual Value	Thomson Reuters Eikon	Yearly change in stock price	Performance Variable
2	<i>Pre-Tax Return on Equity</i>	Real Number	Actual Value	Thomson Reuters Eikon	Predefined Ratio by TR	Performance Variable
3	<i>Beta</i>	Real Number	Actual Value	Thomson Reuters Eikon	Own calculation based on monthly returns vs. Stoxx 600.	Risk Variable
4	<i>Loan Loss Provision to Average Loans</i>	Real Number	Actual Value	Thomson Reuters Eikon	Predefined Ratio by TR	Risk Variable
5	<i>Standard Deviation of Daily Returns</i>	Real Number	Actual Value	Thomson Reuters Eikon	Own calculation of annualised Standard Deviation based on daily variances.	Risk Variable
6	<i>Tier 1 Risk-Adjusted Capital Ratio</i>	Real Number	Actual Value	Thomson Reuters Eikon	Predefined Ratio by TR	Risk Variable

Source: Own development.

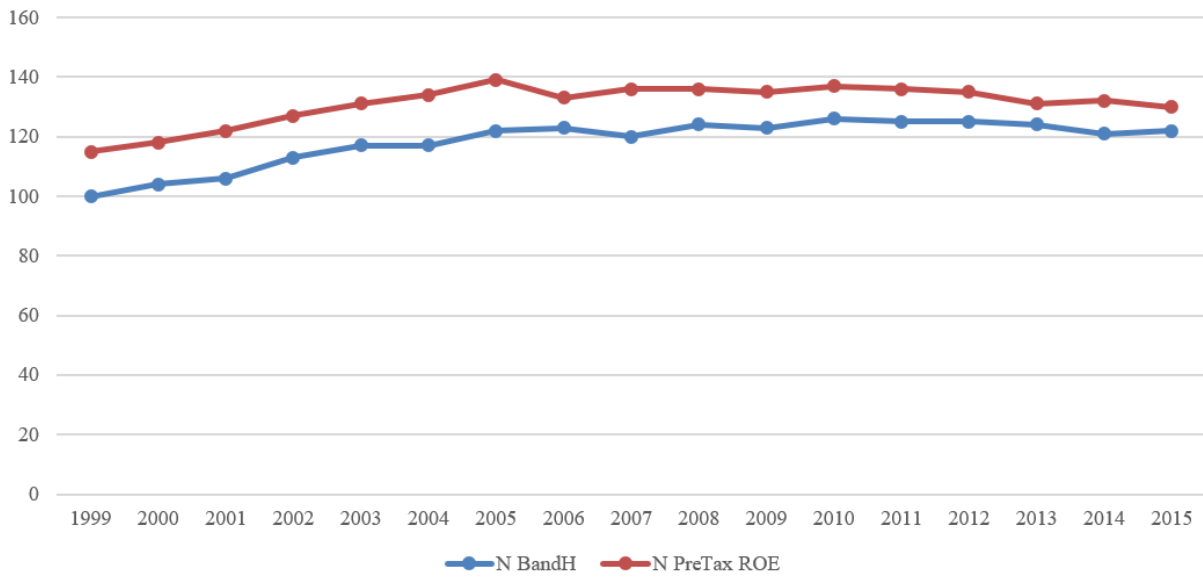
Two out of the six variables are performance measures whilst four variables are measures of the risk profile of a bank. All measures are expressed by their actual

value and are represented as a real number in the data set. The variables have been sourced from Thomson Reuters Eikon and have been in certain cases modified as described in the following. Overall, the author gathered 13,747 data points for all six variables across the time period from 1999 to 2015. All variables in the set have been trimmed to account for outliers by being winsorised at 1% and 99% level per year (Reifman & Keyton, 2010). This means outliers below 1% and above the 99% level are replaced with the 1% or 99% value per year in the data set.

However, the availability of data on variables is important in order to have the possibility of testing against them. Even though the author only chose public and listed banks to be part of the sample, data was not readily available for every bank on accounting as well as on market data. Therefore, the sample had to be reduced as outlined in the prevailing chapter to 157 banks. However, as also explained, not just banks active, at the time of the study, but also merged and inactive banks have been included in the sample. Therefore, the number of observations for variables of specific banks per year tends to fluctuate over time.

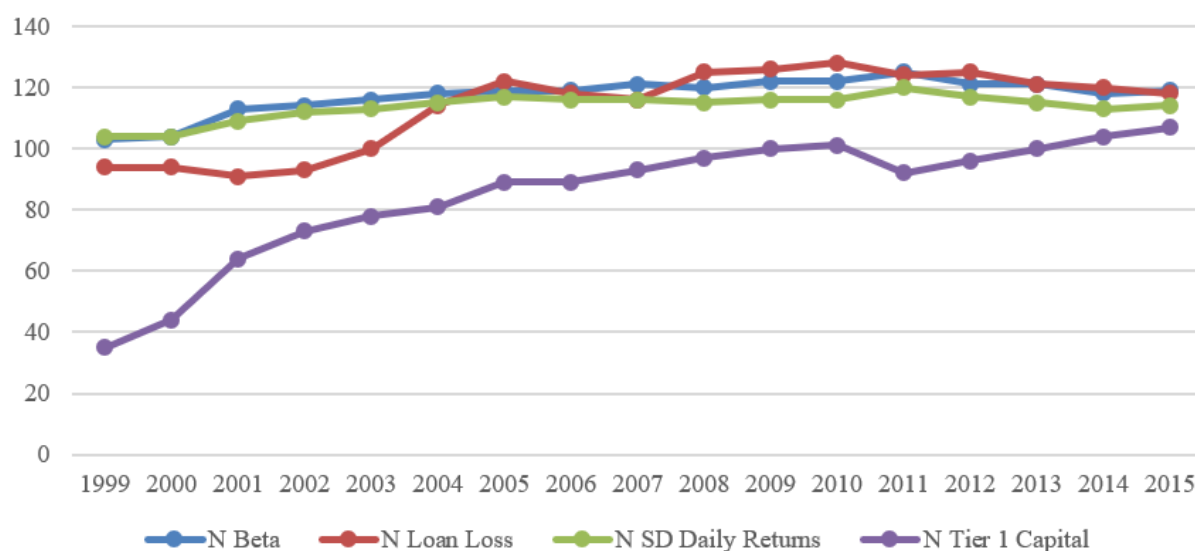
As data is gathered from Thomson Reuters Eikon, in certain cases data was not available even if the bank was active at the time of measurement. This is especially true for ratios that have been newly introduced e.g. Tier 1 Risk-adjusted capital ratios. Therefore, the author decided not only to use one variable to measure a certain criterium but chose to have two or more expressions of performance or risk. Furthermore, the panel data analysis methods used in the context of this study are robust for unbalanced panels and missing data points are, therefore, not a larger issue for the statistical robustness of the test applied. This will be explained in more detail in Chapter 5.4.

In order to test the reliability of accounting data contained in Thomson Reuters Eikon, the author decided to sample certain variables and compared those with the relevant numbers outlined in the actual annual accounts. The testing led to certain observation, but not to systemic issues and therefore the author considers the data source as reliable.

Figure 35: N Performance Measures

Source: Own development.

The above figure shows the number of observations for the two performance measures used in the study. The quantity (N) of observations slightly increased for the Buy and Hold returns of the respective banking stock as well as for the Pre-Tax Return on Equity (ROE) from 1999 to 2005. From then on N stayed flat until the end of the time period used in the context of this study for both measures at around 130 observations for Pre-Tax ROE and 120 for the Buy and Hold returns per year.

Figure 36: N Risk Measures

Source: Own development.

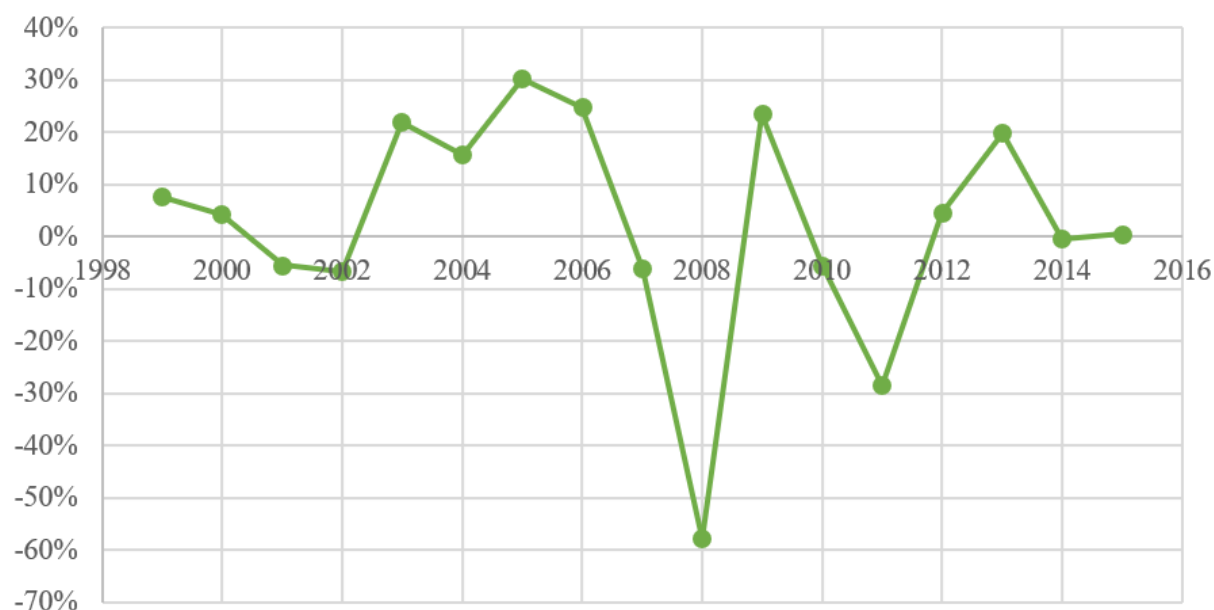
For the risk measures, the picture looks slightly different. For Beta as well as for the Standard Deviation of the Daily Returns, which are market data-driven variables, the data availability follows the pattern observed for the performance measures, with a slight increase until 2005 and flat from then on. The number of observations for the Loan Loss Provisions fluctuates across the whole time period, but at a higher level of N from 2005 on. However, all three variables tend to rise to a level of 120 observations per year in the later years of the study. Contrarily, the Tier 1 Risk-Adjusted Capital Ratio observations start at a very low level around 38 and increase until 2015 to above 100. Data availability on Thomson Reuters was limited for this ratio. It can be summarised based on this short analysis that measures that are market data-driven seem to be better available in the Thomson Reuters Eikon database than the measures that are accounting data-driven. Further details for the single variables will be explained in the following chapters.

5.3.2.1 Performance Variables

As outlined above two variables that act as a proxy for the performance of banks were gathered. The author chose, based on the literature analysis to use Buy and Hold returns as well as the Pre-Tax ROE.

The Buy and Hold return is defined as the return of a stock in a certain holding period and provides, therefore, a measure for the economic success of bank in this period (Aebi et al, 2012). Therefore, the variable is being used as a market data-driven proxy. In line with other authors e.g. Ellul and Yerramilli (2013), Aebi et al (2012) or Magee et al. (2013) the annual Buy and Hold return was used. This further aligns with the fact that the independent variables as gathered from annual account statements are yearly figures as well. The Buy and Hold return was computed by annualising monthly returns gathered from Thomson Reuter Eikon for every single bank. Furthermore, it was assumed in the calculations that dividends were reinvested. In annex B the author reports the number of observations, minimum, maximum, mean and standard deviation for the variable on a yearly basis.

Figure 37: Median Buy and Hold



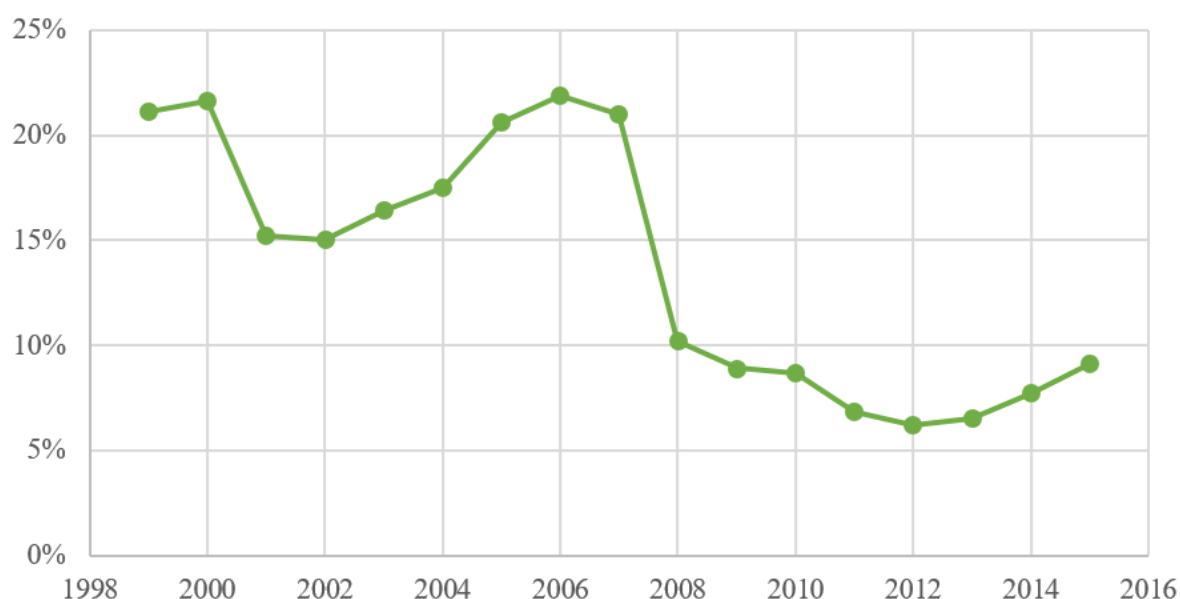
Source: Own development.

The figure above shows the development of the annual Buy and Hold return in the sample over the sampling period measured as a median to further account for outliers. Overall three lows can be found in the sample followed by steep increases in returns afterwards. The first relevant low occurred in 2001 and 2002 with on average returns of minus 5 % and minus 7 % respectively. The downturn can be linked to the dot.com crisis and the events around the terror attacks in New York

as outlined in the analysis of the financial crisis in this study. Following the downturn, an era of high positive returns prevailed until 2007 as the outbreak of the global financial crisis emerged. In 2007 and 2008 the stocks experienced on average a loss of 6% and 58 % respectively. The following increase of 2009 was just short in nature and was followed by a further crisis, namely the Eurozone crisis starting in 2010 with its high in 2011 leading to negative returns of minus 6% and minus 29% respectively. The median returns for 2014 and 2015, both at 0%, show that the European banking sector was still in a period of transition despite a short rise in 2012 and 2013 and had at that time not yet recovered from the last crisis. A further mentionable fact is that the standard deviation of observations for the Buy and Hold return was higher in times of market increases than in times of decreases with its highest peak in the upturn of the average stock prices in 2012.

The pattern of the movement of the median annual Buy and Hold return observed in the data set aligns with analysis of the financial crisis section in this study as all three crises can clearly be observed in the data set gathered by the author. Furthermore, it supports the research gap in which the author argued that contrary to the US banking market the European market had not recovered until 2015, especially due to the Eurozone crisis, and that therefore it is more sensible to test regulatory proposals regarding Risk Governance in the European banking sector as a further crisis is observable at the time early proposals were developed.

The second proxy as a measure for the performance of a bank is the annual Pre-Tax Return on Equity which measures the profitability of a bank by dividing the Income Before Tax for the fiscal year by the Total Equity and is expressed as a percentage. Therefore, the proxy is an accounting driven variable. The measure has been used widely in the academic studies assessed in the literature analysis chapter. Amongst others Aebi et al (2012), Magee et al. (2013) and Battaglia and Gallo (2015) used the measure in their studies as a performance proxy. The author chose to take the Pre-Tax ratio to account for the different tax regimes in the European Union and Switzerland and therefore eliminating the possibility of unwanted interference of unequal taxation rules in the data set.

Figure 38: Median Pre-Tax ROE

Source: Own development.

Based on the figure above the median Pre-Tax ROE across all banks has not been negative throughout the sample period. However, the Pre-Tax ROE of the banks in the sample can be divided into two parts, that is, pre-global financial crisis and post-global financial crisis. Before the global financial crisis, the level of the median Pre-Tax ROE was between 21% and 15%, with the lower figures in 2001 and 2002 indicating the influence of the dot.com crisis on the measure. Post 2007 the median Pre-Tax ROE stays under 10% for the rest of the sample period with all-time lows during the Eurozone crisis in 2011 and 2012 of 7% and 6% respectively. The lows are in line with what has been observed for the Buy and Hold returns. However, the two-fold pattern, which is clearly attributable to the global financial crisis and the measures applied thereafter by the Central Banks and their influence on the profitability of banks is specific to this measure.

From a volatility perspective, the highest Standard Deviations of the observations were mainly detected, in contrast to the market figures, during the downturns in ROE with the highest Standard Deviation in the year 2011.

5.3.2.2 Risk Variables

Next, to the performance variables the author also decided to test the hypotheses against variables that are proxies for the risk profile of a bank. As already applied for the performance variables, measures based on accounting as well as market data were gathered. The author chose to use the annualised Standard Deviation of Daily Returns of bank stocks, Loan Loss Provisions, the Tier 1 risk-adjusted capital ratio and the annualised Beta based on the literature analysis.

The first measure of risk that should be explained in more detail is Beta. This measure has been used in other studies contained in the literature analysis as well as a proxy for the risk of a bank based on market data, e.g. Ellul and Yerramilli (2013) and Minton et al., (2014).

The measure is part of the Capital Asset Pricing Model, which has been developed in the 1960s and is a tool to determine the required market return of an asset compared to a well-diversified portfolio (Hull, 2015). The Beta factor indicates the risk of a specific asset in that model. The well-diversified market portfolio has a Beta of 1. If Beta for an asset is greater than 1 the asset moves more than the market and tends to be riskier than the well-diversified portfolio or the market (Hull, 2015). If Beta is below 1, the asset moves less than the market and is therefore seen as less risky as the well-diversified portfolio. Based on the Beta or better said the riskiness of an asset the required return of that asset is determined (Hull, 2015).

The Beta-factor is commonly calculated as shown below:

Equation 1: Beta Factor

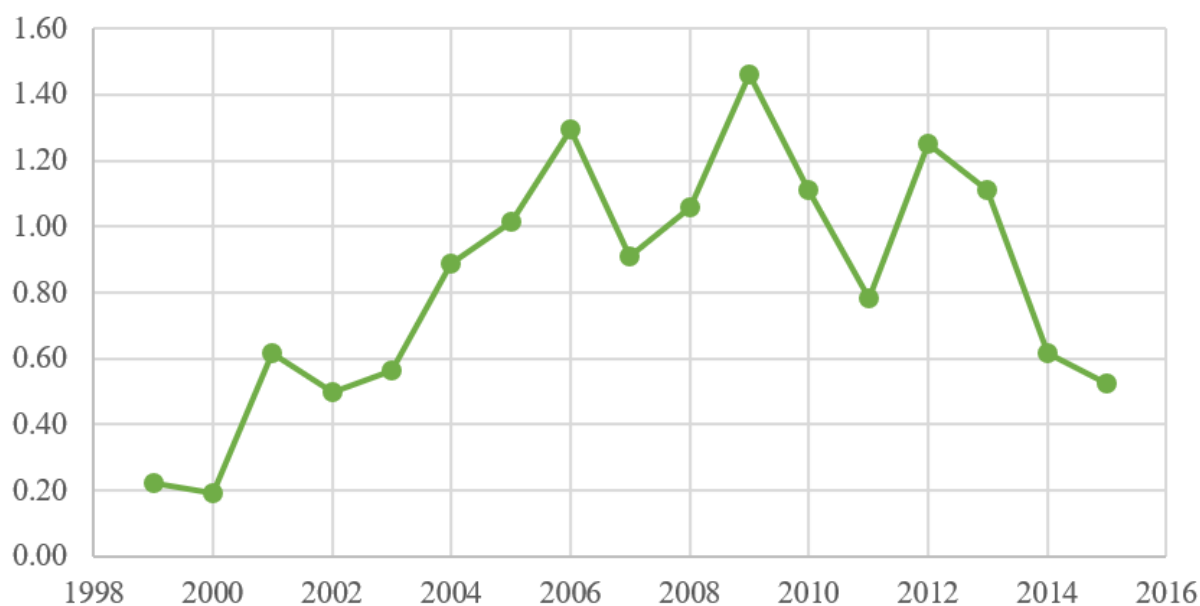
$$\beta = \frac{cov(r_a, r_b)}{var(r_b)}$$

Source: Hull (2012, p. 9).

Where “ r_a ” stands for the return of the specific asset and “ r_b ” is the return of the benchmark or the market. According to Damodaran (1999) three major factors that contribute to the estimation of the Beta factor, the benchmark that is used in

the calculation, the time period for the measurement of the returns as well as the intervals of the returns e.g. daily, weekly or monthly.

As the aim of the study is to assess the behaviour of European banks, the author, therefore, chose to use a European stock index as the benchmark for the calculations and took the returns of the STOXX Europe 600. According to STOXX Ltd (2019), the index represents companies of each size across all sectors from 17 countries of the European region including Switzerland, which is important as the author did not only include EU28 banks in the sample but Swiss banks as well, which constitute for a large proportion of the overall sample. Furthermore, the index consists of stocks of 600 companies hence it is large enough and according to Damodaran (1999) it should, therefore, be more valuable for the estimation of Beta. The author further decided to use yearly Beta-factors for the respective banks as the empirical model is largely dependent on Risk Governance data which is being reported on a yearly cycle. Moreover, this is in line with the best practice for Beta estimation (Damodaran, 1999) for companies that are changing their business models or are facing a dynamic environment, which is clearly the case for the financial industry considering the recent financial crises, thus a shorter time period e.g. annual should be chosen. Regarding the return period, the author used monthly returns for the estimation in order to increase the observations per year, which is in line with academic practice as well (Damodaran, 1999). Raw data of monthly returns for the banks in the sample as well as for the STOXX Europe 600 were gathered from Thomson Reuters Eikon. Based on that, the author calculated the Beta-Factors for all banks in the sample, as described before.

Figure 39: Median Beta

Source: Own development.

The median Beta of the sample is shown in the figure above. At first sight, it is observable that the median Beta for the banks in the sample has been below 1 until 2004 indicating that the banks have on average moved less than the market and can be seen therefore as less risky investments compared to the STOXX Europe 600. From 2005 onwards, Beta moved above 1 with peaks in 2009 and 2012 of 1.42 and 1.25 respectively and then moved down again to 0.52 in 2015. It seems to be counterintuitive that especially in the financial crisis periods Beta tends to be lower compared to the overall market as observable in 2001, 2007 and 2011, however, as these crises impacted the overall financial markets and not just the banking sector and therefore increasing the risk of the whole market it seems to be obvious that banks moved with or even less than the market. Perhaps, implicit guarantees as discussed in financial crisis section of this study might have supported the relative safeness of banks in these time periods as well. For the peaks in 2009 and 2012, one must take the Buy and Hold returns, shown in the performance variables section, into account which had their peaks in 2009 and 2012 as well, which means that banks were more volatile than the market and through the risk-return relationship riskier as well. The standard deviations for the Beta-factors in the sample (Annex B) had their peaks in 2004 and 2013 explaining the steep increase as well as the decrease in Beta at those times.

A further market-based proxy for a bank is the Standard Deviation of their daily returns also called Total Risk (Minton et al., 2014). Total Risk is the annual standard deviation of daily returns of the stocks of a bank and provides an understanding of the volatility of a stock in the respective timeframe (Hull, 2015).

In mathematical terms the Standard Deviation of the returns can be expressed as shown below.

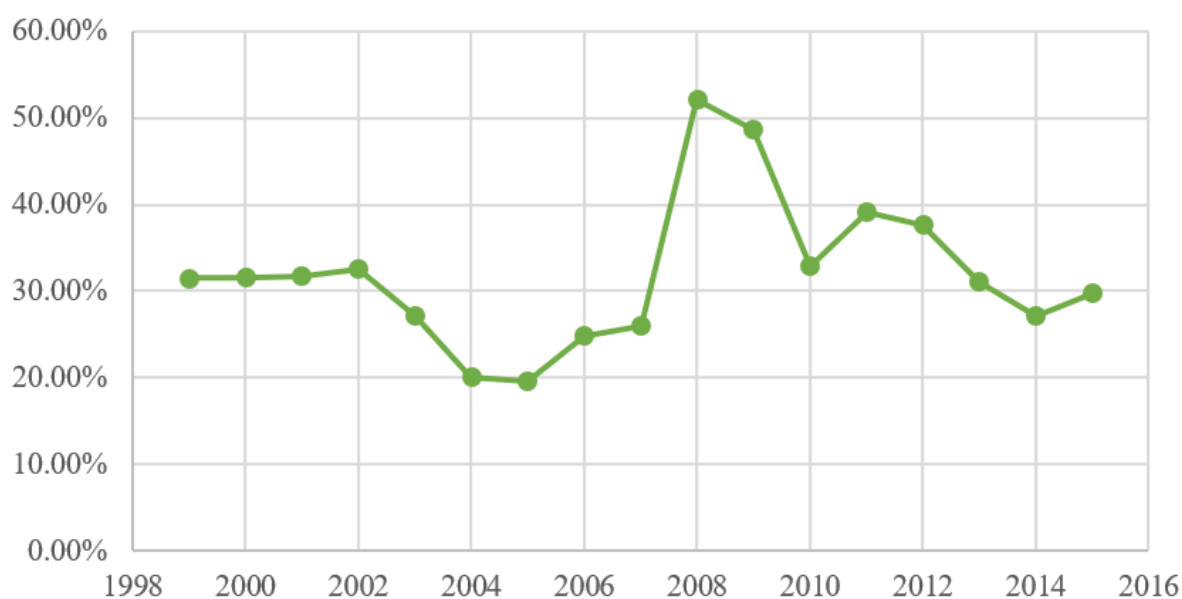
Equation 2: Standard Deviation of Stock Returns

$$Vol_i = 100 \sqrt{\frac{\sum_{t=1}^n (R_{i,t} - \bar{R}_i)^2}{n-1}} \sqrt{m}$$

Source: Bali, Engle and Murray (2016, p. 365).

“ $R_{i,t}$ ” reflects the return of stock “ i ” in period “ t ” and “ \bar{R}_i ” reflects the average return of stock “ i ” over all time periods used in the calculation of Volatility. Furthermore, “ n ” reflects the number of time periods used in the overall calculation and “ m ” reflects the number of observations per year (Bali, et al., 2016). In the case of this study, the author used the number of actual trading days per bank stock per year based on Thomson Reuters data. The trading days differ for most of the stocks based on the exchanges on which they were traded. Furthermore, the author took the specifics of the stock exchanges of the home-country of each bank into account and considered these in the calculation of the annual Standard Deviation by taking the actual days of trading per exchange for the respective stock.

The measure itself has been used in other studies reflected in the literature analysis as a measure for market-data based risk as well, e.g. Pathan (2009) or De Young et al. (2010).

Figure 40: Median Standard Deviation of Daily Returns

Source: Own development.

The figure above shows the median annual Standard Deviation of the daily returns of all banks across the time period. Peaks in the volatility of the stocks or in other terms the Total Risk are observable in 2002, 2008, 2009 and 2011, which aligns with the time frame of the three financial crises in the time period of the study. The highest increase of the volatility happened at the beginning of the global financial crisis from 2007 to 2008 and during this crisis, stocks experienced the highest volatility also compared to the dot.com and Eurozone crisis.

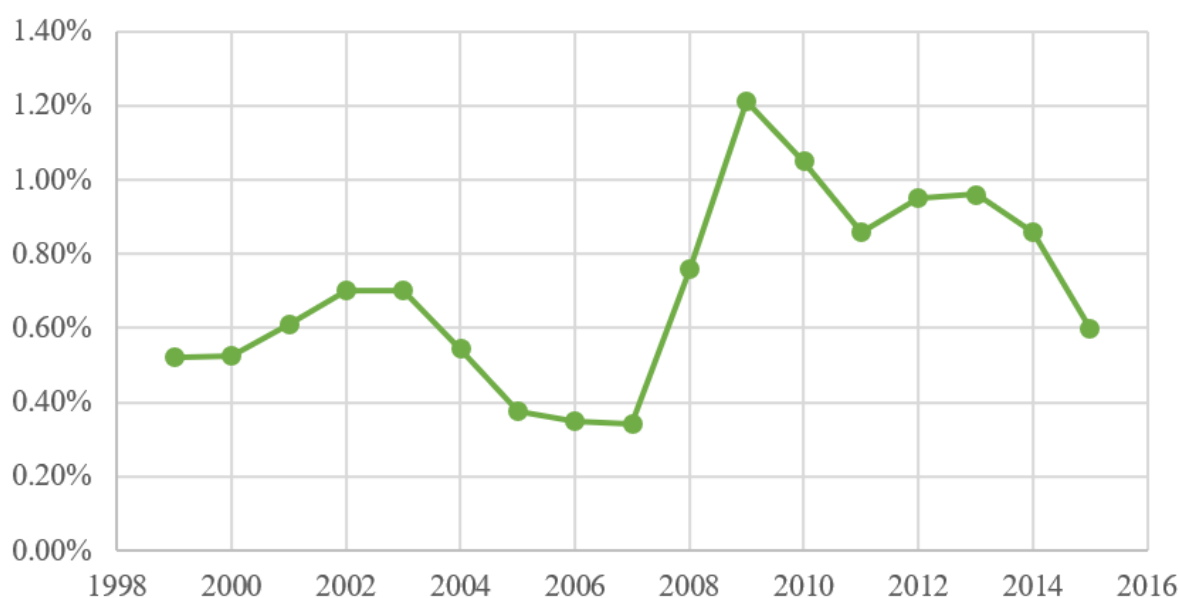
From a Standard Deviation perspective of the observations (Annex B), the measure increased in all financial crises as well, but had its peak in 2002 showing the highest volatility within the sample observations across the time period.

Next, to the market data-driven proxies, the author decided to use accounting data-driven proxies as well. As explained above, one of the risk proxies is the Loan Loss Provisions of a bank. But why are those provision proxies for risk? This is because they account for future defaults of customers, late payments, as well as expenses for the loan collection and, are based in most of the banks on historical default rates (Hull, 2015). The reserves are reflected in the balance sheet of the bank and fluctuate from quarter to quarter depending on the actual default rates in the last quarter and its charge-offs that can increase or decrease the reserves. The reserves, therefore, reflect the overall quality or risk of a bank's credit book,

which is one of the major revenue contributors for banks through interest income (Hull, 2015). Higher reserves indicate worsening credit quality and higher default rates, therefore, indicate a higher risk profile at these times for the respective bank as well.

For the study, the author used the Loan Loss Provisions measure from Thomson Reuters Eikon (2018), which is defined as the “...ratio of provision for loan losses for the fiscal year as a proportion of total loans for the same period and is expressed as a percentage”.

Figure 41: Median Loan Loss Provisions of Average Loans



Source: Own development.

Consistent with the market data-driven proxies the median Loan Loss Provisions measure also shows increased risk during the three financial crises as reflected in the figure above. The provisions increased steeply from 2001 to 2002 reaching a high of 0.70% which was held until 2003 and then normalised until 2007. In 2007, right before the global financial crisis, the measure reached an all-time low of 0.34% for the banks in the sample, which was followed by a steep increase during the crisis in 2008 and 2009 to the all-time high of 1.20% in 2009. The Eurozone crisis is also reflected with an increase in the Loan Loss Provision level in 2012 and 2013. However, the following years from 2014 to 2015 show higher levels of Loan Loss Provisions compared to the pre-global financial crisis time period and

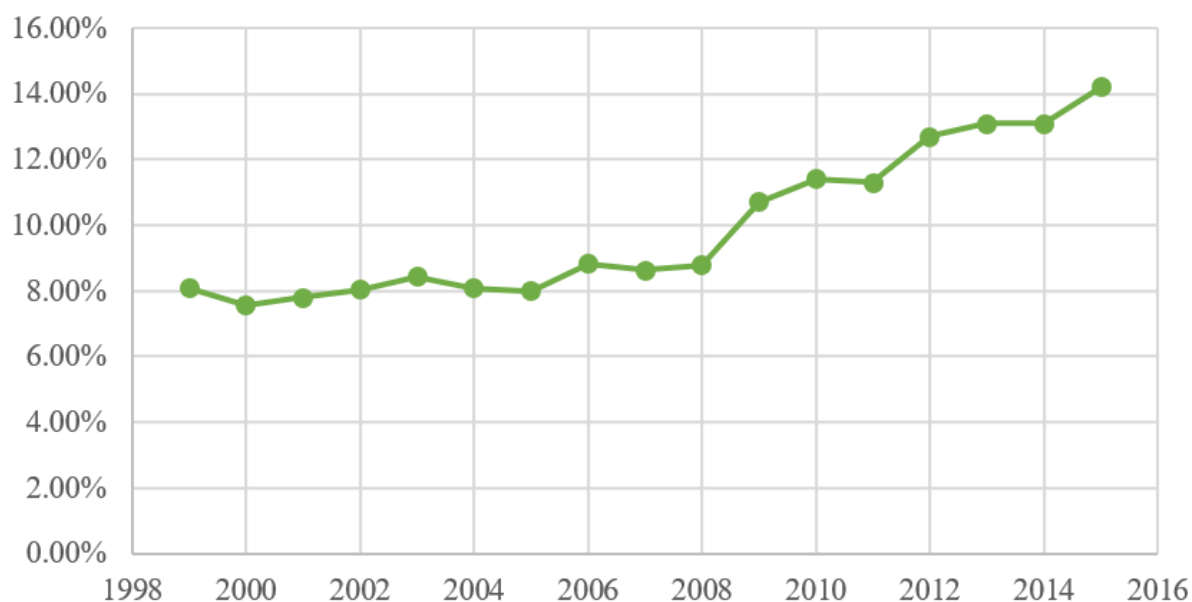
could lead to the assumption that banks were not able to improve the quality of their loan books after the two crises starting in 2007. This is in line with the ECB's view that made the reduction of non-performing loans in the Euro area to one of their main supervisory priorities (ECB, 2019b). Furthermore, the measure seems to be of a lagging nature as the rises occur always in the later years of the crises and stay for at least a year after the crisis has ended e.g. in 2012 and 2013. This lag might be driven by the fact that the measure is accounting data-driven and that default rates start not directly at the beginning of a crisis in the real economy but do lag as well.

The last proxy for risk is accounting data-driven as well and is the Tier 1 Capital ratio and more specifically the risk-adjusted Tier 1 Capital ratio. The measure was introduced by the Basel Committee in 1988 and was adjusted in 1998 by the same institution (BIS, 1998). It refers to the ability of a bank to absorb the risks of its assets with its equity. Tier 1 sets the common stock as well as the disclosed reserves of a bank in relation to its Risk-Weighted Assets (RWA). Risk-weighted means that all active balance sheet items need to undergo certain haircuts depending on their market or credit risk, which can be stipulated by regulatory set haircuts or ones that are calculated by the banks with internal models based on historical data, which have been approved by regulators. For some items, no haircut is applied at all e.g. cash or government bonds (BIS, 1998). However, especially after the global financial crisis regulators focussed more on the robustness of banks and due to this on Tier 1 capital as well. Therefore, the European Union introduced the Capital Requirements Regulation (CRR) in 2014 ((EU) No. 575/2013, EU, 2013b), which reflects the Basel III accord and focuses on capital adequacy by increasing the capital of banks steadily over a phase-in period, which lasted until January 1st, 2019.

The author used the calculated ratios provided by Thomson Reuters Eikon (2018) for the data set and which are defined by the provider as "...the ratio of Tier 1 Capital at the end of the fiscal year to Total Risk-Weighted Assets for the same period and is expressed as a percentage. Tier 1 Capital consists of the sum of common stockholder's equity, certain qualifying issues of preferred stock and

minority interest, less goodwill, intangible assets, investments in certain subsidiaries and other adjustments”.

Figure 42: Median Risk-adjusted Tier 1 Capital



Source: Own development.

In contrast to the other measures the ratio does not directly show the risks within a bank but rather the ability to absorb risk in the form of losses within the asset base of the bank. The figure above shows the median Tier 1 capital of the banks in the sample throughout the time period of the study. First, a clear trend is observable that shows that banks are increasing their Tier 1 capital starting slightly over 8 % in 1999 to more than 14% in 2015. Second, also supported by increasing standard deviations of the measure (see Annex B) the Tier 1 capital mostly increased after times of financial crisis e.g. in 2003, 2009 and 2012. However, the increase in 2014 and 2015 could be also explained by the implementation of the CRR standards (EU, 2013b) that needed to be followed from 2014 on and require banks to gradually increase their Tier1 capital ratio until the beginning 2019.

As a conclusion after having introduced and described the dependent variables, the author can state that the financial crises explained and introduced in the theoretical part of the dissertation can be found in the performance and risk variable data set as well. Their impact on the banking sector can clearly not be

omitted and it can be observed based on the data that during the crisis years banks experienced on average the highest risks as well as the lowest performance measured based on the market as well as accounting data.

5.3.3 Control Variables

In line with academic best practice and the findings of other papers (e.g. Schultz et al., 2011, Lingel and Sheedy, 2012) there are certain firm and industry as well as country- and culture-specific variables that could influence the impact the performance as well as the risk profile of a bank.

Therefore, for testing the above-shown hypotheses against the proxies for the performance and the risk of a bank the author decided to use control variables in the context of this study as well. The table below contains all nine control variables that have been gathered by the author and shows the main characteristics of the variables. Six of the variables control for firm-specific effects that relate to the business model or the size of a bank, which is especially important as the data set contains banks with different business models as well as balance sheet sizes. All these variables have been gathered from Thomson Reuters Eikon. Furthermore, two variables should be used to control for cultural components that could influence the performance as well as the risk profile of a bank and were derived from Hofstede's famous IBM study (2001). One further variable should be used to control for country-specific Governance components and is based on the World Governance Indicators (WGI) which have been developed by the World Bank.

Overall the author gathered 20,583 data points for all nine variables across the time period from 1999 to 2015. The first six variables in the table below have been winsorised at 1% and 99% level per year to account for extreme outliers in the data set (Reifman and Keyton, 2010). Hofstede's indices, as well as the WGI, are used as published by the respective authors (Hofstede, 2001, World Bank, 2018).

Table 12: Coding Table Control Variables

No.	Name	Data Type	Coding	Source	Calculation	Notes
1	<i>Deposit Growth</i>	Real Number	Actual Value	Thomson Reuters Eikon	Predefined Ratio by TR	Firm-Specific Variable
2	<i>Loan Growth</i>	Real Number	Actual Value	Thomson Reuters Eikon	Predefined Ratio by TR	Firm-Specific Variable
3	<i>Loan to Deposit Ratio</i>	Real Number	Actual Value	Thomson Reuters Eikon	Predefined Ratio by TR	Firm-Specific Variable
4	<i>Operating Leverage</i>	Real Number	Actual Value	Thomson Reuters Eikon	Predefined Ratio by TR	Firm-Specific Variable
5	<i>Securities Earnings</i>	Real Number	Actual Value	Thomson Reuters Eikon	Predefined Ratio by TR	Firm-Specific Variable
6	<i>Total Assets</i>	Real Number	Actual Value	Thomson Reuters Eikon	Predefined Ratio by TR	Firm-Specific Variable
7	<i>Uncertainty Avoidance</i>	Real Number	Actual Value	Hofstede 2001	Hofstede calculation	Country-dependent Culture Variable
8	<i>Long vs. Short Term Orientation</i>	Real Number	Actual Value	Hofstede 2001	Hofstede calculation	Country-dependent Culture Variable
9	<i>Worldwide Governance Indicators</i>	Real Number	Actual Value	World Bank	Own calculation, mean per country per year of the six governance indicators	Country-dependent Governance Variable

Source: Own development.

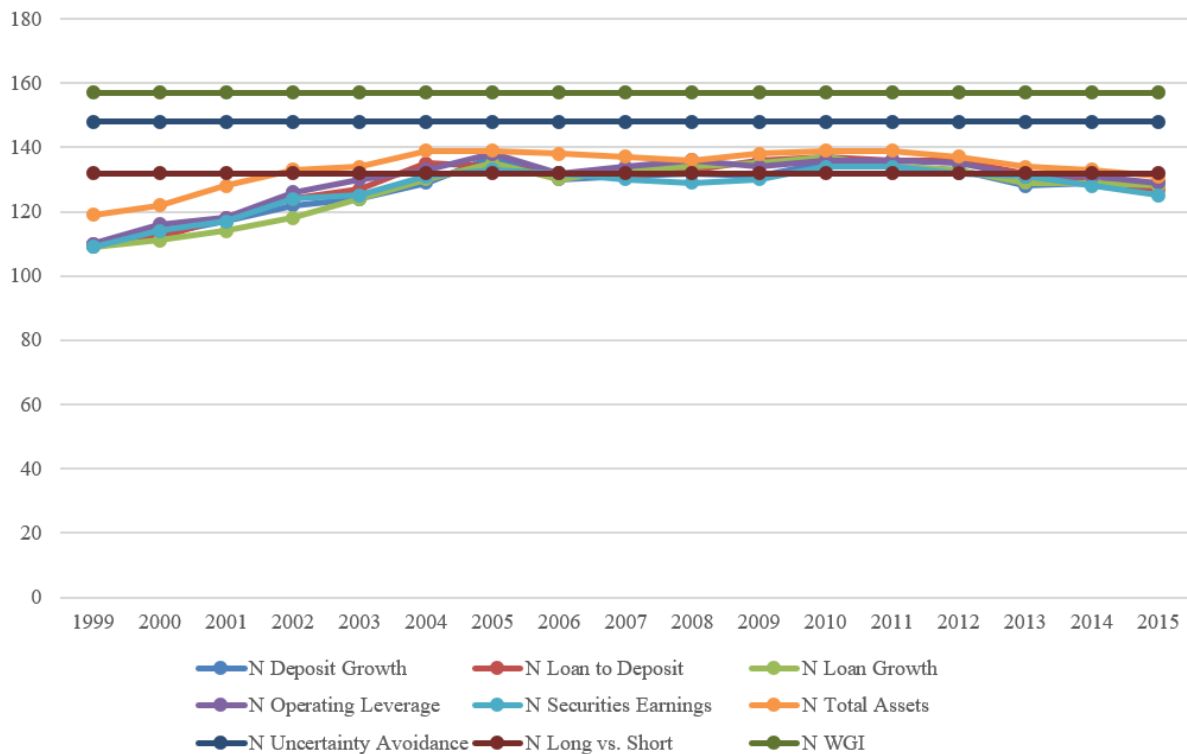
The above table shows the nine variables as well as their specifics, which will be explained in more detail in the following paragraphs. However, certain side notes must be given to provide overall context. As with the dependent variables, the availability of variables is key and data, regarding the control variables, was not readily available for every bank. Therefore, the author not only applied one single control variable to measure firm-specifics but chose to have six variables. Due to that, the number of those single observations tends to fluctuate over time.

Next, to the bank-specific measures, differences in culture and the overall governance framework should be controlled for, as this is a cross-country study and these differences might bias the results of the empirical models. For the culture variables availability was not a large issue and the same holds true for the

governance data. Data itself was gathered directly from Hofstede’s study (2001) and from the World Bank statistics as published on its website (World Bank, 2018).

Firm-specific control variables in the set have been trimmed to account for outliers by being winsorised at 1% and 99% level per year as suggested by Reifman and Keyton (2010). This means outliers below 1% and above the 99% level are replaced with the 1% or 99% value per year in the data set.

Figure 43: N Control Variables



Source: Own development.

The figure above shows the number (N) of observations per variable per year. One can clearly observe two specifics for the number of observations.

First, N for the culture and governance variables is stable over time, since these are available for most countries in the sample. The WGI is available for all countries of the 157 banks in every year in the sample, whilst for the Hofstede indices, just lower numbers were reached. For Long vs. Short-Term Orientation, data was available for banks in 132 cases and for Uncertainty Avoidance, the measure was available in 148 cases.

Second, for the firm-specific control variables, the picture looks different. The availability for all six measures increases from 1999 to 2004 from around 110 to over 130 and is stable at that level during the time period in the scope of the study. Highest scores in N are available for the Total Asset measure, which is stable from 2004 on at a level of 140 observations per year.

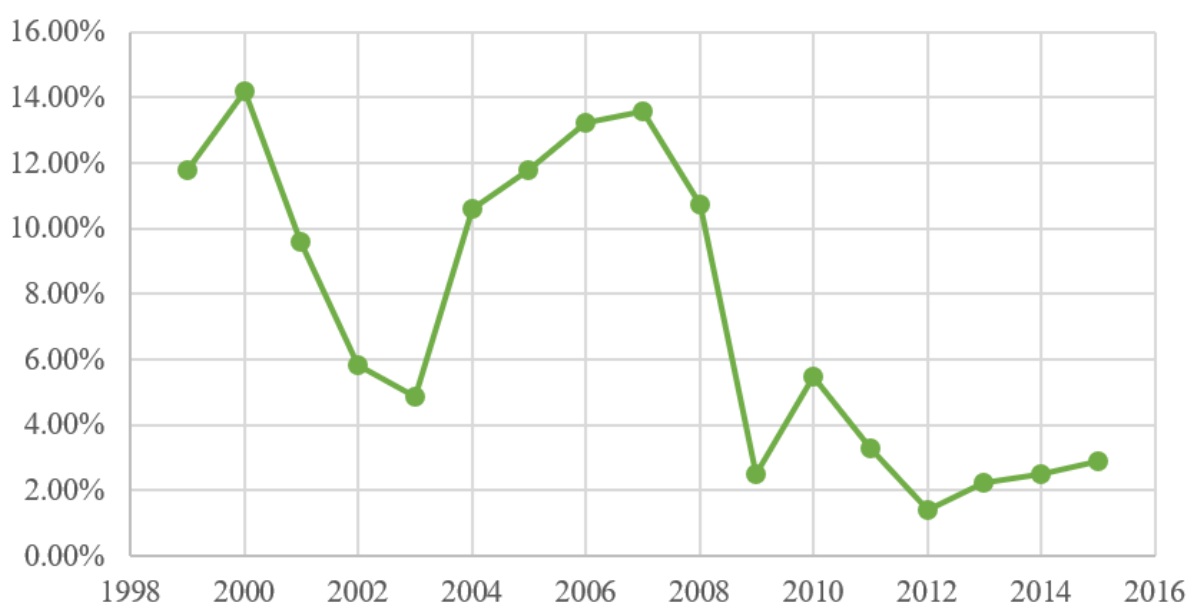
Further details for the single control variables will be explained in the next chapters.

5.3.4 Firm-specific Control Variables

As outlined above the author chose six firm-specific variables that should be used to control for their influence on the performance as well as the risk profile of banks in order to make the tests of the hypotheses more robust. Based on the papers assessed in the literature analysis of the study the Deposit Growth, the Loan to Deposit Ratio, the Loan Growth, the Operating Leverage, the Security Earnings as well as the Total Assets were selected. These measures are all accounting data-driven and reflect either Income or Balance Sheet items of the respective banks.

The first measure used is the Deposit Growth of the banks in the sample. The measure is derived from Thomson Reuters Eikon (2018) and is defined in the tool as the "...change in annual Total Deposits as compared to the same period one year ago in percent. Total Deposits consist of Non-Interest-Bearing Deposits, Interest-Bearing Deposits and Other Deposits at the end of the fiscal year". Bank deposits are in most cases the cheapest way to source funds that can be loaned to other customers (Bueschgen and Boerner, 2003). Sources for deposits can be private and corporate customers as well as financial institutions. Deposits are mainly taken by commercial banks rather than investment or mortgage banks.

The measure is used in this study as a control for the business model of a bank having an impact on risk or performance. At the same time, it also used as a driver of the performance of banks as higher deposits decrease the costs of borrowing for the bank by not needing to access the capital markets. Through the lower costs of deposits compared to the capital markets the spread between interest paid and interest received widens leading to a larger proportion of interest income and therefore to a better performance everything else equal.

Figure 44: Median Deposit Growth

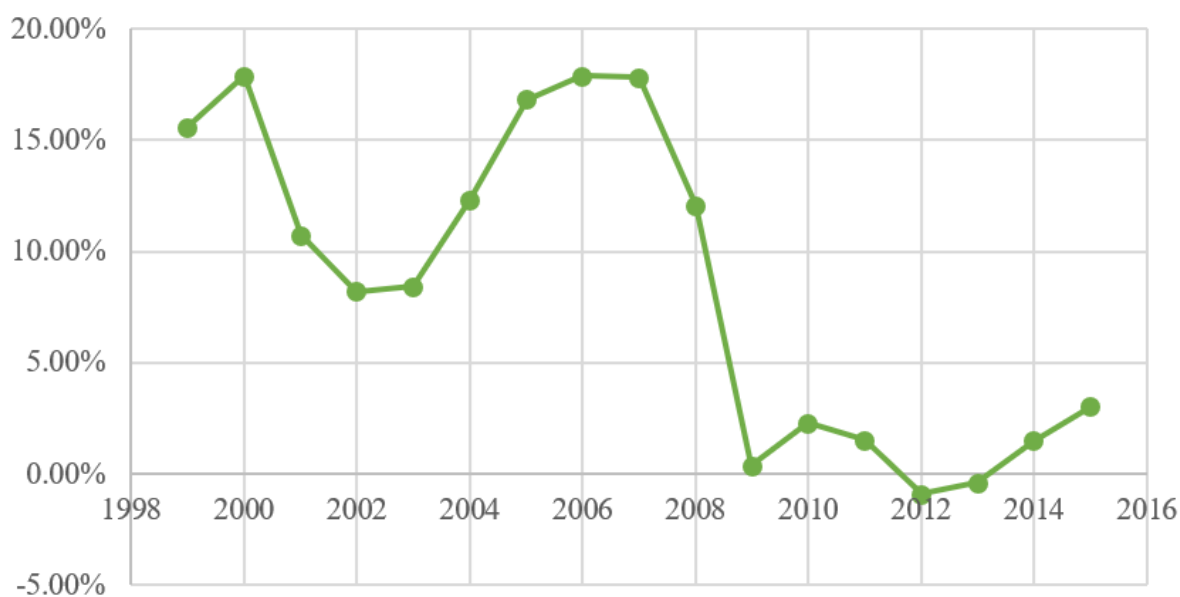
Source: Own development.

The figure above shows the median of the Deposit Growth of all banks in the sample over the time period from 1999 to 2015. Median values have been used as in the case of the dependent variables in order to account for extreme outliers, which could bias the outcome of the variables. All other five dependent firm-specific control variables will, therefore, be reported as well with median values for the purpose of describing the trends of their development in this chapter. However, all further related descriptive data is reported in Annex C. The figure shows that the deposit growth is at lows in 2003 and stays at higher levels with some fluctuation until 2008 (above 12% annual growth rate). Levels decrease after 2007 and remain on levels under 5.5% from 2009 to 2013 and decrease even further from 2013 to levels under 3% annually. Since deposits are driven by interest rates, people tend to deposit more money if the interest on it is higher than in the opposite case (Hull, 2015). Therefore, the changing interest environment after the global financial crisis in Europe as outlined in the crisis section of this study could have led to the shape of the graph. It at least correlates with the interest rate movements of the major central banks e.g. the ECB who had a low in deposit facilities in 2003 followed by a sharp increase until the end of 2008, since the ECB keeps rates very low and in a negative environment (ECB, 2019a).

Furthermore, the deposit volume is also dependent on the trust of depositors. In times of financial stress, bank runs could happen, where depositors mistrust the financial stability of a bank and call all their deposits (Neuberger, 1994). This could have also led to decreasing growth rates in 2001, 2009 and 2011. One way to prevent this is deposit insurance mechanisms on a country level or across banking groups (Bueschgen and Boerner, 2003). As outlined in the bank governance section of the study this insurance could have a negative impact as well on the risk-taking behaviour of banks as risk is being transferred from shareholders to taxpayers.

The next control variable in scope is the Loan Growth, which has been derived from Thomson Reuters Eikon as well. The measure is defined by Thomson Reuters Eikon (2018) as the "...change in the annual period Net Loans as compared to one year before in percent. It is derived by dividing Net Loans for the fiscal year minus Net Loans one year ago by the annual Net Loans one year ago, multiplied by 100". The variable shows by how much the loan book of a bank grows in a year.

Growth of this factor is key for all commercial and as specialised mortgage banks as the interest income, which is derived from the loans to customers, is the major revenue driver of these institutions (Bueschgen and Boerner, 2003). Therefore, the variable can be a driver of the performance of the banks in the sample of this study, as e.g. Fahlenbrach, Prilmeier and Stulz (2016) in their study found that the loan growth is related to the ROA. But the variable not only influences the performance of banks but risk as well. Fahlenbrach et al. (2016) find in the same study that banks that grow fast in terms of loans in the later stage of a credit boom experience higher Loan Loss Provisions than the ones that grow fast in the beginning of the boom by investing in better credit qualities, which tend to worsen in the end of a boom.

Figure 45: Median Loan Growth

Source: Own development.

The figure above shows the median Loan Growth of the banks in the sample. As outlined before more descriptive data can be found in Annex C.

Based on the figure one can see that the loan growth is also being impacted by the financial crises. Growth rates decrease from 2000 to 2002 and from 2007 to 2009 as well as from 2010 to 2011, which is rational as banks do not widen their lending in times of increased default probabilities and at the end of credit booms (Fahlenbrach et al. 2016). However, growth rates were significantly higher in the first half of the data set until 2007. Peaks were recorded in 2000 and 2007 with growth around 18% for both years. However, lows in that period were experienced in 2002 until 2003 with growth rates around 8%. During the global financial crisis rates of Loan Growth decreased dramatically to 0% in 2009 and just slightly increased until 2010 only to decrease again in 2011 and turning negative in 2012 as well as in 2013. Since then rates are slightly increasing again to the end of the study period in 2015.

The low rates in the second part of the study period putting the Eurozone crisis aside might be driven by the fact that capital is a scarce resource after the crisis as outlined above driven by the new CRR requirements (EU, 2013b) implemented after the global financial crisis. This has a direct impact on the asset base of a bank as one measure to increase capital can be to lower the growth rate on assets.

However, the effect can also be driven from the demand side, meaning that customers are not requesting the same level of loans as they have done pre-crisis. This could be driven by the fact that enough liquidity is in the market and could be reflected in the low deposit growth rates above as well.

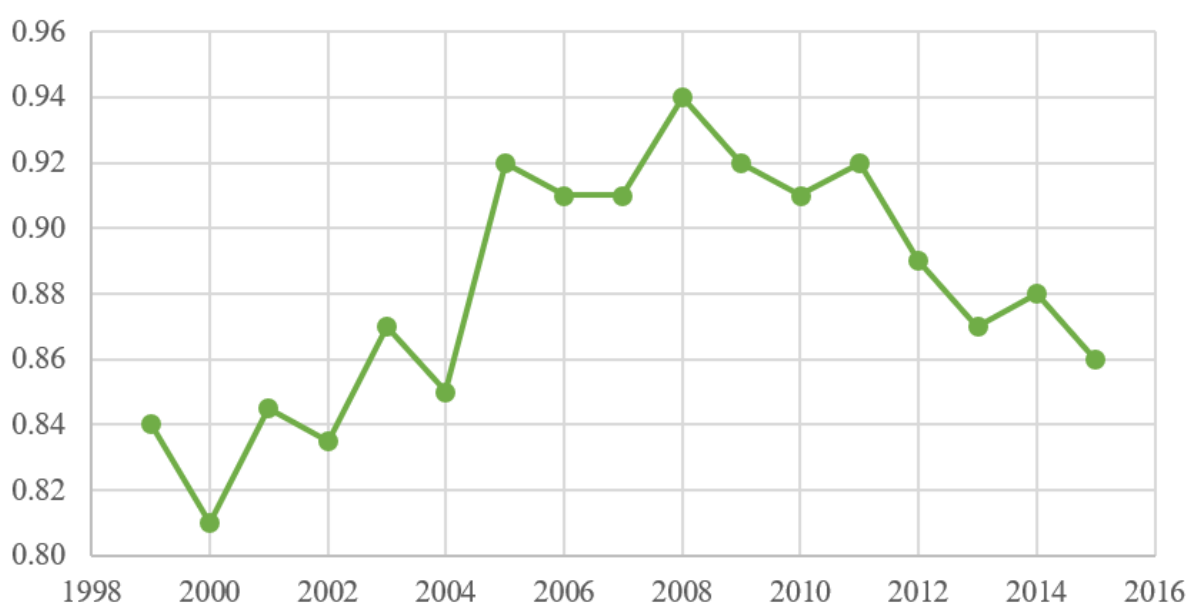
The third ratio the author uses to control for bank specifics sets the two components explained before in relation to each other, that is, the Loan to Deposit Ratio. Data on this ratio has been gathered as well from Thomson Reuters Eikon (2018) and is defined in the tool as the "...end of the fiscal year loans to deposits for the same period".

The ratio is a measure of the liquidity of a bank and implies how many of the loans are funded by the bank's own deposits. (Grier, 2007). If the ratio is over 1 the bank not just relies on its own deposits, but on borrowings from the capital markets as well and if the ratio is equal to or below one, the bank relies solely on its own deposits that it is taking from its customers (Grier, 2007). Deposits are debt from depositors which provide money to the bank with a return equal to the deposit rates. These deposits can be called as outlined above at any time, but the loans granted on the other side are not as liquid as the deposits. Therefore, the ratio can also be understood as a liquidity ratio. Nevertheless, banks assume the deposits from customers to be stable at a certain ratio as not all depositors will call their deposits at the same time (Bueschgen and Boerner, 2003). Therefore, a ratio well below 1 could lead to the assumption that a bank is not efficiently using its funds (Grier, 2007). However, if the ratio is above 1 it means banks are using outside borrowing to fund their loan book. This is usually derived by borrowing overnight or short-term on the money market. These funds are less stable than deposits (Grier, 2007) as they can be called overnight. This was one of the main issues as described in the financial crisis part of this dissertation that led to the downfall of Lehman Brothers who was very dependent on short-term borrowing which dried out when other banks lost confidence in the bank. Furthermore, as an investment bank, Lehman could not rely on customer deposits like commercial banks as it was a pure investment bank without a notable private or corporate client business, where deposits were generated. Therefore, if the measure is above 1 it indicates that banks are using borrowing from the capital markets as well to

fund their loan books. Due to the before described issues, those banks carry more risk due to liquidity reasons.

The measure was also used in other studies analysed in the literature research as a control variable in the models, e.g. Fernandes and Fich (2013) or Lingel and Sheedy (2012). The measure should be used in this study as a control variable to account for specific risks that are based on liquidity constraints a bank may face in times of financial stress.

Figure 46: Median Loan to Deposit Ratio



Source: Own development.

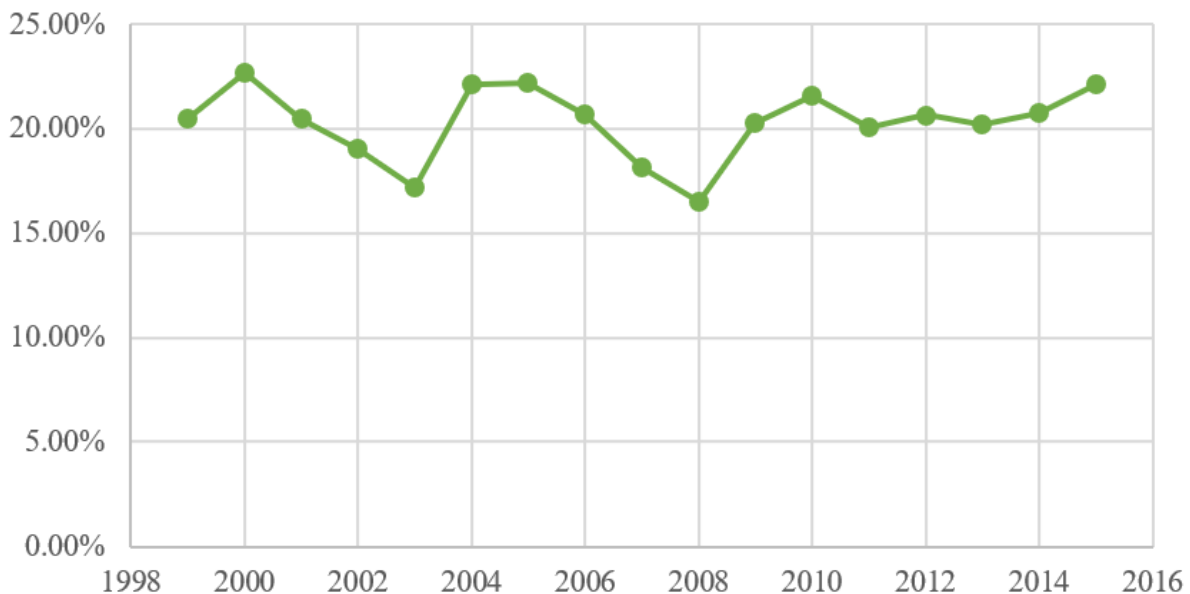
The figure above shows the mean Loan to Deposit Ratio of the banks in the sample. More descriptive data can be found as in the other cases in Annex C.

Based on the shape of the curve one can see that the median of the banks in the sample was always below 1 in the time period in the scope of this study indicating that the banks in the sample are relying on their own deposits to fund their loan book. The ratio increased steadily until 2005, starting from 0.84 in 1999 to 0.92 in 2005 and staying around 0.91 in 2006 and 2007. In 2008 the ratio peaked at 0.94. After the global financial crisis, levels steadily declined to 0.86 in 2015 with a small increase in-between during the debt crisis in 2011. From this figure it could be interpreted that banks used their deposits more efficiently or better said lowered their liquidity to fund further loans during the rise of the global financial

crisis. However, after the crisis, the banks returned to a more conservative approach and increased their liquidity ratio again and keeping, therefore, a lower loan to deposit ratio. This is aligned with very small loan growth and a small deposit growth, which however outperforms the loan growth as one can see in the deposit and loan growth figures above.

The fourth control variable, which should be used in the course of this study is to control for investment banking activities as the measures employed before are more frequently used in the analysis of commercial banks. It is gathered from Thomson Reuters Eikon (2018) as well and based on the tool's definition, shows the "...percentage of Average Earning Assets represented by securities at the end of the period". The ratio explains how much the income of a bank is driven by investment income which next to the interest income is one of the major revenue streams of a bank. Using the measures that account for different revenue streams of banks in a sample is common in the academic research analysed in the context of this dissertation, for example, Lingel and Sheedy (2012) controlled for this as well.

Figure 47: Median Securities Earnings



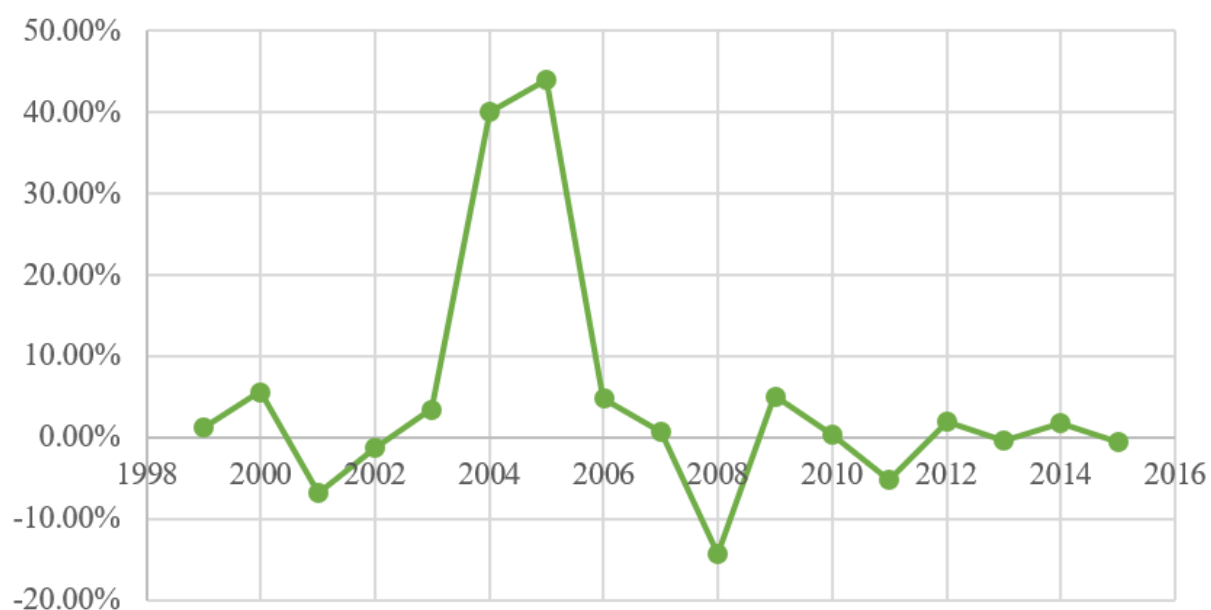
Source: Own development.

The figure above shows that the income generated from securities is overall stable in the time period in scope and fluctuates around 20%, furthermore supporting the

fact that banks in the sample are rather commercial banking driven. However, certain volatility in the measure is especially correlated with financial crises. Lows in the income generated from securities with values around 17% and 16% could be observed in 2003 as well as in 2008 in the aftermath of the dot.com crisis and the global financial crisis. Nevertheless, for 2011, such a steep decrease could not be observed.

However, the revenues generated from investment assets seem to be a steady part of the overall revenue base of European banks in the sample without major increase or decreases over the time period in scope from 1999 to 2015. Nevertheless, the measure should be used to control if the fluctuations detected above have an influence on the performance or the risk profile of a bank.

The fifth variable that should be used to control for firm-specific is the operating leverage of a bank and it is sourced from Thomson Reuters Eikon again. Operating leverage is defined by Thomson Reuters Eikon (2018) as the “...change in net revenue less the change in operating expenses for the period expressed in percent”. The idea behind the measure is that banks have a high fixed cost base e.g. IT infrastructure and branches, therefore, showing how efficient this cost base is used. Meaning that banks need to employ economies of scale to become more efficient (Bueschgen and Boerner, 2003). Based on that the measure basically tells if the revenues grow faster than the costs of a bank and shows how profitable a bank is. If the revenues of a bank increase less than the cost base, the bank obviously runs into to profitability issues. Therefore, the measure should be employed as a control variable that accounts for efficiency. Other authors trying to assess the impact of Corporate Governance on performance or risk have also used efficiency ratios as control variables e.g. Hines et al. (2015).

Figure 48: Median Operating Leverage

Source: Own development.

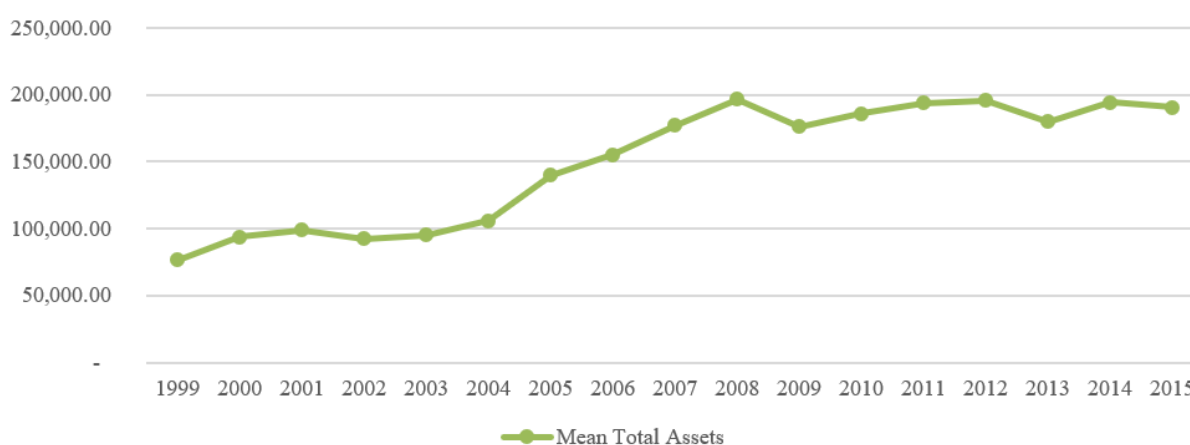
The figure above shows the median Operating Leverage for all banks in the sample during the time period in scope. Operating Leverage is fluctuating around 0% during the period in scope with one extreme, which occurred in 2004 and 2005, where the measure was up at levels of 40% and 44% respectively. This indicates that the profits increased much more than the costs of the banks in these years and could be interpreted as the glory years before the global financial crisis, where banks tended to have higher profits as observable in the Pre-Tax ROE numbers described above as well. Even markets were bullish in these years with a high rate of Buy and Hold returns for the banks in the sample. Lows in the ratios are highly correlated with the financial crises during the sample period, which is not unexpected as the sector faced negative revenue growth, as outlined in the dissertation, but had large fixed costs and could therefore not reduce costs as rapid as revenues decreased. The lows are observable in 2001, 2008 and 2011 were strongest in 2001 and 2008 with minus 6.80% and minus 14.35% respectively. Since 2012 the level stays around 0% until the end of the sample period. Showing that the European financial sector is still far away from pre-global financial crisis efficiency levels.

The last accounting measure that shall be applied as a control variable accounts for the size of a bank and is expressed as Total Assets of the respective bank. Total

Assets might influence the performance and the risk profile of a bank e.g. through economies of scale. The measure is again derived from Thomson Reuters Eikon (2018) and is defined in the tool as the “...sum of the Cash & Due from Banks, Other Earning Assets, Net Loans, Property/Plant/Equipment, Net Goodwill, Net Intangibles, Long-Term Investments, Other Long-Term Assets and Other Assets”.

Total Assets as a control variable was used in most of the studies that were part of the literature analysis for this dissertation e.g. Beltratti and Stulz (2012), Ellul and Yerramilli (2013) or Hines et al. (2015).

Figure 49: Mean of Total Assets



Source: Own development.

The figure above shows the average Total Assets of all banks in the sample in million EUR through the relevant period from 1999 to 2015. Overall a clear trend of growth is observable from 1999 to 2008 in which Total Assets in the sample grew from an average of 77 billion EUR to an average of 200 bn EUR. After 2008, which was the peak of the global financial crisis as well as the growth of the Total Assets ended and the average size of banks in the sample remained unchanged around 200 billion EUR. This is supported by the fact that through regulatory intervention the growth of the Asset base became unattractive and expensive, e.g. by the implementation of the new Capital Requirements Directive (EU, 2013b). Furthermore, as outlined above Deposit and Loan growth was at low levels as well since at least 2009 and could therefore not lead to increased growth of the asset base of European banks.

5.3.5 Culture Control Variables

As this study is a cross-country study which covers countries across Europe and, therefore, different cultural contexts, the author decided to control as well for the impact culture might have on the performance as well as the risk profile of the banks in the sample.

Following Magee et al. (2013) two cultural variables should be used that could influence the risk-taking and risk-related behaviour of persons working in the specific cultural context. Specifically, the risk related dimensions from Hofstede's (2011) updated study "Culture's Consequences: Comparing Values, Behaviours, Institutions, and Organisations Across Nations" should be used. Hofstede (2001) argues that most socio-economic studies control for country specifics by solely applying country variables rather than providing more background to the key variable itself, the culture. The study identified five main dimensions along which the values of countries can be ordered. Hofstede carried out the study himself two times in 1968 and in 1972 in the context of a firm-specific setting in IBM and collected data from over 50 countries (Hofstede, 2011). Initially, he (Hofstede, 2011, p. 8) identified 4 cultural dimensions:

- "Power Distance
- Uncertainty Avoidance
- Individualism versus Collectivism
- Masculinity versus Femininity"

Each of the countries in his study were grouped alongside the specific dimensions and the findings of the initial studies were tested in other settings outside IBM as well. It is important from Hofstede's (2011) point of view to recognise that the phenomena discovered by his study show cultural aspects on a country level and not on a specific person level, which has led in his view to certain misinterpretations in the past.

Two further dimensions were added after the first study in cooperation with other researchers (Hofstede, 2011):

- Long versus Short Term Orientation
- Indulgence versus Restraint

As outlined above in order to account for the specific research setting of this dissertation the author decided to follow Magee et al. (2013) and choose just the two dimensions that could culturally influence the risk or performance of a bank. Therefore, Uncertainty Avoidance and the Long versus Short Term Orientation were chosen.

Uncertainty Avoidance should not be understood as avoiding risk but rather understood as the concept of how cultures tend to avoid situations of uncertainty e.g. by-laws or codices (Hofstede, 2011). Countries with low scores have higher resilience to uncertainty as compared to countries with higher scores. In the specific case of this study the uncertainty avoidance of a culture might have an impact on the risk or performance of a bank as decisions under uncertainty are day-to-day business in financial markets and the preference of a culture might lead to different decisions that in the end influence the performance or the risk profile of a bank.

The score has a scale from 0 to 100 and typically Central and Eastern Europe countries as well Latin countries, Germany and Japan score higher (Hofstede, 2011). Low scorers are the Nordics and countries with Chinese culture as well as English speaking countries. During the sample period of this dissertation, the values for the single countries did not fluctuate and are same for every year. This is in line with the results of social sciences that argue that cultures on a country level tend to be robust and do not change easily or frequently (Hofstede, 2011). The measure could not be gathered for every country in the sample and is, therefore, missing for Cyprus, Lithuania and Slovenia. However, as outlined above in the sample description the countries do not have a huge impact on the study in terms of quantity and Total Assets or are even missing anyway as Slovenia. Overall observations were gathered for 148 banks in the sample and the mean of the measure across these is 66.8 which is in the upper half of the score and shows that overall banks in the sample reside in countries with a lower tolerance for uncertainty.

The second dimension the Long versus Short Term Orientation is a measure that explains how much a culture honours sustainability, traditions as well as openness to learn either from each other or other countries (Hofstede, 2011). Confucianism

was the basis for the development of the measure and is rooted back to the initial work of Michael Minkow published in 2007 (Hofstede, 2011). The score has a scale from 0 to 100 as well and typically East Asian followed by Central and Eastern Europe countries score high (Hofstede, 2011). Low scorers are the English-speaking countries, Latin America or Australia. Companies that reside in countries with high scores tend to plan for long term goals and sustainability rather than short-term profits without sustainable growth. This means that banks in cultures with low scores could have a different risk profile or performance during the timeframe of the study depending on the cultural orientation. Again, the measure could not be gathered for every country in the sample and is, therefore, missing for Bulgaria, Cyprus, Greece, Lithuania, Luxembourg, Malta, Romania and Slovenia. Overall, the measure has been collected for 132 banks in the sample. The mean of all observations is 33.8 which is a value in the lower half of the score's scale and indicates that the banks in the sample reside on average in countries with a greater short-term orientation.

Nevertheless, both measures might not be robust in any case as some of the banks in the sample are large international banks that operate across the globe and are therefore not completely rooted only in one cultural framework.

5.3.6 Governance Control Variables

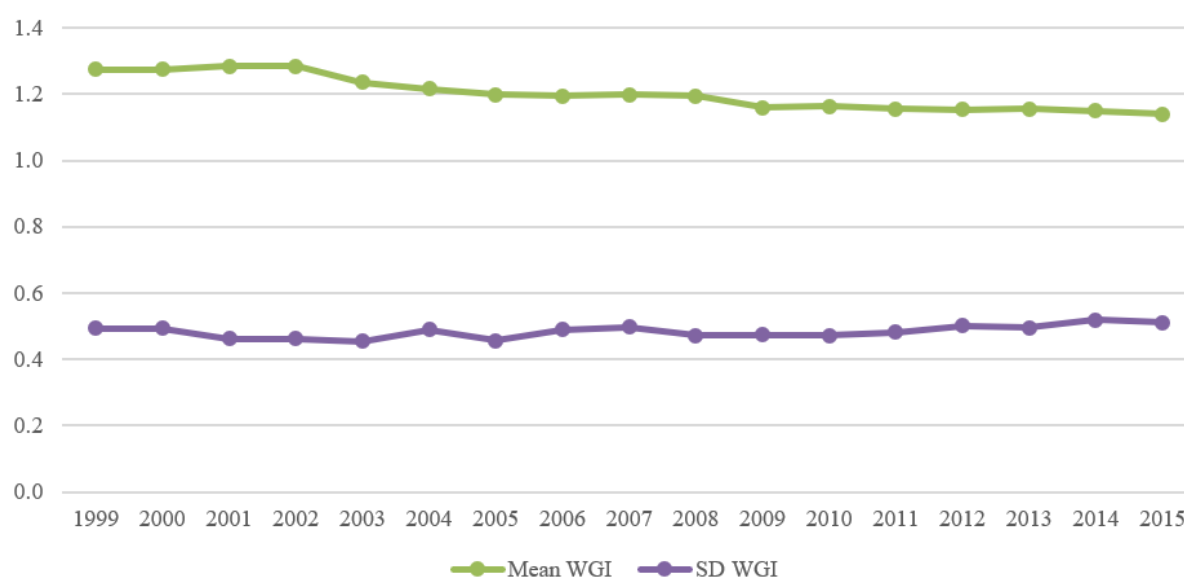
Further following Erkens (2012) and Magee et al. (2013) the author employs a measure that accounts for the overall Governance quality in the respective countries of the study and should be used as a control variable that could influence the risk-taking profile as well as the performance of a bank operating in the respective countries. The measure is based on Worldwide Governance Indicator (WGI) that was developed in a study by Kaufman, Kraay and Mastruzzi (2010) in the context of a World Bank project. WGI covers six dimensions of governance variables for over 200 countries, is frequently updated and is based on information provided by over 25 organisations, which cover surveys of households and corporations, business information providers, non-profit as well as public governmental organisations (Kaufmann, Kraay and Mastruzzi, 2009). The six dimensions include according to Kaufmann et al. (2009):

- Voice and Accountability – measures by how much citizens of a country can participate in decision-making and to raise their voice e.g. free media
- Political Stability and Absence of Violence/Terrorism- measures the probability of destabilization of the government
- Government Effectiveness – measures amongst others the quality of public services
- Regulatory Quality – measures the soundness of policies and regulations
- Rule of Law – measures amongst others quality of property rights as well as enforcement of rights
- Control and Corruption – measures by how much public power is used to grow wealth of public officials

The author used the newest edition of the survey for this study which contains indicators from 1996 to 2016 and values of the six variables are reported in their standard normal units, ranging from -2.5 to 2.5 (World Bank, 2018). Positive values show a better performance in the respective dimension and negative values indicate bad performance in the respective dimension.

In following Erkens (2012) as well as Magee et al. (2013) further, the author used the average of the six dimensions per country per year and constructed an equally weighted index out of these. In years where no data was available, the author used the data from the year before considering that overall governance measures tend to fluctuate in a very slow manner (Love, 2010). This was the case for 1999 and 2001 within the time period of the study.

Figure 50: Worldwide Governance Indicators (average per country over six dimensions)



Source: Own development.

The figure above shows the average of the WGI measure of the banks in the sample per year as well as the standard deviation of the WGI in each year. The overall WGI shows a slight decrease from 1.27 in 1999 to 1.14 in 2015, indicating that the overall Governance has worsened over the time period according to the World Bank (2018). However, the extent of fluctuation, also observable in the above shown standard deviation, is very low. Therefore, the overall governance indicator can be judged on a broader level as stable.

Next, to the overall Governance indicators, other studies employed further firm-specific governance variables next to Risk Governance variables to control for these specifics, e.g. Aebi et al. (2012) or Battaglia and Gallo (2015), and these indicators included board size, board independence and experience. However, the authors (Aebi et al., 2012; Battaglia & Gallo, 2015) did not find a significant influence of these variables on performance as well as risk variables. Therefore,

and since certain overall governance e.g. independence measures are part of the independent variables introduced in the following chapters, the author decided to add no further firm-specific governance variables to the data set.

5.3.7 Crisis Variables

As outlined in the introduction and reflected in the hypotheses of the study the author wants to understand if Risk Governance influences the performance or the risk profile of a bank through the economic cycle and especially in times of financial crisis. What a financial crisis is, and which have taken place in the sample period as well as their impact on the economy has been explained in the financial crisis section of this dissertation already.

In order to control for times of financial crisis, the author compiled a dummy variable that indicates a financial crisis if the value is “1” and no financial crisis if the value is “0”. Based on the financial crisis part of this study and supported by the performance and risk variables introduced and explained above, the author set the variable to “1” for 2001 and 2002 to account for the dot.com crisis, 2008 to account for the global financial crisis and 2011 for the Eurozone crisis. The author chose just the years of extremes for the banks in the sample as expressed in the profit and loss data. If overall GDP data would have been employed, which would have taken the impact in the real economy into account, the time frames accounted as crises would have been too broad. Therefore, the results of this study with regard to the banking sector would have been biased if general macroeconomic factors would have been considered to define the crisis years.

Furthermore, the author assumes, based on the analysis of the financial crises discussed in Chapter 3 of this study, that financial crises are external shocks to the banking industry, which is important for the empirical part. This assumption is grounded in the understanding that failures of banks in risk management as well as governance contributed to the bandwidth of the crises, but that the initial shock came from different markets as for example the overestimation of the new economy or wrong incentives for home-owners in the US.

5.3.8 Independent Variables

To measure, the impact of Risk Governance mechanisms on the robustness of a bank several independent variables must be gathered in the last step. In order to do that the author took the results of the academic, regulatory and expert analysis of this dissertation into account and compiled a unique set of 21 Risk Governance variables. The variables cover the time period from 1999 to 2015 and are manually collected from annual accounts as well as risk reports of the respective banks. Despite other authors using Risk Governance Indices e.g. Ellul and Yerramilli (2013) or Magee et al. (2013) the author decided not to construct such an index as there are several issues that arise with the construction of such an index. On the one hand, there is the issue of the weighting of the single factors in the index and it is very complex to achieve robust results as well as rationales for the weighting (Litz, 2003). On the other hand, and more importantly the author not only wanted to test if Risk Governance overall has an impact on the performance and risk profile of a bank but wanted to understand which specific instruments of Risk Governance are relevant and which are not.

The variables used to measure Risk Governance were grouped as explained before into three areas:

- Risk Governance Structure – Measures that related to organisational settings on the board level
- Risk Committee Oversight Quality – Measures that influence the overall quality of the risk committee’s oversight
- Risk Governance Tools – Measures that account for specific instruments used to gather and influence the risk profile of a bank

Specific variables on the risk committee specifics have been collected in two cases, irrespective of the occurrence of one or the other setup, either if a risk committee is present or if combined audit and risk committee is present. This is because the tasks are carried out the same way as suggested by regulatory advice independently from the setup. However, the structure will be controlled for by collecting and regressing data on the three committee setups explained in more

detail in the following paragraphs. Overall the author gathered 39,359 data points for all 21 variables across the time period from 1999 to 2015.

The table below represents the independent variables in the data set, which have been decided on in Chapter 4 of this study, as before the data type, the collection coding, as well as the source, are shown for each variable.

Table 13: Coding Table Independent Variables

No.	Name	Data Type	Coding	Source	Area
1	<i>Board has a stand-alone Risk Committee</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Governance Structure
2	<i>Board has a stand-alone Audit Committee</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Governance Structure
3	<i>Board has a combined Audit and Risk Committee</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Governance Structure
4	<i>Chair of Risk Committee is also Chair of the Board</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Governance Structure
5	<i>Chair of Risk Committee is also Chair of another Committee</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Governance Structure
6	<i>Chief Risk Officer at board level</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Governance Structure
7	<i>Chair of Risk Committee is independent</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Committee Oversight Quality
8	<i>Majority of Members of the Risk Committee independent</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Committee Oversight Quality
9	<i>Meeting Frequency of the Risk Committee per Year</i>	Real Number	Actual Frequency	Manually collected from financial statements	Risk Committee Oversight Quality
10	<i>IT Qualification is available in Risk Committee</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Committee Oversight Quality

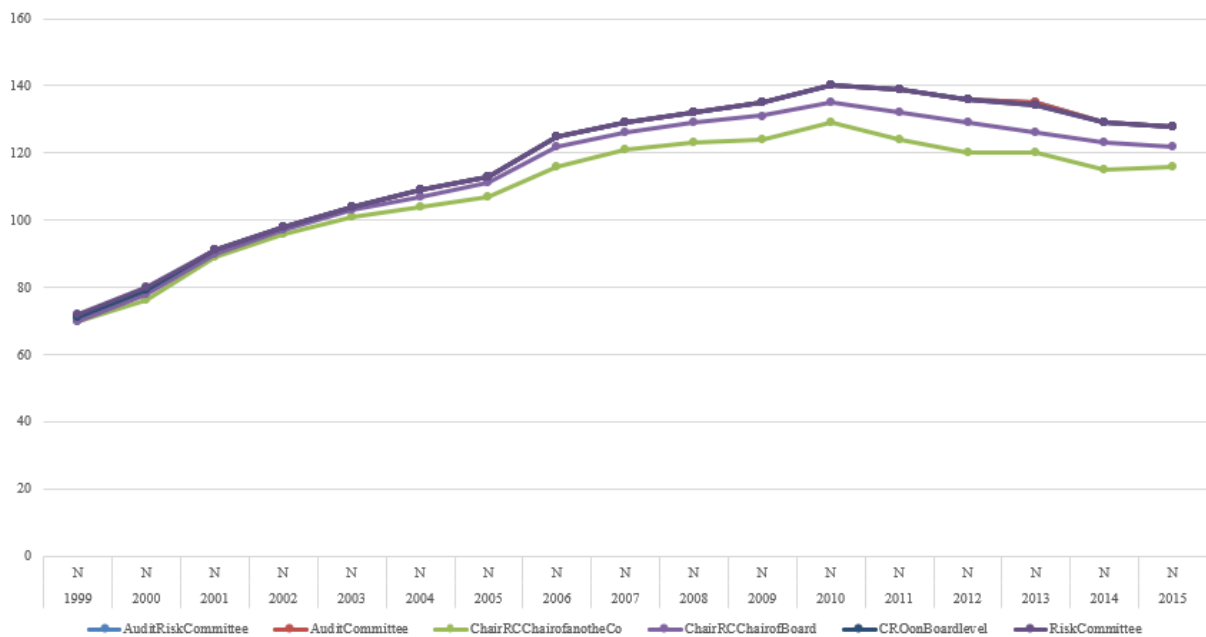
No.	Name	Data Type	Coding	Source	Area
11	<i>Risk Management and Banking Experience is available in the Risk Committee</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Committee Oversight Quality
12	<i>Risk Committee discusses Risk Appetite Statement</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Committee Oversight Quality
13	<i>Risk Committee makes Back testing of Risk Appetite Statement</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Committee Oversight Quality
14	<i>Risk Committee covers Credit Risk</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Committee Oversight Quality
15	<i>Risk Committee covers Market Risk</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Committee Oversight Quality
16	<i>Risk Committee covers Operational Risk</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Committee Oversight Quality
17	<i>Risk Committee covers Reputational Risk</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Committee Oversight Quality
18	<i>Risk Committee reviews the bank's Risk Policies annually</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Committee Oversight Quality
19	<i>Code of Conduct in place</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Governance Tools
20	<i>Risk Appetite Framework in place</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Governance Tools
21	<i>Risk Appetite Statement in place</i>	Binary	'1' if present and '0' if not	Manually collected from financial statements	Risk Governance Tools

Source: Own development.

As already outlined in the sample construction the availability of data for the banks in the larger sample was limited and was one of the biggest challenges of the project. However, the author was able to collect data for 157 European banks. As panel mortality through merger and acquisitions or insolvency, especially in

times of financial crisis, is a topic for this study as well as for most other panel studies the number of observations fluctuates across time. From a practical point of view, it was very challenging to collect annual accounts especially of the smaller banks in early years of the sample as they had to be gathered from the company websites and in some cases, archives did not date back enough to collect data for the early years of the study. This is a further fact leading to an unbalanced panel. The distributions will be discussed in more detail below.

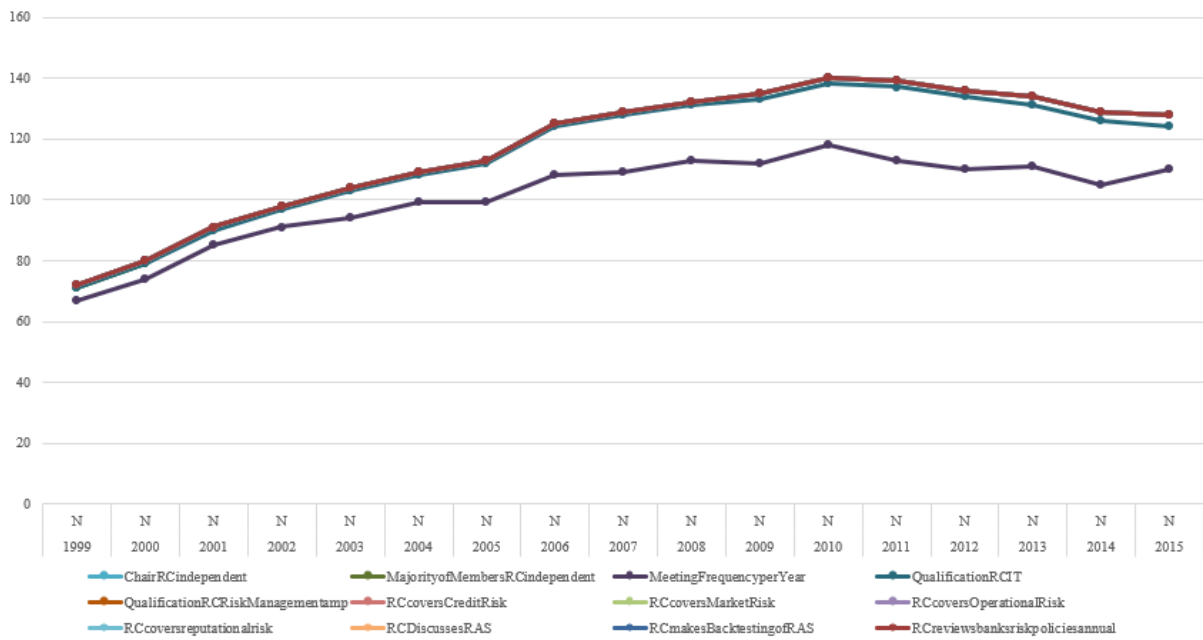
Figure 51: N Risk Governance Structure



Source: Own development.

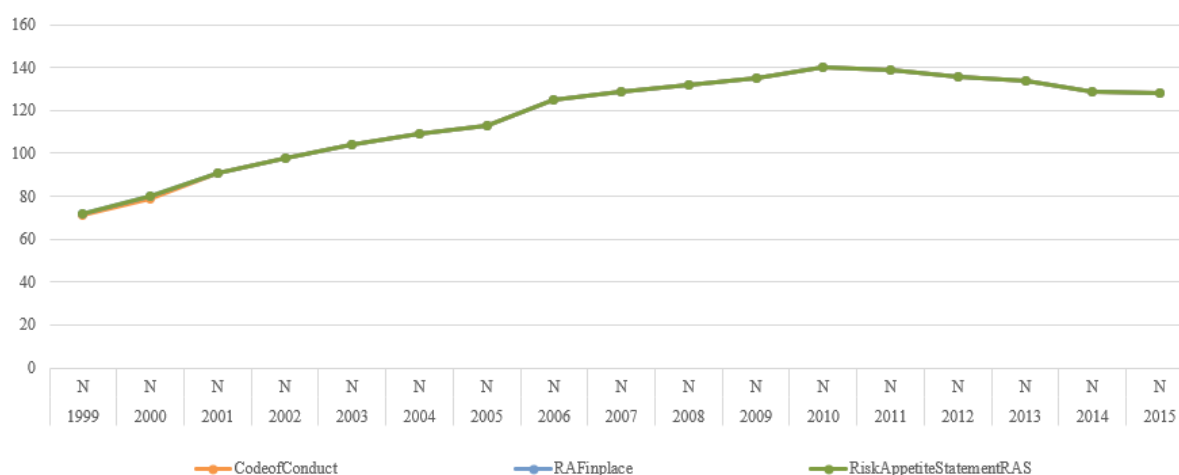
The figure above shows the quantity (N) of observations for the Risk Governance Structure measures. Data on the committees themselves shows overall a better availability than the specific data on the risk committee structure. Furthermore, it is observable as well that the number of observations in the sample increases from around 70 in 1999 to over 130 for the three committee and the CRO measures in 2015 with a peak in 2010 of over 140 observations per measure. As already explained the risk committee structure measures face a lower quantity of available data, especially the information of whether the chair of the risk committee is also the chair of another committee but follows the same trend as the other measures.

Figure 52: N Risk Committee Oversight Quality



Source: Own development.

The figure above shows the quantities (N) of observations related to the quality of the risk committee oversight. As the observations all relate to the risk committee, they follow the same increasing trend from around 70 observations in 1999 to around 130 in 2015 again with a peak of 140 observations in 2010. This clearly shows that the number of banks in the sample has decreased after the crisis of 2008 and consolidation has happened in the sector. However, one exception for the data distribution exists: the meeting frequency of the risk committee, which was only available in a smaller number of cases, fluctuated since 2005 between 100 and 120 observations.

Figure 53: N Risk Governance Tools

Source: Own development.

The figure above shows the quantity (N) of observations for the three Risk Governance tool measures. They trend in total equality in terms of quantity. Starting from around 70 observations in 1999 the number increased to around 130 in 2015. Similar to the case of the measures described before a peak is again observable in 2010 with 140 observations.

5.3.8.1 Risk Governance Structure Variables

The first set of measures is related to the overall structure of the board under Risk Governance aspects. Basel Committee on Banking Supervision (2015) as well as the Financial Stability Board (2013) advocate for improvements regarding the Risk Governance of banks to make it more efficient as well as effective.

In order to test the effectiveness of the measures proposed in statistical terms, the implementation of the measures must be assessed as already discussed in Chapter 4 of this study. Overall 21 mechanisms have been identified by the author based on regulatory as well as experts' proposals. In the following paragraphs, the measures will be shortly introduced and then the distribution of the mechanisms in the sample used in this dissertation will be explained.

Part of the Risk Governance proposals by the BCBS (2015) and the FSB (2013b) as well as FINMA (2016) and EBA (2017) is to increase the effectiveness as well as the efficiency of a board by implementing dedicated committees that focus on specific topics. In the context of Risk Governance that is namely the risk as well

as the audit committee, however, the focus as described previously of this study will be on the risk committee. However, all regulators (FSB, 2013b; BCBS, 2015; FINMA, 2016; EBA, 2017) ask for proportionality, meaning that the organisational setup and the introduced measures and tools should depend on the size, the risk and complexity of the specific bank. In order to fully test the hypotheses of this study, data on the audit committee must be collected as well as it is part of the overall Risk Governance Framework from the regulator's point of view (FINMA, 2016; EBA, 2017).

As described in Chapter 2 of the study, the audit committee itself has an important task in the Risk Governance by overseeing the internal audit function as well as the external audit activities that ensure the review of the Risk Governance framework of the bank. Thus, by doing so it is providing assurance on the effectiveness of the framework. Therefore, the main objectives of the audit committee regarding Risk Governance are to review the internal audit activities related to internal controls of the Risk Governance framework to confirm design appropriateness as well as effectiveness and to assess the view of the external auditor or other third parties on the framework (FSB, 2013)b. Next, to the review, the committee should also ensure that the management of the bank takes appropriate steps in a timely manner to remediate control weaknesses being detected either by internal or external audit (BCBS, 2015). Furthermore, the committee should be a distinct committee from the risk committee which is not just the proposal made by regulators (FSB, 2013b; BCBS, 2015), but also from the experts interviewed in the context of this dissertation. Nevertheless, the audit committee has further tasks as well that expand beyond the Risk Governance and could influence the performance and the risk profile as well. The audit committee also oversees the accounting policies and the practices of the bank as well as the setting of the framework for the internal audit and the financial accounting function (BCBS, 2015).

The measure has not been used largely as an independent variable from other authors in the context of Risk Governance studies, however, as regulatory bodies as well as the expert panel clearly, articulate the importance of the committee the variable will be used in the model. This was indicated during the discussions with

practitioners and is also found in regulatory advice as well (FSB, 2013b). The focus of the audit committee is specifically on the past, meaning that as its decisions and control tasks are always based on accounting measures it is only able to assess past performance and not future developments or risk. The open side here, covering the future or better said taking a forward-looking approach is the responsibility of a distinct committee, namely the risk committee, which will be explained in more detail in the following paragraphs.

The risk committee is the cornerstone of the Risk Governance framework at board level as it discusses and reviews the overall risk strategy of the bank, reviews the risk policies of the bank frequently and ensures that management implements processes for compliance with the policies (FINMA, 2016; EBA, 2017). As indicated above the committee clearly has the task to take a forward-looking approach. Furthermore, the committee should advise the board regarding the Risk Appetite Framework, as well as the risk culture of the bank (FSB, 2013b). As already stated, the described view on the risk committee is shared by the experts interviewed for this study who clearly articulated that the risk committee is one of the major pillars of a Risk Governance framework as it is the main place where the board can intensively discuss and review with a deep focus on the relevant risk areas. Also, other authors as outlined in academic analysis section of this study have put their focus on this committee, amongst others Ellul and Yerramilli (2013) or Magee et al. (2013).

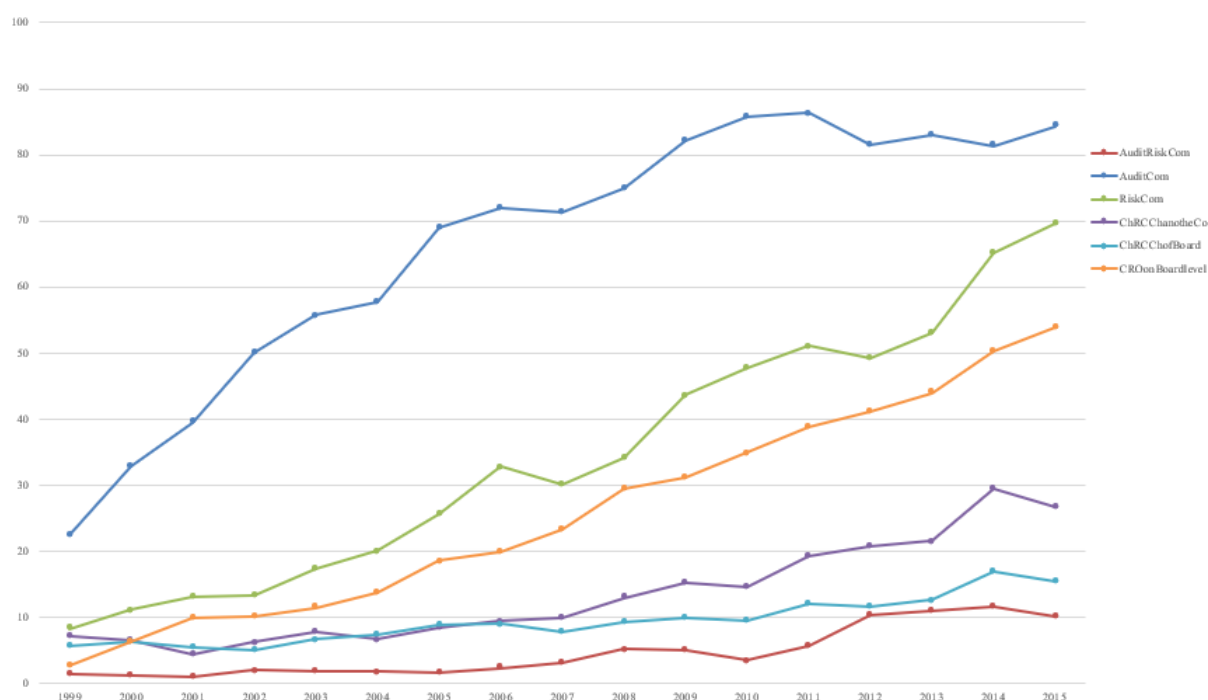
Next, to the stand-alone committees, there are in practice situations where banks especially smaller ones employ a combined audit and risk committee. This approach is a mixture of the above-outlined approaches and combines the task of both committees in one. The mixed setup is according to regulators not the ideal as all (FSB, 2013b; BCBS, 2015; FINMA, 2016; EBA, 2017) strongly advocate for the implementation of a stand-alone risk as well as the audit committee. However, all (FSB, 2013b; BCBS, 2015; FINMA, 2016; EBA, 2017) state that the specific setup of committees must be dependent on the structure, the risk profile and the complexity of a bank. Therefore, in practice there might be a reason to have such a combined committee in place, especially under the light of information exchange and efficiency gains, which would, however, come with a

broader scope and restrictions of available time as such a combined committee must cover both tasks. The experts in the interview section of this dissertation all advocated for the setup of a stand-alone risk committee, but one must account for the fact, that all of them were fulfilling their duties in a board that at the time of the interviews already had the setup required by the regulators. Other academic papers focussing on Risk Governance as outlined in the literature analysis section have not used this measure in their studies but have solely focussed on stand-alone risk committees. However, the author of this dissertation decided to test the regulator's requirements by including data on the risk committee, audit committee as well as the combined risk and audit committee.

One specific that relate to the risk committee and which count into the organisational setup of the board is the “dual-hatting”, as all regulatory bodies (FSB, 2013b; BCBS, 2015; FINMA, 2016; EBA, 2017) argue that the chair of the risk committee should neither be the chair of the board nor the chair of another committee as it would lead to time constraints as well as potential conflicts of interest. The FINMA (2016) takes a special standpoint in this case, as only the dual-hatting of the board and the risk committee is explicitly forbidden. In contrast to the other regulatory bodies, the dual-hatting of the risk committee and other committees is not explicitly forbidden. Some of the experts do not totally agree with that statements from regulators as they argue that time constraints do not occur, but rather efficiency gains are achieved since information can be used in the risk as well as the audit committee if one-person chairs both, even if under differing views. Their main critique is that otherwise information could get lost if the distinct committees are headed by different persons. However, it has been observed that the rationale has been given, in cases where the interviewee holds a dual-hatting role in the board as outlined in the interview section of the dissertation. In order to ensure information, exchange the regulators on the contrary (FSB, 2013b; BCBS, 2015) suggest having effective communication and coordination between the two committees by establishing an official interface. In order to test the proposals by the regulators as well as the ones from the interviewees, the dual-hatting should be assessed taking into account the measures of whether the chair of the board is also the chair of the risk committee and the

measure of whether the chair of another committee is at the same time chair of the risk committee.

The last measure of the Risk Governance structure at board level is the Chief Risk Officer (CRO). This function should, according to regulators be implemented at board level to ensure independence (FSB, 2013b; BCBS, 2015; FINMA, 2016). However, the EBA (2017) paper does not specifically refer to this requirement and leaves it therefore open to the local regulators of the member states. Nevertheless, the role of the CRO is to implement and to oversee an effective risk management framework within the bank (FSB, 2013b). For that the CRO needs enough resources as well as direct access to the board in order to ensure that he can vote against the first line of defence decisions regarding specific transactions or the admired risk appetite. In his or her position the CRO develops risk policies and procedures, defines the Risk Appetite Statement as well as sets the Risk Appetite Framework (BCBS, 2015). The CRO needs according to regulatory proposals (e.g. FSB, 2013b) direct access to the risk committee in order to be able to express his true and unbiased view on the risk position of a bank to the risk committee. Therefore, the CRO with his position in the bank plays a crucial role in the effectiveness of the Risk Governance Framework of a bank. This holds true not just from a regulatory point of view, but practitioners also advocated for the setup of an independent CRO function at board level as it increases the ability of the risk committee to have direct access to risk data and opinions on these. Furthermore, several studies researched in the context of this dissertation have accounted for the installation of such a function at board level e.g. Aebi et al. (2012), Ellul and Yerramilli (2013) or Minton et al. (2014). Therefore, the author decided to use the measure as well in order to test the effectiveness of the Risk Governance framework of European banks.

Figure 54: Distribution of Risk Governance Structure Measures in Percent

Source: Own development.

The figure above shows the development of the occurrence of the above-described variables within the data set over the time period from 1999 to 2015 as a percentage of occurrences in the sample in the specific year. Furthermore, the figure shows normalised measures that account for panel mortality and missing data in the sample. The overall trend for the implementation of an audit committee as well as a risk committee and a CRO at board level is constantly rising since 1999. The most implemented feature is the audit committee, which is being implemented in almost 85% of the banks in the sample from 2009 on. Afterwards, the measure is trending around that level until the end of the time period. However, one must consider the combined risk and audit committee as well, which started to rise from 2010 on to a level of over 10% in the sample, leading to the fact that from 2010 on almost all banks in the sample had an audit committee installed. The audit committee might be one of the top scores as its implementation in the board structure is not just a financial industries phenomenon since the risk committee is advocated for on a broader scale, at least since the Sarbanes Oxley Act came into force in 2002 (Government Publishing Office, 2002), which also influenced large public companies in Europe e.g. due to listings in the United States.

The risk committee also follows an upward trend but starts at a very low level of only 8% in 1999 and increased especially after the global financial crisis in 2008 to almost 70 % of banks having the risk committees being implemented in 2015. Also, in this case, one must consider that the combined audit and risk committee adds further occurrences as well. Therefore, overall 80 % of the banks had installed a risk committee on board level in 2015, which was well before the latest regulatory changes in 2016 and 2017 by the FINMA and EBA. Therefore, one can assume that the industry itself might have already understood that this type of committee is necessary and could add value to the Corporate Governance of banks.

The installation of a CRO at board level also shows a steady increasing trend to a high of over 50% occurrence in the sampled banks, advocating for the growing importance of the function in the context of effective risk management. However, the number of banks that implemented the proposals of regulators is still very low compared to the importance the measures have from a regulatory perspective (FSB, 2013b). Nevertheless, one must consider the proportionality principle also addressed by the regulators, which means that less complex and smaller banks do not necessarily need to install all requirements (e.g. BCBS, 2015; FINMA, 2016). This will be further assessed in a later stage, where the author will analyse the distributions of the single measures compared to clusters of banks with specific Total Asset sizes.

The two other measures exploring the dual-hatting, either of the chairman of the board or the chairman of another committee, employed also experience a growth trend, however at a lower level compared to the growth rate of the risk committee as well as the audit committee over the time period of the study. As of 2015 in approximately 20% of the risk or combined committees the chair is also the chairman of the board and in approximately 30% the chair is also chair of another board, indicating that this setup which is seen negatively from the regulators' perspective (FSB 2013b; BCBS, 2015) is being used in the industry frequently as advocated by some of the interviewees.

5.3.8.2 Risk Committee Oversight Quality Variables

As the focal point of the study is the risk committee, the second set of mechanisms analysed is related to the risk committee oversight quality and takes into account measures that should improve the Risk Governance according to several regulators (FSB, 2013b; BCBS, 2015; FINMA, 2016; EBA, 2017).

The first two measures analysed speak to the independence of the members of the risk committee either to the chair or to the majority of members. All regulators in the scope of the study advocate for the independence of the majority of the members of the risk committee (FSB, 2013b; BCBS, 2015; FINMA, 2016; EBA, 2017). This view is shared by the practitioners as they also advocated during the interviews for the independence of the majority of the committee. Academic research related to Corporate Governance as explained in Chapter 4 of this study is not that convinced that independence of committees is key to the success of a bank, as Fernandes et al. (2018) indicate that banks due to their specific challenges as discussed in Chapter 2 of this study need more advice than control, arguing against the majority of independent directors. Which is since certain internal know-how is needed by directors to provide value-adding advise and this is more the case for non-independent directors as explained in Chapter 2 of this study. Also, empirical evidence is hinting in that direction as for example Erkens et al. (2012) find that banks with higher independence experienced a worse stock performance than banks with more dependent directors during the financial crisis of 2007 and 2008. Therefore, the outcome of this measure in the context of panel data analysis will be very interesting.

With regard to the independence of the chair, all (FSB, 2013b; BCBS, 2015; EBA, 2017) except one regulator (FINMA, 2016) are very clear and ask for the independence of the chair. The FINMA (2016) does not explicitly state that the chair must independent nor does it ask for the opposite. Practitioners do not argue against it. From an academic perspective, the same holds true as already explained above.

For coding reasons independence has been defined in alignment with BCBS (2015, p.3) the following way: “A non-executive member of the board who does

not have any management responsibilities within the bank and is not under any other undue influence, internal or external, political or ownership, that would impede the board member's exercise of objective judgment.”

The next measure in scope is the meeting frequency of the risk committee as one of the assumptions is that the more often a committee meets the better is the oversight quality by the respective committee due to more time to conduct their monitoring role. Boards or committees that meet more frequently are called proactive boards or committees (Andres & Vallelado, 2008). However, the higher frequency could also be due to bad performance and a sign of reactive boards (Andres & Vallelado, 2008) leading to negative governance outcomes in the end. The practitioners argued for a higher frequency as they see the need for an in-depth discussion of risk topics especially considering the complexity as well as the opaqueness of banks. Regulators on the other side do not argue for specific meeting frequencies of the committee (FSB, 2013b; BCBS, 2015; FINMA, 2016; EBA, 2017). Therefore, it will be a further value added by the study to find out if statistical evidence can be provided for either reactive or proactive boards.

Next, to the variables of independence and meeting frequency mentioned above, a further driver of the oversight quality could also be the qualification of the board and specifically committee members. Practitioners consistently voiced that the qualification is key, which would form a board theory perspective as discussed in Chapter 2 of the study mean that an increased know-how could lead to an improved advisory capability, which in the end would also tie into the need for a higher proportion of advice in the case of banks discussed before as indicated by Fernandes et al. (2018). Two specific areas of know-how advocated for by the practitioners are on the one hand risk management capabilities from a financial institution's perspective and on the other hand specific IT skills related to financial institutions. Especially, the latter is rather surprising on the first glimpse, however, it is logical if one considers that banks are mainly driven by IT systems and applications as well as cyber-risk being one of the current hot topics in the banking community (ECB, 2019c). Therefore, it makes sense to have such capabilities in a committee and the board from a practitioner's perspective. Regulators share the view on the risk management capabilities as all of the

relevant ones ask for specific capabilities that are related to that (FSB, 2013b; BCBS, 2015; FINMA, 2016; EBA, 2017). However, as before the FINMA (2016) is not as concrete as other regulators and asks only for specific know-how, which is needed for the committee work rather than specifically mentioning risk management skills. However, the IT capabilities mentioned by the practitioners are not mentioned at all in the regulatory framework assessed. Nevertheless, as one assumes IT risk to be part of the operational risk of a bank and which is covered by the risk committee, one could argue that this skill set is implicitly required by regulators as well. Therefore, it makes sense to test in the study, if having such IT-know how in the committee makes a difference when it comes to Risk Governance and its influence on risk profile and performance of a bank through the economic cycle. Other researchers have as discussed in Chapter 4 of the study focused on the experience as well, but more related to financial experience or executive experience in a bank (Aebi et al., 2012; Fernandes & Fich, 2013) and found mixed results. For coding purposes of this study, the following definitions were made by the author:

- Risk Management & Banking Experience: Person having actively worked as a commercial and or investment banker or for an insurance company. Relevant firms include banks, funds and insurances.
- IT-Experience: Person having actively worked either in an IT company or IT department of a financial institution. Furthermore, a person with a university degree related to IT.

The next measures relate to the Risk Appetite Statement and focus on whether it is discussed as well as if it is back tested in the course of the risk committee meetings. Even if it disturbs the reading flow at this stage, the author will introduce the Risk Appetite Statement only in the next sub-chapter, as it is a core tool being used by the risk committee and the board and will, therefore, be part of the Risk Governance Tools section. However, important in this case is the application of the respective tool by the risk committee and the monitoring of the compliance with it by the risk committee. Practitioners do support both tasks as they enhance the oversight quality from their perspective. On the one hand, advice can be given when setting the statement and also monitoring against it can be

conducted during the year. Regulators do see both tasks as part of the job description of the board and the risk committee, linking it to the advice on risk appetite as well as the oversight of the implementation of the risk strategy, which is being expressed by the Risk Appetite Statement (FSB, 2013b; BCBS, 2015; FINMA, 2016; EBA, 2017).

The next four measures are related to the risk types covered by the risk committee in the course of the committee meetings. First of all, in the next paragraphs, the author provides an overview of the specific risk types and their definition, namely, credit, market, operational as well as reputational risk.

- Credit Risk is traditionally the main risk of a bank in short defined as “...the risk that counterparties in loan transactions and derivatives will default” (Hull, 2015, p. 41). In terms of credit risks, banks should be diversified and pay attention to the diversity of their borrowers. Lending for example 25% of the total credit exposure to one borrower might lead to distress for the whole bank if that borrower cannot repay the loans.
- Market risk arises when certain market variables move into an unfavourable direction. The EBA (2019) defines it as “...the risk of losses in on and off-balance sheet positions arising from adverse movements in market prices.” And the Basel Committee on Banking Supervision (2019, p. 13) states that “Market risk is defined as the risk of losses arising from movements in market prices. The risks subject to market risk capital requirements include but are not limited to default risk, interest rate risk, credit spread risk, equity risk, foreign exchange (FX) risk and commodities risk.”
- Operational Risk is in short, “...the risk of loss arising from inadequate or failed internal processes, people, and systems or from external events” (Hull, 2015, p. 682). The variety of the underlying events is wide and ranges from mistakes in the execution of transactions, market entries, fraud, litigations legal or compliance-driven and natural disaster leading to physical damage of building facilities and so on. Recently the topic of cyber-attacks has also become more and more important and needs to be considered. It is therefore not surprising that operational risk is often “considered to be the biggest risk” for banks (Hull, 2015, p.42).

The quantification on the one side, as well as the handling of operational risk, is much more difficult than it is for other risks like credit or market risk. For the latter risk categories, the management and the board can make a decision on how much risk they are willing to take and whether collateralising elements to reduce such risk shall be bought. Operational risk, on the contrary, is part of the business. It is therefore even more important to identify the operational risks and to decide whether insurance is required. However, there is always a remaining risk that huge losses will occur without the risk having identified before.

- The Basel Committee on Banking Supervision (BCBS, 2009, p. 19) defines reputational risk as

“...the risk arising from negative perception on the part of customers, counterparties, shareholders, investors, debt-holders, market analysts, other relevant parties or regulators that can adversely affect a bank’s ability to maintain existing, or establish new, business relationships and continued access to sources of funding”.

Allen (2003) notes that even though a certain behaviour or a contract is in line with legal and regulatory requirements if it is perceived by a customer or the public as unfair or leads to an inferior position of one party this might lead to serious loss of reputation. All contracts and transactions should, therefore, be reviewed by business management on whether the customer fully understands it, how it is or could be perceived by the environment and how it potentially affects the institution's reputation.

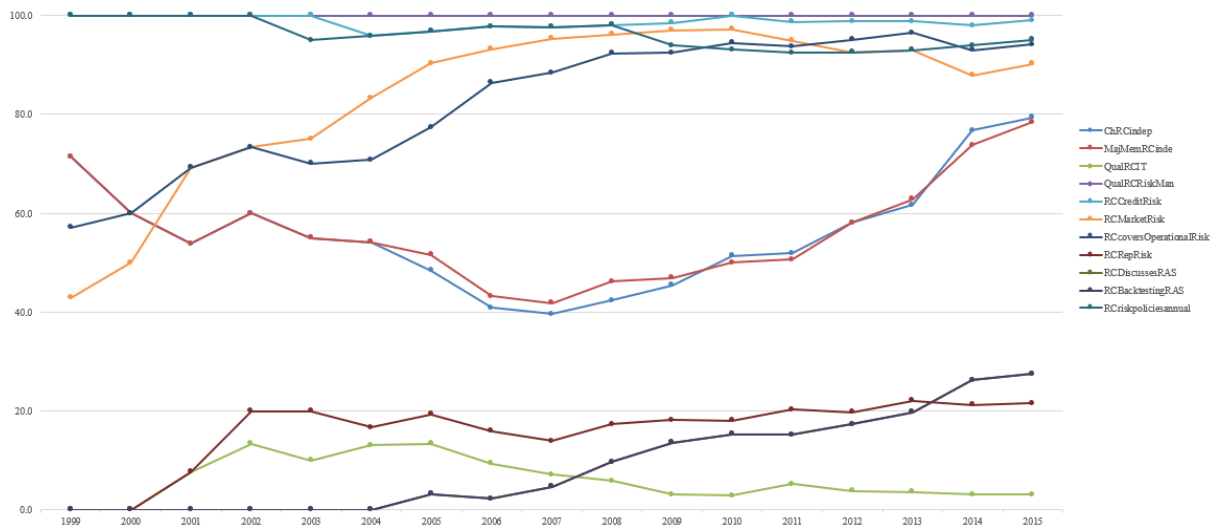
Due to the special relation of trust between a financial institution, customers and other stakeholders the reputation of a single bank and the whole financial sector is of utmost importance. The identification and management of reputational risks is therefore essential to be a reliable business partner and hence be successful in the long-term. This type of risk is especially important keeping the enlightened Shareholder Theory in mind, which asks for the alignment of stakeholder and shareholder interests to ensure the long-term success of a company. Through the consideration

and management of reputational risk the alignment of the interests can be supported.

From a regulatory perspective, BCBS (2015) and EBA (2017) specifically require the risk types to be covered, which is in line with the practitioners, who emphasised that these are the relevant risks. However, the practitioners assumed that from a broader perspective liquidity risk is important for them as well but is somehow linked to the overall market risk of a bank and therefore included in this category. The FINMA (2016), in contrast, is not as explicit as the other two regulatory bodies. Distinct risk categories are not mentioned in their (FINMA, 2016) guideline; however, it is referred in this context to the ERV (Schweizerischer Bundesrat, 2019), which provides more clarity around the single risk types to be covered by the risk committee, which are at a minimum credit, market, real estate and operational risks. In contrast to the EBA (2017) reputational risk is not explicitly covered by the FINMA (2016) as a relevant risk type.

The last measure to be covered is if the risk committee reviews the bank's risk policies on an annual basis. The BCBS (2015) proposals specifically ask for this, whilst the EBA (2017) does not refer at all to such a requirement. Nevertheless, the FINMA (2016) sees the need for an annual review of the risk management framework, which could include the policy landscape and policies as well. The practitioners mentioned it as one of the tasks but did not focus on their responses specifically on the item.

In the following section, the distribution of the specific measures will be discussed based on the below figure.

Figure 55: Distribution of Risk Committee Oversight Quality Measures in Percent

Source: Own development.

The figure above shows the development of the occurrence of the above described variables for all banks with a risk committee within the data set over the time period from 1999 to 2015 as a percentage of occurrences in the sample in the specific year. Furthermore, the figure shows normalised measures that account for panel mortality and missing data in the sample. Data has been gathered for both risk committees as well as risk and audit committees to gain a complete picture of the oversight quality.

Starting with independence, one can observe that the topic became more and more important as it clearly increased since 2007 for the chair as well as the majority of the members. Leading to the fact that in 2015 almost 80 % of the risk committees had both measures. A differentiation between the two is not observable for the banks in the sample. Therefore, the measures are either implemented or not by a bank.

Qualification measures and their distribution in the sample show interesting results with two poles. Whilst risk management and banking experience is present in each risk committee established in the sample over the whole time period, IT know-how is almost not present in the sample with under 10% of occurrence in the later years of the sample. Furthermore, there is no trend observable which would hint into the direction of increasing importance. Therefore, the experts' view on the IT know-how is at least from a descriptive data perspective not

supported. However, if statistical evidence exists that the know-how has influence on risk and return then it must be observable in the panel data analysis. Overall, the results show that risk management and banking experience is understood by all banks with risk committees in the sample as a crucial factor of the committee.

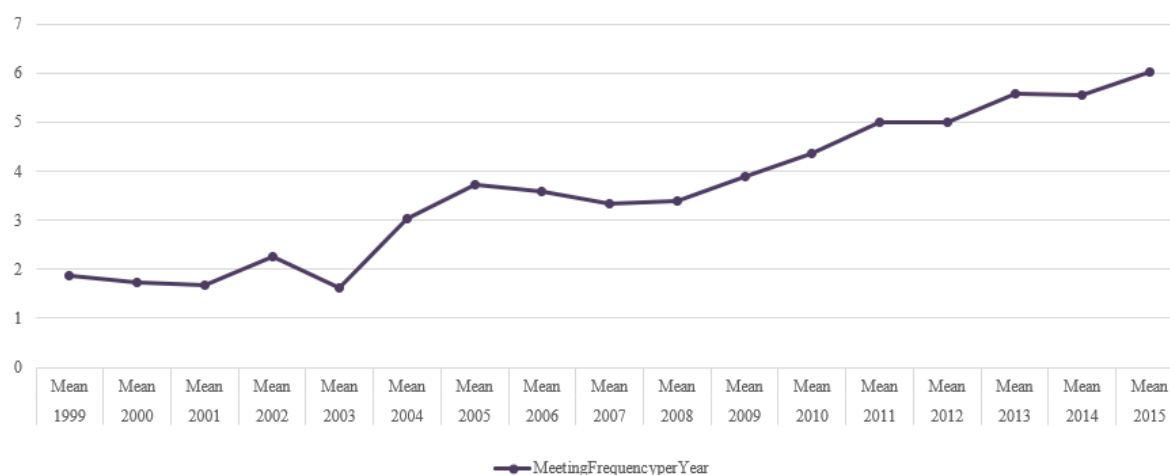
When it comes to risk types three of them are covered by almost every committee over the time period in scope, these are credit, market as well as operational risk. Reputational risk, however, picked up in coverage first after the global financial crisis and is from a coverage perspective still at a low level under 50% of the respective banks with risk committees. This might be because compared to the former risk types, reputational risk is a rather new risk type and therefore not yet covered by every bank. However, it became obvious in the global financial crisis that banks must worry about reputation if they do not want to lose the trust of stakeholders and customers. This has been also indicated by the expert's interviewed. However, the figure shows that reputational risk is a focus topic and it is understandable, why the regulators do see it as part of good Risk Governance. As discussed before, only FINMA (2016) does not specifically ask for the coverage of this risk type.

Evidence for the discussion as well as back testing of the Risk Appetite Statement is straight forward. This means, if a bank has a Risk Appetite Statement implemented, the risk committee also discusses the respective back tests the respective as observable in the figure of the Risk Governance tools as well. This means that the regulatory requirements and guidance are part of the best practice already, at least for the banks setting up a Risk Appetite Statement.

Also, the annual review of this risk policies is clearly part of the best practice based on the evidence of this study. Almost all risk committees implemented to the yearly review of the policies and it seems to be the case that based on that no specific further guidance of regulators is needed, which might explain, why do they not explicitly cover this requirement as indicated in the regulatory analysis of this study.

The last measure not covered yet is being shown below and is the mean of the meeting frequency in the sample of banks, which have established a risk committee.

Figure 56: Mean Meeting Frequency



Source: Own development.

What one could observe in the figure above is that the meeting frequency shows an increasing trend as well. The trend starts with a mean of around two meetings per year in 1999 to around six meetings per year in 2015. This aligns with the view of the practitioners, which clearly argued that they need to meet more often in a year and that quarterly meetings would not be enough. The question, however, of whether boards are pro- or re-active cannot be answered based on the figure above. This has to be answered during the panel data analysis, which is able to judge statistical relevance as well as causality.

5.3.8.3 Risk Governance Tool Variables

The last set of mechanisms to be discussed is related to the tools a board must implement if it wants to enhance the Risk Governance of a bank according to the relevant regulators (FSB, 2013b; BCBS, 2015; FINMA, 2016; EBA, 2017).

The first measure to be covered is the Code of Conduct, which is explicitly required by BCBS (2015) as well as the EBA (2017). The FINMA (2016) does not explicitly ask for such a code but requires the board to introduce guidance related to the corporate culture. Also, experts have seen the Code of Conduct and

a risk culture as one of the cornerstones of a good Risk Governance as all policies and processes are worthless as long as the corporate culture is corrupt. Therefore, all experts strongly advised to set a Code of Conduct in a bank. Furthermore, the Code of Conduct helps management to align the interests of stakeholders with the ones of the company by following the ideas of the enlightened Shareholder Theory. This should help to achieve the goal of long-term success of the company as it ensures that stakeholders that are critical to the aim are satisfied.

In the following, the concept will be explained in more detail. The subject of adequate risk culture and the implementation of an accompanying Code of Conduct are getting more and more into focus at all levels, i.e. for practice, for regulators and for scientific research although for the latter the available studies are still rare. The Group of Thirty (G30) published their special report on ‘Banking Conduct and Culture: A Call for Sustained and Comprehensive Reform’ in 2015 which was followed-up on in 2018 by the report on ‘Banking Conduct and Culture: A Permanent Mindset Change’.

The G30 (2018, p. 1- 2) define culture

“...as the mechanism that delivers the values and behaviours that shape conduct and contributes to creating trust in banks and a positive reputation for banks among key stakeholders, both internal and external (...) culture comprises not only conduct and behaviours, but also the bank’s values and ethics.”

Focusing on risk culture more precisely the European Banking Authority (EBA, 2017, p. 4)

“...means an institution’s norms, attitudes and behaviours related to risk awareness, risk-taking and risk management, and the controls that shape decisions on risks. Risk culture influences the decisions of management and employees during the day-to-day activities and has an impact on the risks they assume.”

Risk culture is a key element for a financial institution and a group-wide and integrated risk culture should be implemented via policies, communication and dedicated training. It is further not an exclusive topic for the internal control function departments or risk management specialists but rather for all employees.

The EBA (2017) identifies four key areas essential for sound risk culture. Firstly, noted is the tone from the top involving the board and management as the cultural framework setting and communicating body. Moreover, they should be a role model and identify themselves with the promoted values. Secondly, accountability for all employees is another key area. The employees must be aware that they are responsible for their actions and the risk they take in the name of the firm. Thirdly, an open and effective communication environment must be installed to foster the constructive involvement and engagement of all employees throughout the organisation. Finally, appropriate incentives aligned with the financial institutions risk framework and long-term interest must be implemented. The professional and ethical values being aimed at, need to be enshrined in a Code of Conduct or Code of Ethics. Such code should overall protect the interests of shareholders and customers and foster a culture of accountability and honesty in the group (BCBS 2015). The Basel Committee further details that the code should explicitly prohibit illegal activities for example fraud, sanctions breaches, bribery and corruption, violation of consumer rights, financial misreporting or misconduct. It should clearly state that ethically correct behaviour and job fulfilment in line with laws and regulations is expected from all staff. The Institute of Business Ethics (2019) names crucial elements for the development of a Code of Conduct. The core values of the corporation need to be defined as they are the foundation of the code and should guide employees through critical dilemmas. These values need, of course, to be supported by the board and senior leadership functions. It is essential to understand what is unique to the individual firm and what is important for the people affected. The simple duplication of another's institutes code will most likely not be successful. Before launching the code company-wide it should be tested with a cross-section and a mixed group of employees from different, levels, departments and locations. Depending on the result changes need to be implemented. Following that, the launch of the code should be memorable and employees should be actively engaged to discuss the code among themselves but also with the management. During this process, general awareness of ethical behaviour should be raised. However, the initial presentation is only the beginning and should be followed by continuous

monitoring, training and case studies as well as a reward scheme for those proving ethical behaviour.

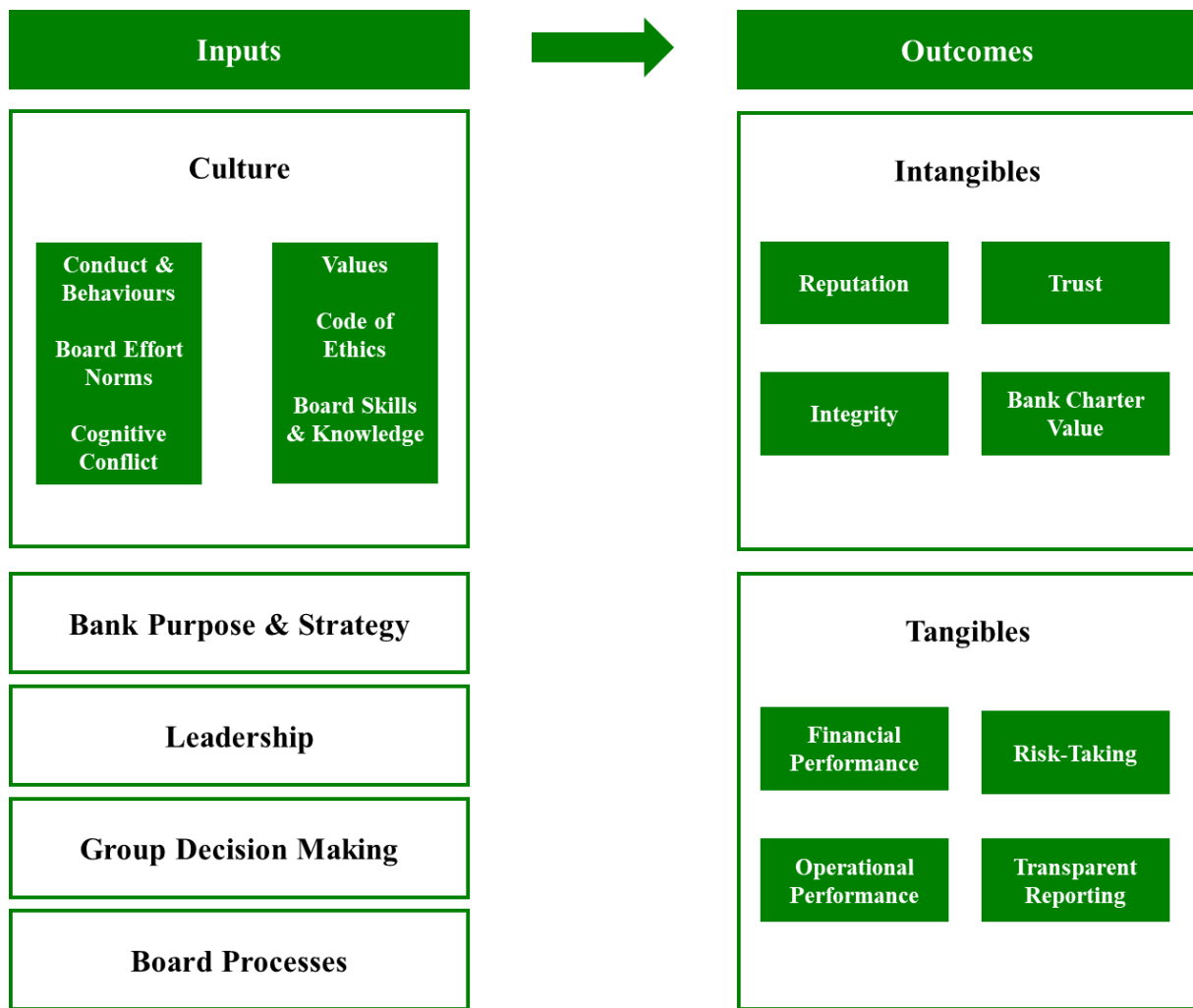
The code itself should be concise and simple to make sure it is unambiguous for all staff. It should apply to all employees, have a global scope and clearly define expected behaviour. A multi-disciplinary team comprised of all departments ranging from Risk Management, Communications, Internal Audit, Human Resources, Business Units, IT or Security should review and edit the code to make sure it reflects the whole organisation's culture and values (Deloitte, 2005).

“The culture of each firm is unique to that organisation and it is not empirically right or wrong; rather, it has to be right for that organisation” (G30, 2018, p. 2). Banks facing scandals or conduct issues do not have a bad culture in general. However, certain elements of the corporate culture may be leading to inappropriate behaviour and thus resulting in undesirable outcomes. Banks should, therefore

“...specify their cultural aspirations through a robust set of principles, and fashion mechanisms that deliver high standards of values and associated conduct consistent with the firm’s purpose and broader role in society. (...) Banks should work to fully embed the desired culture through ongoing monitoring and perseverance, drawn from four key areas: senior accountability and governance, performance management and incentives, staff development and promotion, and an effective three lines of defence” (G30, 2015, p. 12-13).

Culture itself cannot easily or not at all be measured or observed whereas this is possible for behaviour and the stipulated conduct codified in the respective guidelines of the bank. In fact, these are the only observable elements of culture derived by the underlying norms, beliefs or unspoken rules (G30, 2018).

Culture is constituted of many complex layers combining structural elements like policies or technology with human aspects like values and norms. The criteria and the positive results of sound culture and conduct are summarised by Gontarek (2016) in the following overview.

Figure 57: Input and Output Criteria of Sound Culture and Conduct

Source. Gontarek (2016, p. 124).

Sceptical voices are concerned that the implementation and particularly the internalisation of adequate culture and conduct are not yet embedded throughout the financial industry. The more time passes after the disastrous outcomes of the financial crisis the more risk increases that banks return to old behaviour and practices. This is especially true if interest rates rise again and post-financial crises regulations are rolled back (G30, 2018). The topic and focus on culture and conduct is therefore of even greater importance than ever before. This is supported by the view of the practitioners interviewed in the context of this study as well. They all confirmed that risk culture expressed through a Code of Conduct is key to effectively manage the risks of the bank. Therefore, this study is adding value also to this discussion by testing the concept based on statistical data.

The next two measures, namely, the Risk Appetite Statement and the Risk Appetite Framework are interlinked and will, therefore, be explained together in more detail. By making an investment decision, the point is mainly the risk-return profile of the investment. The term risk appetite in the past has often only been expressed in monetary figures, namely the potential gain of an investment and the potential loss on the other side of the project fails. However, the concept of risk appetite is far more than that and includes a broad range of concurrently and interdependent risk categories, the demands of stakeholders as well as strategical handling (Govindarajan, 2011). In 2013 the Financial Stability Board (FSB) published ‘Principles for An Effective Risk Appetite Framework’. Risk Appetite is accordingly the aggregation of risks a financial institution is willing to take to achieve its business goals (FSB, 2013a).

The main elements are the Risk Appetite Framework and the Risk Appetite Statement. The Risk Appetite Framework is a global concept that is defined as

“...the overall approach, including policies, processes, controls, and systems through which risk appetite is established, communicated, and monitored. It includes a Risk Appetite Statement, risk limits, and an outline of the roles and responsibilities of those overseeing the implementation and monitoring of the RAF. The RAF should consider material risks to the financial institution, as well as to the institution’s reputation vis-à-vis policyholders, depositors, investors and customers. The RAF aligns with the institution's strategy” (FSB, 2013a, p. 2).

The Senior Supervisors Group (2010) suggests that a RAF should:

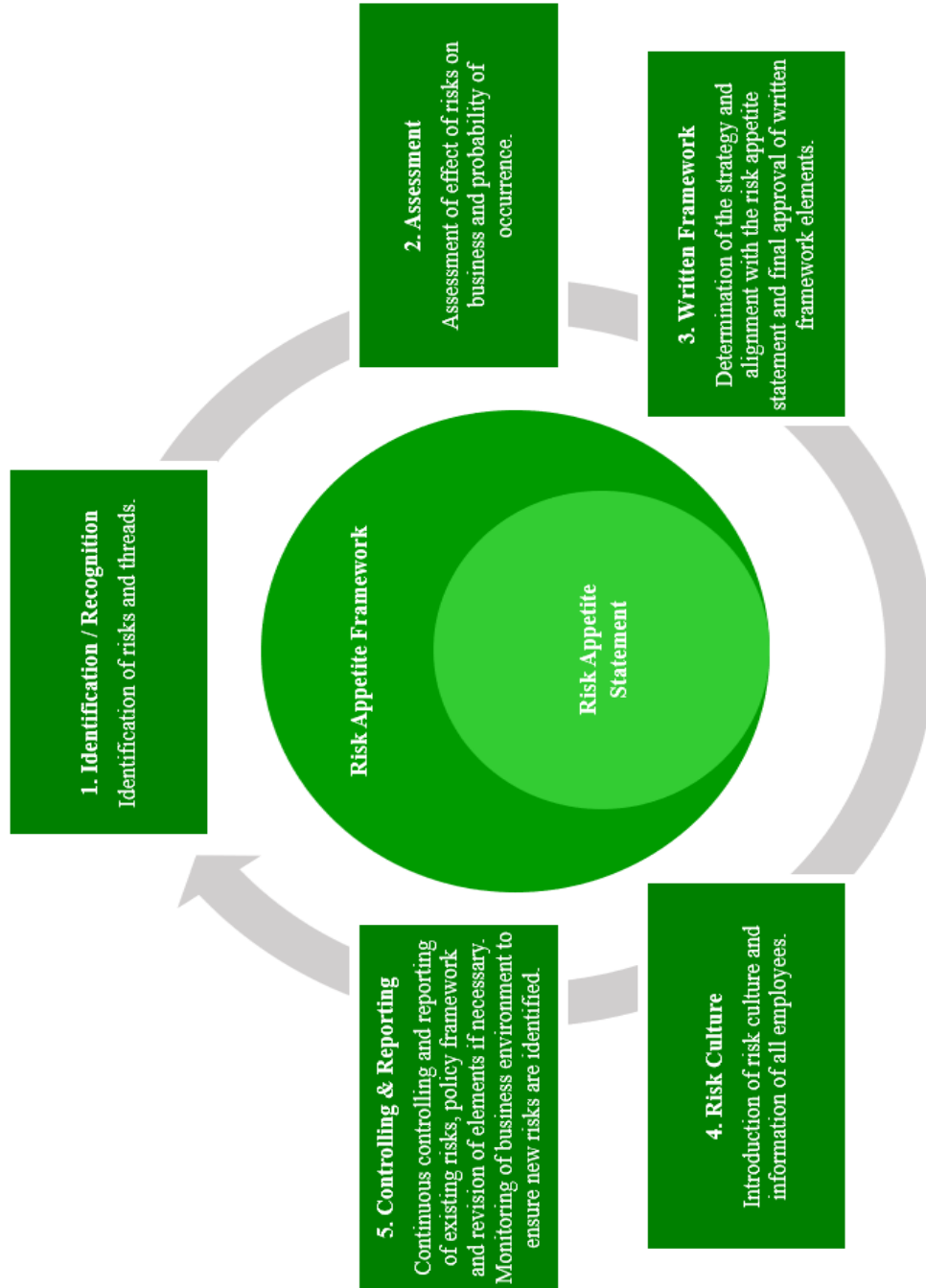
- a) Help derive strategic decisions;
- b) while considering a range of scenarios establish a forward-looking and clear view on the desired risk profile including required processes;
- c) be flexible and consistent at the same time to adjust to environmental changes;
- d) be discussed regularly to evaluate how to manage unexpected events;
- e) start with a Risk Appetite Statement describing the relevant risk, business and product areas.

The Risk Appetite Statement (RAS) as the main element of the RAF is

“...the articulation in written form of the aggregate level and types of risk that a financial institution is willing to accept, or to avoid, in order to achieve its business objectives. It includes qualitative statements as well as quantitative measures expressed relative to earnings, capital, risk measures, liquidity and other relevant measures as appropriate. It should also address more difficult to quantify risks such as reputation and conduct risks as well as money laundering and unethical practices” (FSB, 2013a, p. 2).

For RAF as well as for RAS, the Basel Committee on Banking Supervision adopted in 2015 the same definition. RA-Framework and -Statement are essential for the risk handling process and should be the focal point of the process. Figure 58 has been expanded to demonstrate that the whole ‘risk-process’ cycles around the two.

Figure 58: Risk Handling Cycle



Source: Own development based on Walker (2009) and Tricker (2015)

The implementation and subsequent updating of the RAF is a continuous and iterative process requiring the involvement of the whole bank. This includes the consideration of the financial institutions business plan, capital planning as well as the compensation scheme. The FSB (2013b, p. 4-5) details that

“...an effective RAF should:

- a) establish a process for communicating the RAF across and within the financial institution as well as sharing non-confidential information to external stakeholders (e.g. shareholders, depositors, fixed income investors);
- b) be driven by both top-down board leadership and bottom-up involvement of management at all levels, and embedded and understood across the financial institution;
- c) facilitate embedding risk appetite into the financial institution’s risk culture;
- d) evaluate opportunities for appropriate risk-taking and act as a defence against excessive risk-taking;
- e) allow for the Risk Appetite Statement to be used as a tool to promote robust discussions on risk and as a basis upon which the board, risk management and internal audit functions can effectively and credibly debate and challenge management recommendations and decisions;
- f) be adaptable to changing business and market conditions so that, subject to approval by senior management and the board as appropriate, opportunities that
- g) require an increase in the risk limit of a business line or legal entity could be met while remaining within the agreed institution-wide risk appetite;
- h) cover activities, operations and systems of the financial institution that fall within its risk landscape but are outside its direct control, including subsidiaries and third-party outsourcing suppliers.”

The group-wide Risk Appetite Framework must be established by the Board of Directors and is developed among CEO, CFO and CRO. An effective Risk Appetite Statement on a more detailed level

“...should:

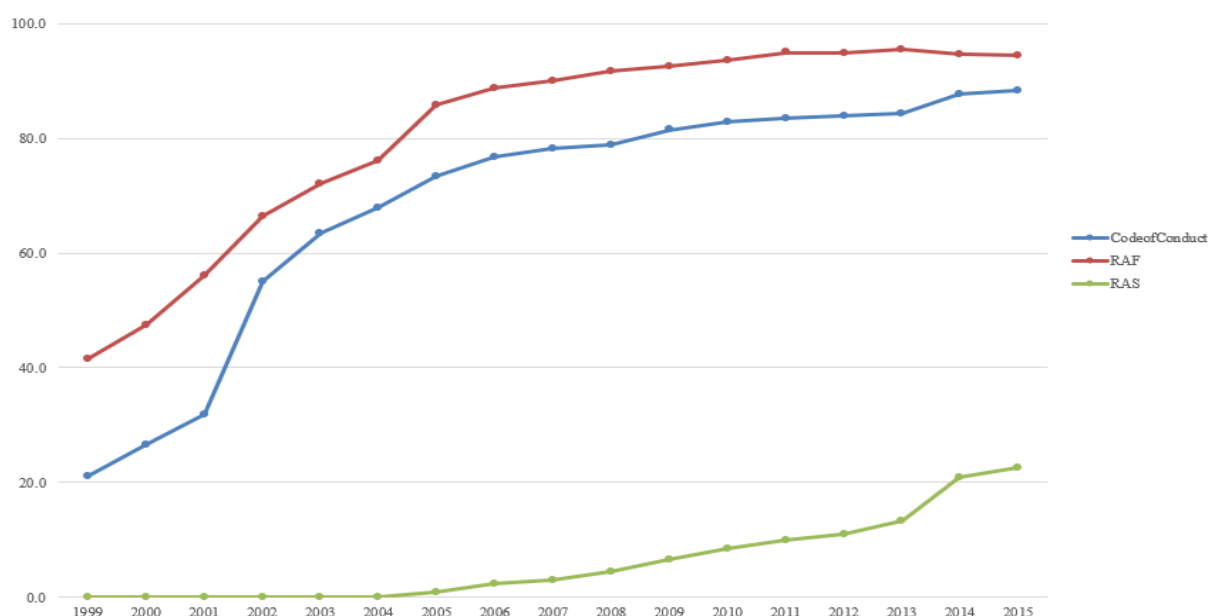
- a) include key background information and assumptions that informed the financial institution's strategic and business plans at the time they were approved;
- b) be linked to the institution's short- and long-term strategic, capital and financial plans, as well as compensation programs;
- c) establish the amount of risk the financial institution is prepared to accept in pursuit of its strategic objectives and business plan, taking into account the interests of its customers (e.g. depositors, policyholders) and the fiduciary duty to shareholders, as well as the capital and other regulatory requirements;
- d) determine for each material risk and overall the maximum level of risk that the financial institution is willing to operate within, based on its overall risk appetite, risk capacity, and risk profile;
- e) include quantitative measures that can be translated into risk limits applicable to business lines and legal entities as relevant, and at the group level, which in turn can be aggregated and disaggregated to enable measurement of the risk profile against risk appetite and risk capacity;
- f) include qualitative statements that articulate clearly the motivations for taking on or avoiding certain types of risk, including for reputational and other conduct risks across retail and wholesale markets, and establish some form of boundaries or indicators (e.g. non-quantitative measures) to enable monitoring of these risks;
- g) ensure that the strategy and risk limits of each business line and legal entity, as relevant, align with the institution-wide Risk Appetite Statement as appropriate; and
- h) be forward-looking and, where applicable, subject to the scenario and stress testing to ensure that the financial institution understands what events might push the financial institution outside its risk appetite and/or risk capacity (FSB, 2013b, p. 5-6)".

The loss a bank is willing and able to take if a worst-case scenario occurs can, for example, be expressed as Value at Risk or Expected Shortfall, which, in theory, should be relatively easy to quantify. Much more difficult is, for example, the quantification of legal or reputational risks. It might be easier, in that case, to express the risk appetite qualitatively, e.g. that strategic projects which might damage the bank's reputation are not acceptable (Hull, 2015).

After having introduced the key concepts of the Risk Appetite Framework as well as the Risk Appetite Statement, it has to be stated that both practitioners and regulators (FSB, 2013b; BCBS, 2015; FINMA, 2016; EBA, 2017) support and require the setup of a Risk Appetite Framework including a Risk Appetite Statement.

The figure below shows the distribution of the respective measures in the sample of banks irrespective of the setup of a risk committee as all measures can be introduced without the committee as well.

Figure 59: Distribution of Risk Governance Tool Measures in Percent



Source: Own development.

The figure above shows the development of the occurrence of the above-mentioned variables within the data set over the time period from 1999 to 2015 as a percentage of occurrences in the sample in the specific year. Furthermore, the figure shows normalised measures that account for panel mortality and missing data in the sample.

What is clearly observable is that the Code of Conduct, as well as the Risk Appetite Framework, are common tools and best practice in the European banking market as both measures are implemented on a broad scale. Both measures picked up in importance shortly after the dot.com crisis in 2001. The Risk Appetite

Framework is the most implemented measure that reached an 80 % distribution in the sample already in 2005 and is since steadily increasing at a lower rate to around 90%. For the Code of Conduct, the development looks similar but on a lower level. Its implementation level reached the 80 % level in 2008 and has grown since into the mid-80s. Therefore, even if FINMA (2016) does not explicitly mention the mechanism, it seems to be the case that the market understood the importance and that it is best practice already to have such code implemented.

Somehow the picture for the Risk Appetite Statement looks different. Until 2004 it was not observable at all and since then it grew steadily to over 20 % in 2015, with a hike in the year 2013. This picture seems to be counterintuitive as one has learned in the previous paragraphs that the Risk Appetite Statement is one of the core elements of a Risk Appetite Framework and that it is being implemented in almost 90 % of all banks in the sample. In this case, one of the limitations of the sample becomes obvious as it relies on disclosure of the banks in their financial statements. Most of the banks stated that they have implemented a Risk Appetite Framework, but only a small proportion mentioned explicitly the setup of Risk Appetite Statement. This means that the Risk Appetite Statement could be or better said must be part of the Risk Appetite Framework according to its definition, even if banks are not disclosing it explicitly. This key finding must be considered in the next chapters when discussing the statistical outcomes of the panel data analysis.

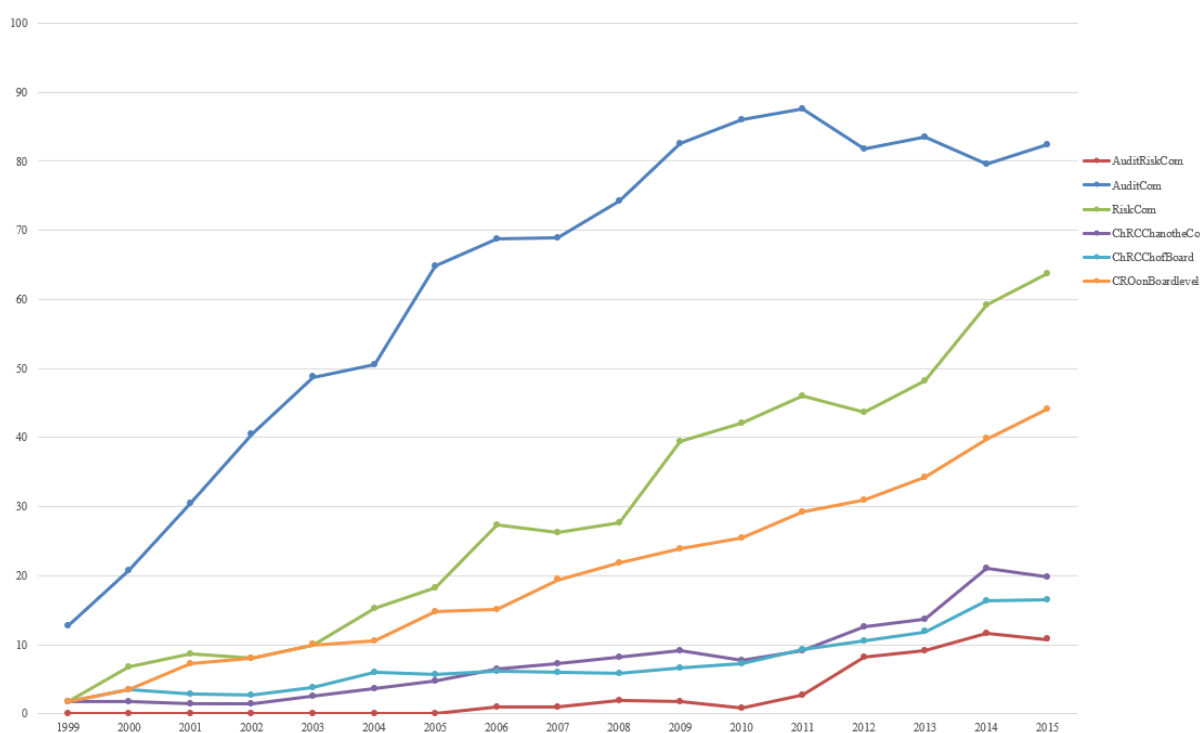
5.3.8.4 Further Descriptive Analysis

In order to further analyse the data from a descriptive perspective it makes sense to drill the data set a level deeper. The author assessed different ways to find meaningful levels for this. On the one hand side one could assess the distributions on a country level and other the other hand side one could assess the distributions in the data set from a bank size perspective. As “N” is low for several European countries and the analysis does therefore not deliver meaningful figures, the author decided to analyse the data set further based on the size of the banks in the sample. However, as size of the banks in the sample changes throughout the time period the author took as an indicator to group the variables the size of the

respective banks in 2015. Four clusters of banks have been setup: Banks with a total asset size below 250 bn EUR, banks with a total asset size above 250 bn and below 500 bn EUR, banks with a total asset size above 500 bn and below 1,000 bn EUR as well as banks with a total asset size above 1.000 bn EUR. “N” for banks in the first group is 129, representing the highest amount in all groups, which is comprehensible as the mean asset size was around 200bn in 2015 as described before. In the second group nine banks are present and 11 in the third group. The smallest group in terms of “N” are banks with a total asset size above 1,000 bn EUR with eight banks.

In a first step the Risk Governance Structure should be analysed for the different sizes of banks. The figure below shows the Risk Governance Structures for banks with a total asset size below 250 bn EUR.

Figure 60: Risk Governance Structure for Banks with a Total Asset Size below 250 bn EUR

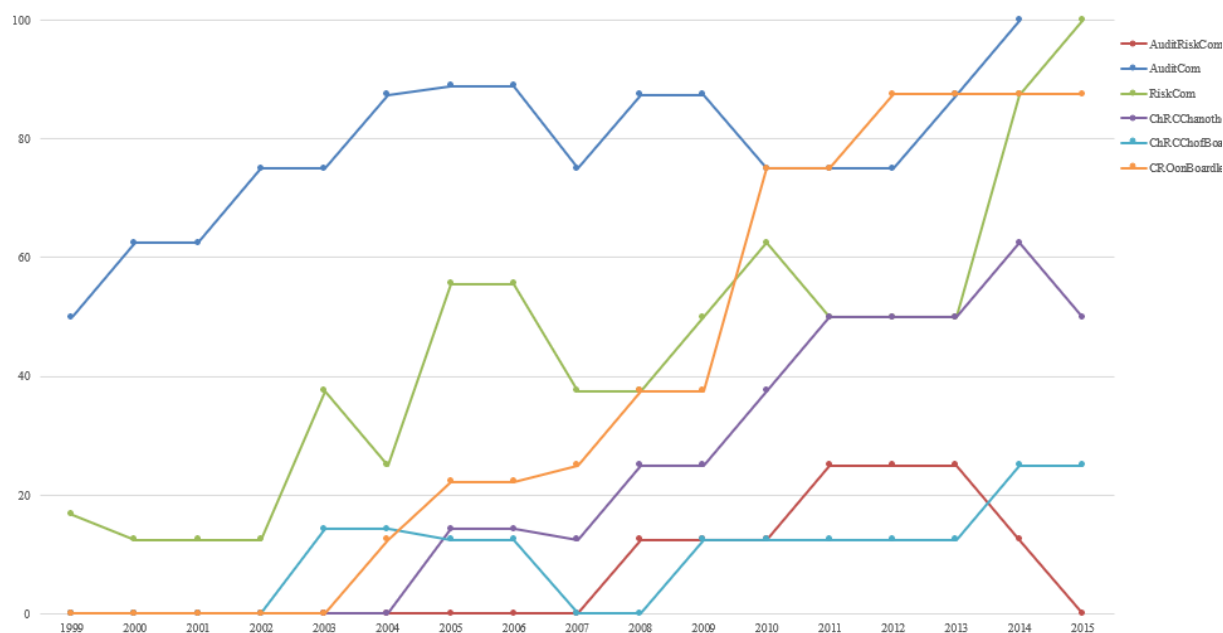


Source: Own development.

The above figure does not differ much from the picture that the overall population is showing, which is not surprising since the group with the smallest asset size stands for 82% of the whole population. Therefore, the analysis does not change

to the one discussed in the last chapter. However, the picture does look different for the second group of banks as shown in the figure below.

Figure 61: Risk Governance Structure for Banks with a Total Asset Size above 250 bn EUR and below 500 bn EUR



Source: Own development.

First of all, the figure above shows more fluctuation, which is based on the much smaller sample size that even in case of a normalization still leads to fluctuations. However, what it can be observed that some of the trends are much larger in this subset as in the total population. The setup of a stand-alone audit committee seems to be standard in this group since 2014 and the same holds true for the stand-alone risk committee which is present in every bank since 2015. The fluctuations in the setup of a stand-alone audit committee are also driven by the up rise of the combined audit and risk committee after the beginning of the global financial crisis. However, as indicated above the trend definitely goes into the direction of a stand-alone risk as well as audit committee. Even if it was best practice at the time of this figure, it supports the proportionality principle of regulators (EBA, 2017; FINMA, 2016), which asks for considering the size and complexity of a bank when deciding on the Risk Governance structure.

A further trend, which is stronger than in the overall population is the setup of an CRO at board level. The percentage of banks implementing a CRO at this level

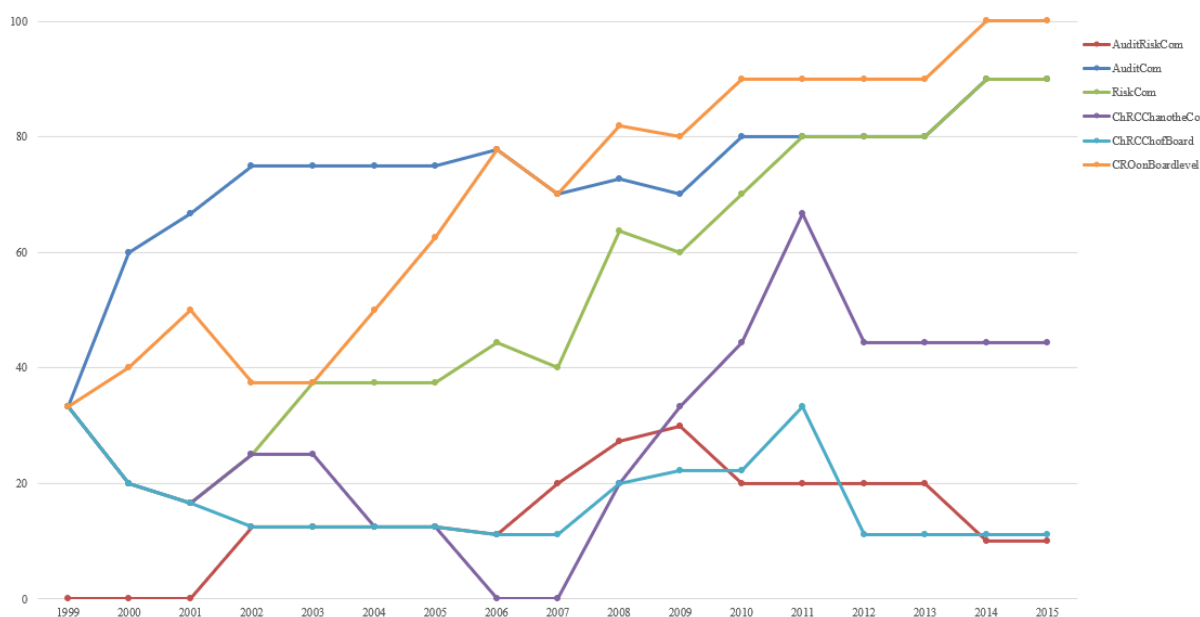
strongly increased after the global financial crisis to over 70% and indicates clearly that the banks either understood the message from regulators that an independent risk management is key or found it out themselves. Since 2012 the level of implementation stays stable around 90%.

What is interesting in the context of the Risk Governance Structure is that dual-hatting of the chair of the risk committee is a bigger topic in this group than in the overall population as in over 50% of the cases the chair of the risk committee is also chair of another committee since 2011, with a peak of 60% in 2014. However, no clear downward trend is observable as in the overall population as well. Regarding the dual-hatting of the risk committee and the entire board, the effect is stronger as well, with a constant level of 12.5% of banks having this implemented since 2009 and an increase to 25% after 2013.

Nevertheless, one must consider that 12.5% stands for one bank in a sample of eight, as one bank has missing data due to panel mortality since 2004, and be careful not to generalize based on the findings.

A slightly larger group of banks are the ones with a total asset size above 500 bn EUR and below 1,000 bn EUR with a total of 11 banks and the figure of their results in the context of Risk Governance Structure is shown below.

Figure 62: Risk Governance Structure for Banks with a Total Asset Size above 500 bn EUR and below 1,000 bn EUR



Source: Own development.

The figure above shows in difference to the second group that the combined audit and risk committee plays a stronger role in the third group of larger banks. Its occurrence increased since 2007 and peaked in 2009 with almost 30% of banks having it implemented in the group. Since it stayed at 18.2% until 2014, when it went down to 9.1%. Nevertheless, there is still one bank in the sample applying this setup. If one keeps in mind the proportionality principle of the regulators (EBA, 2017; FINMA, 2016) it seems not adequate for banks of that size to only have a combined committee. However, on the positive side all banks have since 2011 an audit or combined committee and since 2012 a risk or combined committee. Showing that larger banks already moved into the direction even before it became a regulatory standard (EBA, 2017; FINMA, 2016).

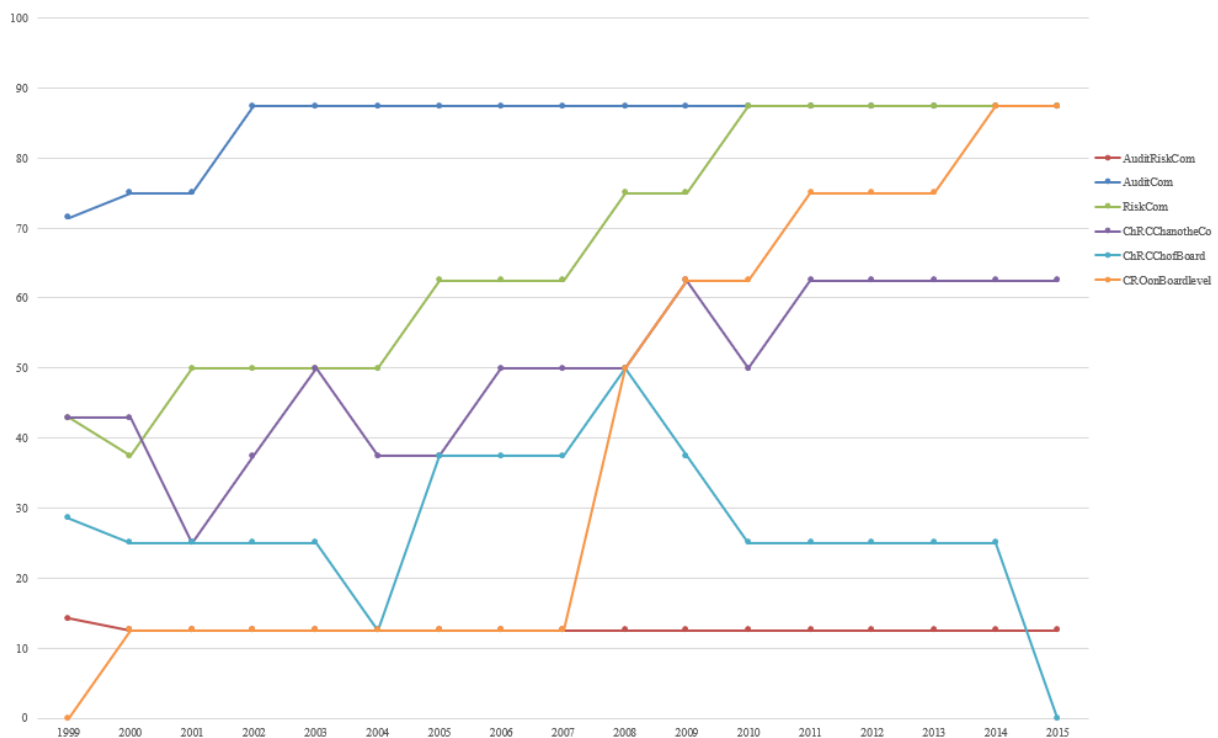
Also, the installation of a CRO at board level is more common in this group and this since the early 2000s. It has risen since to nearly 80% in 2006 and increased further to 90% from 2010 on. Since 2014 all banks of this group have a CRO installed at board level, which is supporting the importance of an independent CRO for a robust risk management.

Dual-hatting is a topic for this group of banks as well and as with the group before especially a dual-hatting of different committees seems to be common. With a

peak in 2011 with over 60% of banks in the sample the quota went down to 44%, which is however still a high quota. Nevertheless, this supports the theory of some of the practitioners interviewed for this study, which saw in such a setting a benefit in terms of information sharing as well as efficiency. The fact that the chair of the board is as well the chair of the risk committee is however not that common, with a slight peak in 2011 as well the ratio stays since at around 11%, supporting from a best practice perspective the fact that as regulators (EBA, 2017; FINM, 2017) state the chair of the board should not be chair of the risk committee as well.

The last group that should be discussed are banks with a total asset size above 1,000 bn EUR, of which eight are in the sample and the results are shown beneath.

Figure 63: Risk Governance Structure for Banks with a Total Asset Size above 1,000 bn EUR



Source: Own development.

The figure above shows that neither the audit nor the risk committee are new concepts for the largest banks in the sample. The audit committee is present since 2002, after the dot.com crisis and scandals like ENRON, in 87.5% of all banks and considering that since then also one bank chose the combined model all banks in that group had an audit committee in place. The quota did not change over time

as one of the banks kept the combined setup. Nevertheless, the stand-alone risk committee only gradually picked up with the audit committee, by steadily increasing from 50% in 2001 to 87.5% in 2010. Since the quota did not change as well. The before explained graphs show that the largest banks early started to introduce the mechanisms regulators (EBA, 2017 FINMA, 2016) judge as good Risk Governance and do therefore not need to adjust their boards following the recent changes, if one puts the combined committee aside, which is still being used by one of the banks.

Surprisingly, in contrast to the sub-group explained before the CRO at board level is as such not as common. After 2007 the ratio of implementation sharply increased from around 12.5% to 75% in 2011. However, it stayed at that level until 2014 and turned to 87.5 % since, meaning that there was still one large bank that did not implement a CRO position at board level until that time.

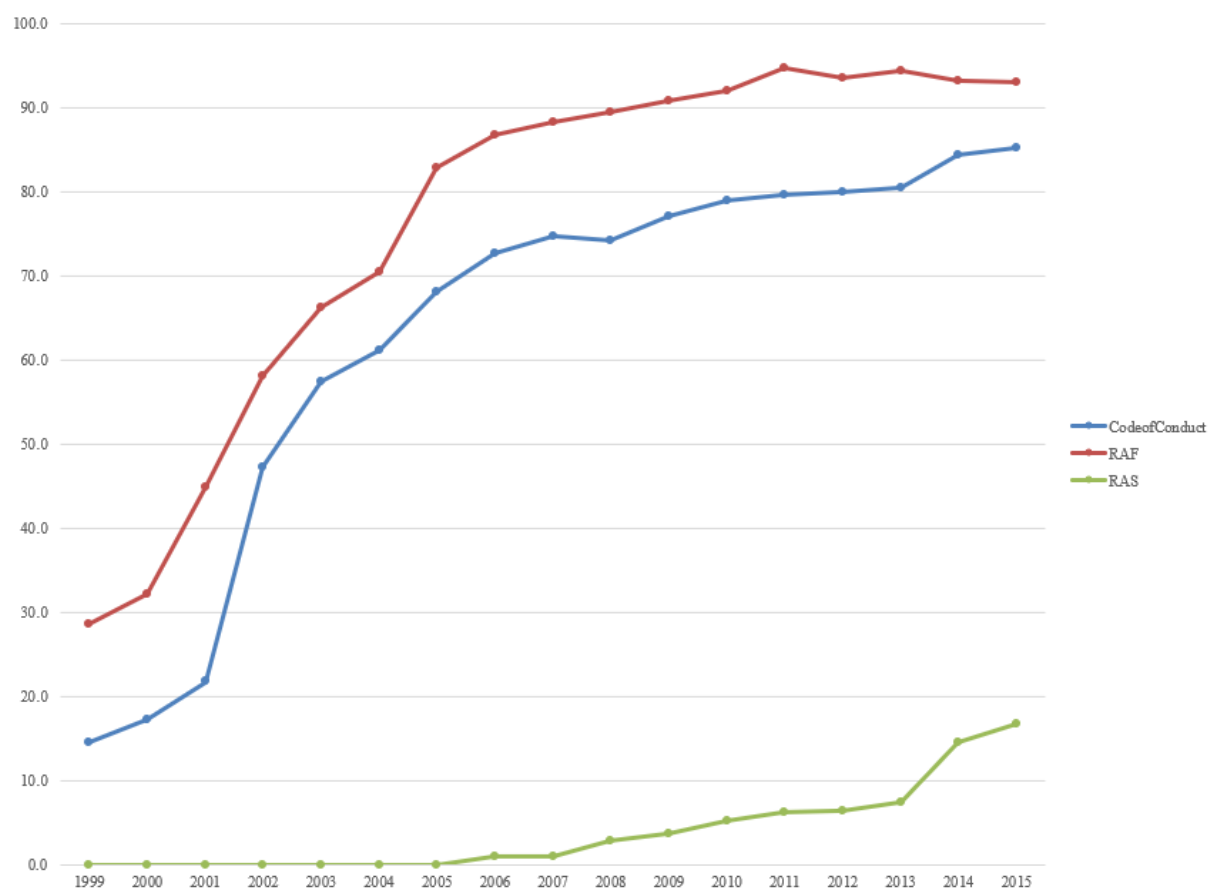
The dual-hatting is even more common in this group when it comes to the chairing of different committees, which is since 2008, following the up rise of the risk committee, the case in over 60% of the banks in the sample, further underpinning the practitioners view on the issue as discussed before. The chair of the board chairing the risk committee as well had its high with over 50% in 2008 and moved down to around 25% from 2010 on. In 2014 all banks decided against this form of dual-hatting and the chair of the board is in all banks not the chair of the risk committee at the same time.

In summary the before discussed results show that it tends to be the case that the larger banks apply more or less all of the Risk Governance mechanisms and this even before regulators (EBA, 2017 FINMA, 2016) asked for implementation of the respective. This underpins the fact that the industry is looking itself for best practice of risk management. However, it also supports the regulatory view of proportionality, which is expressed in both EBA (2017) and FINMA (2017) regulation.

In a next step the author assessed the Risk Committee Oversight Quality grouped according to the above described criteria. However, results derived in form of figures do not lead to meaningful results, being worth to be discussed in this

context as volatility of the single measures is quite high. Therefore, the author decided not to report these measures at this point. Nevertheless, the author decided to further report on the Risk Governance Tools in use and the first group to be discussed is the largest group of banks in terms of “N” and with the smallest total assets size below 250 bn EUR.

Figure 64: Risk Governance Tools for Banks with a Total Asset Size below 250 bn EUR

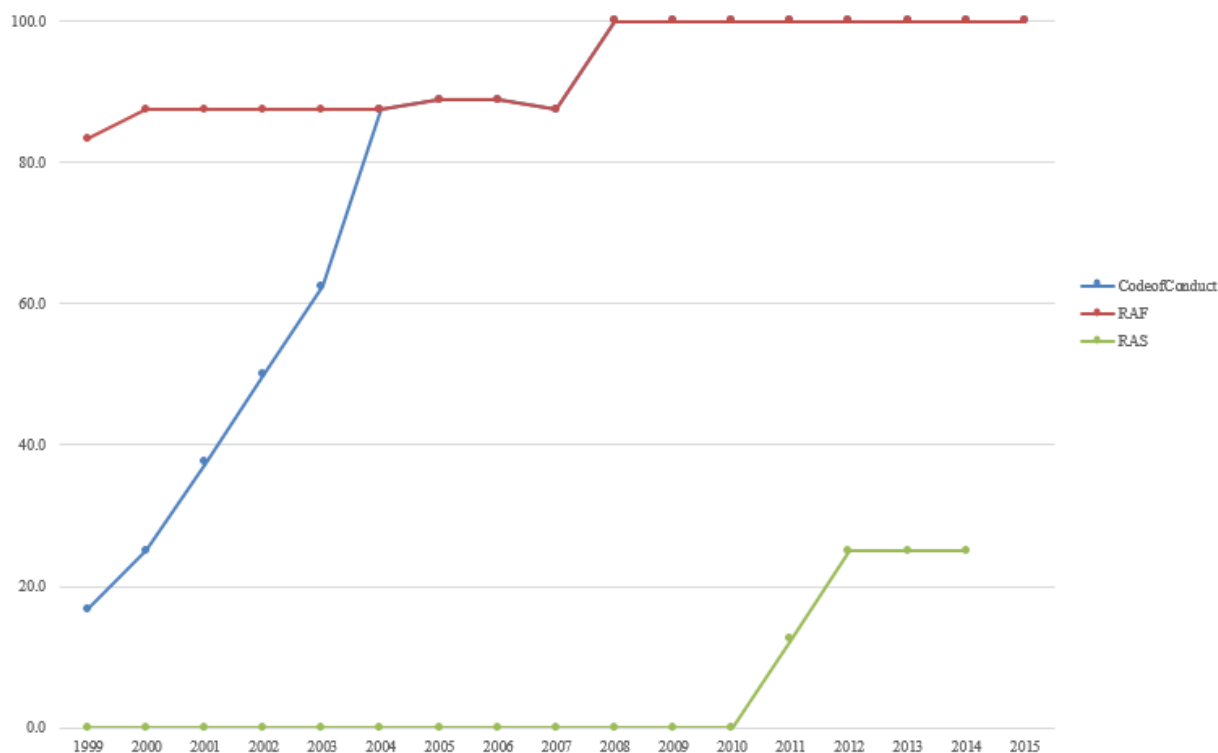


Source: Own development.

The figure above shows the tools in use for the 129 banks in the sample with a total asset size below 250 bn EUR. As one can clearly see the figure unsurprisingly does not differ much from the one that is containing the whole data set. It shows an increasing trend for all three figures leading to a high degree of implementation of a RAF as well as a Code of Conduct. Nevertheless, the separately reported RAS is only slightly picking up since 2007 and is still on a low level, which has been discussed in the overall population as well.

The next group in scope are banks with and total asset size above 250 bn EUR and below 500 bn EUR and the respective figure is shown below.

Figure 65: Risk Governance Tools for Banks with a Total Asset Size above 250 bn EUR and below 500 bn EUR



Source: Own development.

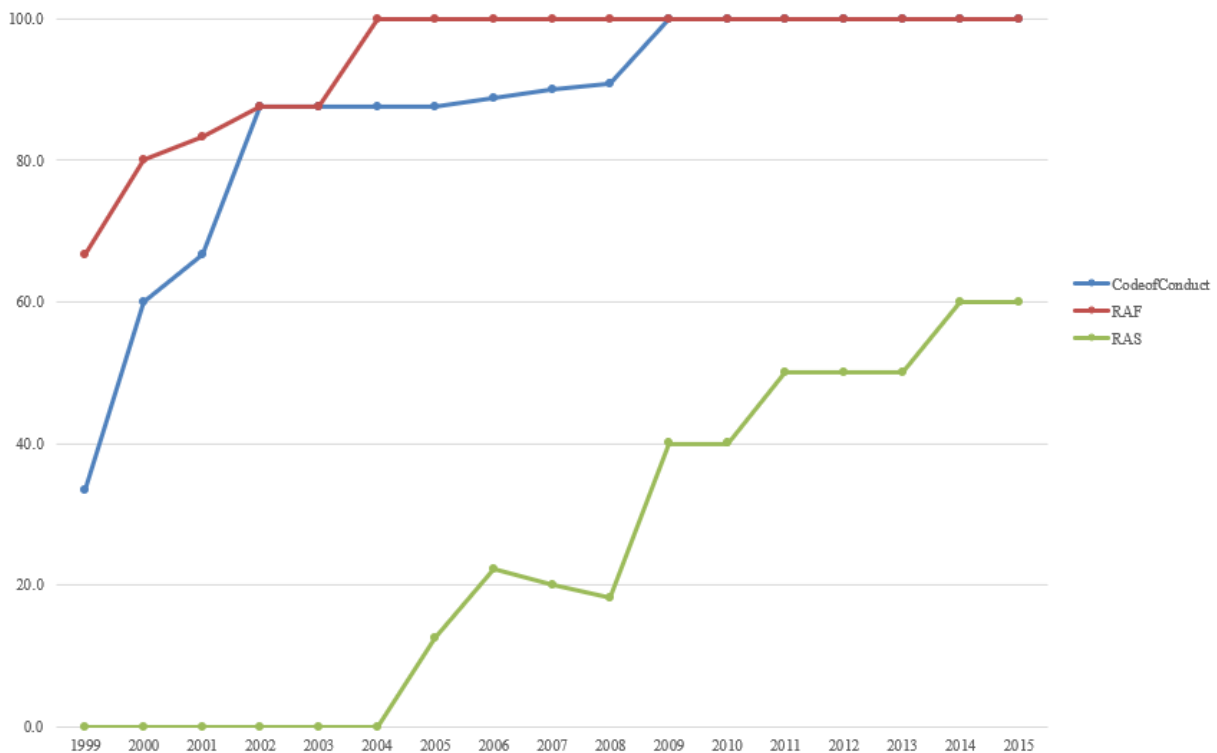
The figure does look different already compared to the one of the first group. As one can see the most common tool is the RAF, which has been implemented in 80% of the banks in this group already back in 1999 and by all banks in the group since 2008 following the global financial crisis. The Code of Conduct implementation did not start at such a high level but made its way from under 20% in 1999 to over 80% in 2004 and full implementation since 2008 as well. However, the RAS is first separately reported since 2010 and since risen to a level of over 20% in the sample.

All three findings show that banks with a larger size started to implement Risk Governance Tools at an early stage even before some of the crises occurred and that they are commonly used tools since. Nevertheless, only that the tools are being used does not tell how well they are used by the respective banks. This assessment can only be made after applying the panel statistics as they will show

if statistical evidence can be found for the influence of these tools on performance and risk of a bank.

The next group being assessed is containing the banks with a total asset size above 500 bn EUR and below 1,000 bn EUR and the figure containing the results is shown beneath.

Figure 66: Risk Governance Structure for Banks with a Total Asset Size above 500 bn EUR and below 1,000 bn EUR

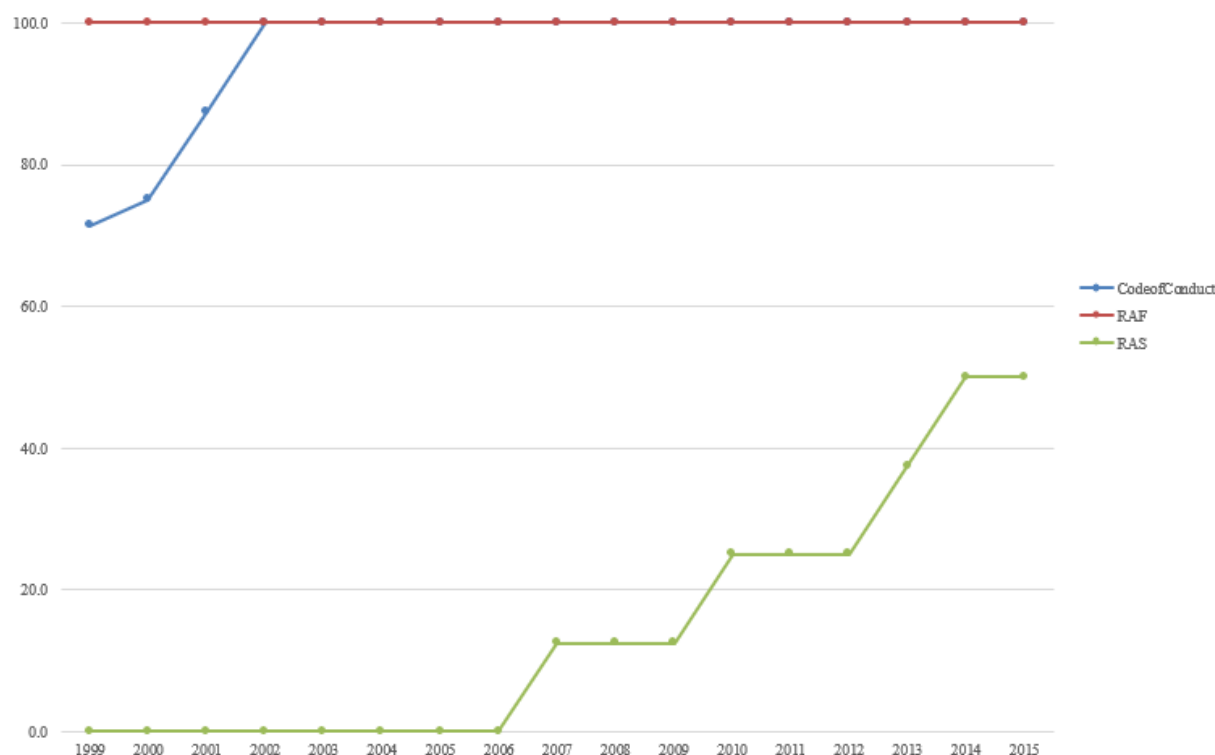


Source: Own development.

This group follows the trend observed in the group before, the RAF has been commonly used since the beginning of the study and has been fully implemented in all banks of the sample since 2004 with increasing to this level from below 70% in 1999. The Code of Conduct shows a similar trend to the group before as well with full implementation in 2008. The RAS in contrast is constantly increasing from 2004 with a steep increase in 2008 following the global financial crisis and is since 2014 at a 60% level. However, further differences are not observable between this group and the one before. Therefore, the discussion made for the group before does hold true for this group as well.

The last group analysed is the one made of the largest banks in the sample with a total asset size above 1,000 bn EUR and the figure displaying the results is shown beneath.

Figure 67: Risk Governance Structure for Banks with a Total Asset Size above 1,000 bn EUR



Source: Own development.

What has been discussed in case of the larger banks before does hold true for this population as well. The two measures RAF and Code of Conduct were implemented even at an earlier stage. The RAF was fully implemented by the group of banks since the beginning of the panel study and the Code of Conduct since 2002, with however already over 70% of the banks having it implemented already in 1999. For the RAS the picture is somehow comparable to the group before. Nevertheless, only 50% of the banks are reporting the implementation in 2014 and 2015.

All in all, both parts of the further analysis show that in general larger banks tend to adopt best practice regarding Risk Governance earlier than smaller banks. Furthermore, those banks had even before the first regulatory proposals and requirements came into force implemented most of the measures based on market

or best practice. However, as discussed before only that a bank reports implementation does not indicate how good the bank is using the respective tools. In connecting to the limitations of the data set discussed in the next sub-chapter of the study the author has to state that the results discussed before could also be driven by the fact that larger banks disclose more information and are more transparent than smaller banks, which might lead to the fact that they are using the structural components or tools, but are not reporting on them.

The impact of the structure, oversight quality and tools with regard to Risk Governance on performance as well as on the risk profile of the respective banks will be assessed and discussed in the panel data section.

5.3.9 Risk Governance Variables and Expected Outcome

After having discussed and explained the relevant independent variables of the data set the author wants to establish a further level of operability for further research. As the study tries to understand how the independent variables influence risk as well as performance in times of a financial crisis as well as in times outside of such a crisis, it makes sense to code the expected outcome of the variables on the specific measures based on the analyses of Chapter 4 of the study as well as the discussion above in this part. The coding is especially important in case of the dual-hatting measures as these are indicating if a suboptimal setting is occurring according to regulators and experts. Therefore, they are coded in a different order as all the other measures. One general assumption is, based on the hypotheses, that all positive measures except the two mentioned before reduce risk through the economic cycle, meaning that an enhanced Risk Governance leads to lower risk in times outside a financial crisis as these banks do invest less in riskier assets e.g. subprime mortgages and that it leads therefore also to a lower risk in times of a financial crisis due to the lower exposure built up before the burst of a bubble. Based on the risk-return relationship one would expect these banks to experience a lower return and therefore performance outside of a crisis. In a financial crisis, the return is driven by losses in the trading and banking book as well as Loan Loss Provisions and therefore one would expect a due to superior Risk Governance less risky bank to have higher returns compared to banks without those mechanisms in place. For the two other measures defined above the coding is opposite.

Below the expected outcomes for the three categories are shown and will be used in the following chapters to further discuss and review the results of the panel data analyses performed.

Table 14: Expected Influence on Outcome of Risk Governance Structure Measures

No.	Name	Area	Expected Outcome Risk No-Crisis	Expected Outcome Risk Crisis	Expected Outcome Performance No-Crisis	Expected Outcome Performance Crisis
1	<i>Board has a stand-alone Risk Committee</i>	Risk Governance Structure	-	-	-	+
2	<i>Board has a stand-alone Audit Committee</i>	Risk Governance Structure	-	-	-	+
3	<i>Board has a combined Audit and Risk Committee</i>	Risk Governance Structure	-	-	-	+
4	<i>Chair of Risk Committee is also Chair of the Board</i>	Risk Governance Structure	+	+	+	-
5	<i>Chair of Risk Committee is also Chair of another Committee</i>	Risk Governance Structure	+	+	+	-
6	<i>Chief Risk Officer at board level</i>	Risk Governance Structure	-	-	-	+

Source: Own development.

Table 15: Expected Influence on Outcome of Risk Committee Oversight Quality Measures

No.	Name	Area	Expected Outcome Risk No-Crisis	Expected Outcome Risk Crisis	Expected Outcome Performance No-Crisis	Expected Outcome Performance Crisis
1	<i>Chair of Risk Committee is independent</i>	Risk Committee Oversight Quality	-	-	-	+

No.	Name	Area	Expected Outcome Risk No-Crisis	Expected Outcome Risk Crisis	Expected Outcome Performance No-Crisis	Expected Outcome Performance Crisis
2	<i>Majority of Members of the Risk Committee independent</i>	Risk Committee Oversight Quality	-	-	-	+
3	<i>Meeting Frequency of the Risk Committee per Year</i>	Risk Committee Oversight Quality	-	-	-	+
4	<i>IT Qualification is available in Risk Committee</i>	Risk Committee Oversight Quality	-	-	-	+
5	<i>Risk Management and Banking Experience is available in the Risk Committee</i>	Risk Committee Oversight Quality	-	-	-	+
6	<i>Risk Committee discusses Risk Appetite Statement</i>	Risk Committee Oversight Quality	-	-	-	+
7	<i>Risk Committee makes Backtesting of Risk Appetite Statement</i>	Risk Committee Oversight Quality	-	-	-	+
8	<i>Risk Committee covers Credit Risk</i>	Risk Committee Oversight Quality	-	-	-	+
9	<i>Risk Committee covers Market Risk</i>	Risk Committee Oversight Quality	-	-	-	+
10	<i>Risk Committee covers Operational Risk</i>	Risk Committee Oversight Quality	-	-	-	+
11	<i>Risk Committee covers Reputational Risk</i>	Risk Committee Oversight Quality	-	-	-	+
12	<i>Risk Committee reviews the bank's Risk Policies annually</i>	Risk Committee Oversight Quality	-	-	-	+

Source: Own development.

Table 16: Expected Influence on Outcome of Risk Governance Tool Measures

No.	Name	Area	Expected Outcome Risk No-Crisis	Expected Outcome Risk Crisis	Expected Outcome Performance No-Crisis	Expected Outcome Performance Crisis
1	<i>Code of Conduct in place</i>	Risk Governance Tools	-	-	-	+
2	<i>Risk Appetite Framework in place</i>	Risk Governance Tools	-	-	-	+
3	<i>Risk Appetite Statement in place</i>	Risk Governance Tools	-	-	-	+

Source: Own development.

5.3.10 Limitations of the Data Set

After having discussed the results of the descriptive statistics, one must discuss the limitations of the data set as well. As lined out in the introduction of the empirical part, the data set covering the Risk Governance variables are manually collected by the author, meaning that operational risk exists that the author collected incomplete data. One source of failure can be that the author overlooked statements regarding Risk Governance within the financial reports as well as annual accounts. A further source could be that the author misinterpreted expressions of Risk Governance within the companies' reports. Furthermore, it could also be the case that the author did wrongly code the correct information collected from the financial statements as well as annual accounts. In order to mitigate the risk, the author performed a quality assessment on the collected data by taking a random sample and checking for consistency of coding as well as the correctness of data in the set. The sampling conducted did not lead to a high number of deficiencies and, therefore, to the assumption of the author that a full quality assurance on the data sample is not needed. However, the risk of inconsistent coding of information in the data set still exists.

Not only the manually collected data bears the risk of incorrectness as well as inconsistency, but this might occur also in data provided by Thomson Reuters. In

order to control this, the author also conducted a quality assessment based on a sample testing of Thomson Reuters data against, on the one hand, the official exchange data for market measures as well as comparisons against financial statements of banks for accounting data on the other hand. The sample was again inconspicuous in terms of data quality.

However, not only the data collection by the author himself could lead to wrong interpretation of data. It may also be the case that the data provided by the bank is a source of data issues. For example, it might be the case that banks carry out certain tasks or set Risk Governance structures up, but do not disclose the respective, which might, in the end, lead to biased results of the empirical analysis. This might be especially the case as discussed before for smaller banks, which might not disclose as much information as larger banks. Furthermore, the fact a bank simply setting up a specific structure or disclosing that it carries out certain tasks related to Risk Governance does not mean that this is being done in the expected quality or with the required care, which might again negatively influence the results described before. For the last two limitations, the author is not able to control as he must rely on the information provided in financial statements as well as annual accounts. Moreover, the author could also not assess in person the specific structures and processes in terms of quality and consistency, which is therefore also not reflected in the results. However, the interviews conducted in the course of the study could at least provide an insight into how serious these settings and processes are being taken by professionals, which strengthens the study regarding this aspect at least partially.

5.3.11 Correlation Analysis

In the following the author provides an overview of the correlation analysis conducted in the context of the study. Correlation analysis provides an understanding of how two variables are associated with each other, but it does not account for any causality (Dowdy & Wearden, 1983). However, they can be useful to understand the relationship and the movement of single variables with each other. According to statistical theory (Dowdy & Wearden, 1983) the highest possible value of the correlation coefficient, which measures the relationship, is never higher than 1. Furthermore, the correlation coefficient is +1 if there is a

perfect positive linear relationship between the two measures and -1 if there is a perfect negative linear relationship. Around the value of zero, no relationship exists between the two values.

For the dependent as well as the control variables the author decided to use the Pearson correlation model, which is especially suitable for normally distributed data sets but is prone to outliers (Dowdy & Wearden, 1983). However, as discussed in the variables section the author winsorised the data set in order to mitigate the influence of extreme outliers, which contributes to the robustness of the Pearson correlation. The correlation coefficient itself is mathematically the covariance of the respective variables, which is being divided by the product of their standard deviations (Backhaus, Erichson, Plinke & Weiber, 2011). Furthermore, the applied statistics below also give a significance level, which is the outcome of the test of the H_0 that states that the variables do not have a relationship in a statistical sense. The below table shows the results for the Pearson correlations of the control variables.

Table 17: Pearson Correlations for Control Variables

	Deposit Growth	LtoD Ratio	Loan Growth	Operating Leverage	Securities Earnings	Total Assets	Uncertainty Avoidance	Long Short Orientation	WGI
Deposit Growth	1	-0.0156	.092**	-.381**	0.02248	-0.01901	0.0144051	0.0034593	0.01085
Loan to Deposit Ratio	-0.0156	1	0.00013	0.0068535	-.075**	-.059**	0.01328657	.066**	0.02593
Loan Growth	.092**	0.00013	1	-.074**	-0.015724	-0.00369	-0.0079206	-.053*	-0.00848
Operating Leverage	-.381**	0.00685	-.074**	1	0.011215	-0.0132	-0.0283665	0.0035901	0.02287
Securities Earnings	0.0225	-.075**	-0.01572	0.0112146	1	.308**	0.03354129	-0.019682	.071**
Total Assets	-0.019	-.059**	-0.00369	-0.013195	.308**	1	-.096**	-.123**	.125**
Uncertainty Avoidance	0.0144	0.01329	-0.00792	-0.028366	0.033541	-.096**	1	-.342**	-.655**
Long Short Orientation	0.0035	.066**	-.053*	0.0035901	-0.019682	-.123**	-.342**	1	.367**
WGI	0.0108	0.02593	-0.00848	0.0228665	.071**	.125**	-.655**	.367**	1

Note: Significant values are denoted with * and ** for 5% and 1% levels respectively.

Source: Own development.

Interesting outcomes of the table above are just reported if significant and over 0.2 in both directions, indicating stronger relationships as discussed above. For the Deposit Growth, the only notable outcome is the relationship with the Operating Leverage which is negative at a 1 % significance level. This can be explained by the fact that higher deposits lead to higher returns hence reduce the fixed cost base. The next measure fulfilling the above restriction is the Securities Earnings to Total Assets relationship, which shows a positive relationship at a 1

% significance level. This means that Total Assets rise if higher Securities Earnings occur, which is understandable as most of the time more securities are needed to achieve higher return and therefore the assets must grow as well. The other three measures showing the respective levels are related to the culture variables and the WGI. Uncertainty avoidance is negatively correlated with long- vs. short-term orientation and with the WGI both at 1 % significance level. This means that the more uncertainty avoidance increases the lower is the score for long- vs. short-term orientation, which is in line with theory as a lower score, indicates riskier behaviour. In the case of the WGI, the result is counterintuitive as one would expect to have a high positive relationship since cultures with a higher uncertainty avoidance would be expected to have higher scores in the WGI, which would imply more robust governance in the country. However, as Central Eastern European countries score higher in the uncertainty avoidance but score lower on the WGI the effect could be explained by that. The contrary is the case with the long- vs. short-term orientation which is positively related to the WGI at a 1 % level indicating that with a higher long-term orientation, stronger governance in the country can be observed. This result mirrors the expectations. However, overall it must be stated that the results discussed before are not indicating any causality.

The next set of variables being assessed is the data for the dependent variables shown below.

Table 18: Pearson Correlations for Dependent Variables

	Buy and Hold	Beta	Pre-Tax ROE	LLP of Avg Loans	SD daily Returns	Tier 1 Capital Ratio
Buy and Hold	1	0.03213	.207**	-0.0353	-.093**	.079**
Beta	0.0321	1	-.125**	0.037647	.344**	-0.0049
Pre-Tax ROE	.207**	-.125**	1	-.055*	-.332**	-0.0274
LLP of Avg Loans	-0.035	0.03765	-.055*	1	.315**	.118**
SD daily Returns	-.093**	.344**	-.332**	.315**	1	0.02114
Tier 1 Capital	.079**	-0.0049	-0.0274	.118**	0.02114	1

Note: Significant values are denoted with * and ** for 5% and 1% levels respectively.

Source: Own development.

As conducted before only the results showing significance and coefficients above 0.2 in both directions, indicating stronger relationships, are discussed in the following. The first pair fulfilling the requirements is the Buy and Hold Return and the Pre-Tax ROE, which show a positive correlation at a 1 % level. This finding is comprehensive as a higher return in the form of Pre-Tax ROE could lead to higher stock market prices as well. Further, Beta and the Standard Deviation of Daily Returns show a positive relationship at a 1 % significance level as well, which is plausible, as both measure the risk from a stock market perspective. A further pair showing a relationship at a 1 % level is the Pre-Tax ROE and the Standard Deviation of Daily Returns but in this case, a negative relationship, which is plausible as well, as based on the risk-return relationship lower risk comes with lower return and vice versa. The last pair meeting the requirements shows again a positive relationship at a 1 % level. In this case, a higher Loan Loss Provision is correlated with a higher Standard Deviation of Daily Returns and is again plausible as both variables measure risk, even if from different angles.

In the next step, the independent variables should be assessed from a correlation perspective. However, as the independent variables are coded as dummy variables as explained before, a different methodology needs to be applied for the analysis, namely the Spearman Rank Correlation technique (Dowdy and Wearden, 1983). The technique builds ranks and measures the correlation between the ranks of the variables, whilst the interpretation is done like in the case of the Pearson correlations. The table below shows the results for the independent variables.

Table 19: Spearman Rank Correlations for Independent Variables

	Audit Risk Com	Audit Com	Risk Com	Ch RC anotheCo	Ch RC Ch of Board	CRO on Board level	Ch RC indep	Maj Mem RC indep	Meet Freq Year	Qual RC IT	Risk Man	Credit Risk	Market Risk	Oper. Risk	RC Rep Risk	Discusse s RAS	Backtest ing RAS	RC policiesa annual	Code of Conduct	RAF	RAS
Audit Risk Com	1.00	-.354**	-.179**	.235**	-0.04	.133**	.212**	.185**	.280**	-0.04	.271**	.265**	.233**	.286**	0.04	.079**	.075**	.265**	.093**	.095**	.071**
Audit Com	-.354**	1.00	.451**	.101**	.154**	.197**	.172**	.186**	.255**	.098**	.282**	.280**	.289**	.267**	.141**	.104**	.110**	.271**	.512**	.427**	.114**
Risk Com	-.179**	.451**	1.00	.427**	.426**	.297**	.582**	.596**	.848**	.195**	.898**	.889**	.836**	.806**	.333**	.271**	.256**	.856**	.335**	.325**	.248**
Ch RC Ch another Com	.235**	.101**	.427**	1.00	.265**	.274**	.543**	.512**	.556**	.105**	.517**	.514**	.471**	.456**	.213**	.235**	.224**	.523**	.189**	.176**	.222**
Ch RC Ch of Board	-0.04	.154**	.426**	.265**	1.00	.156**	.228**	.227**	.312**	.117**	.396**	.373**	.294**	.244**	.161**	.058*	.053*	.402**	.090**	.146**	.055*
CRO on Board level	.133**	.197**	.297**	.274**	.156**	1.00	.343**	.309**	.379**	.118**	.351**	.340**	.307**	.316**	.227**	.311**	.297**	.372**	.280**	.248**	.321**
Ch RC indep	.212**	.172**	.582**	.543**	.228**	.343**	1.00	.934**	.757**	.244**	.664**	.668**	.596**	.627**	.328**	.353**	.339**	.686**	.255**	.232**	.332**
Maj Mem RC indep	.185**	.186**	.596**	.512**	.227**	.309**	.934**	1.00	.784**	.245**	.665**	.669**	.599**	.630**	.361**	.357**	.343**	.684**	.255**	.232**	.336**
Meet Freq Year	.280**	.255**	.848**	.556**	.312**	.379**	.757**	.784**	1.00	.241**	.936**	.937**	.904**	.909**	.407**	.377**	.360**	.937**	.363**	.308**	.350**
Qual RC IT	-0.04	.098**	.195**	.105**	.117**	.118**	.244**	.245**	.241**	1.00	.174**	.162**	.174**	.191**	.228**	.178**	.172**	.168**	.092**	.065**	.168**
Qual RC Risk Man	.271**	.282**	.898**	.517**	.396**	.351**	.664**	.665**	.936**	.174**	1.00	.987**	.921**	.915**	.343**	.300**	.283**	.954**	.367**	.360**	.274**
RC Credit Risk	.265**	.280**	.889**	.514**	.373**	.340**	.668**	.669**	.937**	.162**	.987**	1.00	.921**	.919**	.348**	.304**	.287**	.951**	.362**	.355**	.278**
RC Market Risk	.233**	.289**	.836**	.471**	.294**	.307**	.596**	.599**	.904**	.174**	.921**	.921**	1.00	.930**	.369**	.292**	.276**	.881**	.355**	.331**	.268**
RC Operational Risk	.286**	.267**	.806**	.456**	.244**	.316**	.627**	.630**	.909**	.191**	.915**	.919**	.930**	1.00	.375**	.303**	.287**	.887**	.356**	.328**	.278**
RC Rep Risk	0.04	.141**	.333**	.213**	.161**	.227**	.328**	.361**	.407**	.228**	.343**	.348**	.369**	.375**	1.00	.424**	.411**	.333**	.179**	.128**	.408**
RC Discusses RAS	.079**	.104**	.271**	.235**	.058*	.311**	.353**	.357**	.377**	.178**	.300**	.304**	.292**	.303**	.424**	1.00	.976**	.306**	.144**	.114**	.956**
RC Backtesting RAS	.075**	.110**	.256**	.224**	.053*	.297**	.339**	.343**	.360**	.172**	.283**	.287**	.276**	.287**	.411**	.976**	1.00	.290**	.148**	.084**	.933**
RC risk policies annual	.265**	.271**	.856**	.523**	.402**	.372**	.686**	.684**	.937**	.168**	.954**	.951**	.881**	.887**	.333**	.306**	.290**	1.00	.362**	.343**	.281**
Code of Conduct	.093**	.512**	.335**	.189**	.090**	.280**	.255**	.255**	.363**	.092**	.367**	.362**	.355**	.356**	.179**	.144**	.148**	.362**	1.00	.407**	.152**
RAF	.095**	.427**	.325**	.176**	.146**	.248**	.232**	.232**	.308**	.065**	.360**	.355**	.331**	.328**	.128**	.114**	.084**	.343**	.407**	1.00	.119**
RAS	.071**	.114**	.248**	.222**	.055*	.321**	.332**	.336**	.350**	.168**	.274**	.278**	.268**	.278**	.408**	.956**	.933**	.281**	.152**	.119**	1.00

Note: Significant values are denoted with * and ** for 5% and 1% levels respectively.

Source: Own development.

The above shown table contains, the results of the Spearman rank analysis, as discussed. No surprising results have been gathered based on the analysis. Unsurprisingly, the combined Audit and Risk Committee is significantly negatively related to both stand-alone committees at a 1 % level, which is plausible. The same holds true for the oversight quality measures, which are significantly positively related to the risk committee at a 1 % level. This is especially true for the three risk types and the annual review of the policies as these were implemented by almost all risk committees during the sample period. Also, the relationship between the discussion and the back-testing of the Risk Appetite Statement is significant at a 1 % level and high positively correlated, confirming that if it is discussed it is tested as well. The last interesting finding is that the meeting frequency is highly positively correlated at a 1 % significance level with the risk management qualification as well as the coverage of credit, market and operational risk as well as the yearly review of the policies, indicating that these correlate with a higher meeting frequency.

5.4 Panel Data Analysis

To test the hypotheses introduced before, a large data set has been constructed, by the author as described in the previous chapters. Since the data set observes variables for single banks across several years it is a mixture of cross-sectional as well as time-series data. This type of data set is called a panel data set. More specifically in case of this study, it is an unbalanced panel since as described before panel mortality occurred, meaning that certain banks either pulled out of business, were acquired or merged with other banks. There are certain ways to test data in this form and the most efficient way for analysis is a panel data analysis. Panel data analysis has certain benefits but certain limitations as well. A benefit is a fact that such a panel data analysis usually provides more degrees of freedom as well as less collinearity across the different variables compared to time series studies (Baltagi, 2015). Moreover, Deaton (1995) claims that panel data sets lead to evidence about changes for individuals in the set opposed to cross-sectional studies.

However, certain limitations also come with the application of panel data analysis. Kasprzyk, Duncan, Kalton and Singh (1989) argue that especially the data collection as well as the management and the design of the data set is very complex and therefore error-prone. Furthermore, panel data analysis across countries needs to be controlled for country effects as they do not account for country dependence (Baltagi, 2015).

Panel data analysis regressions are usually built in the following way and the difference to cross-sectional or time-series regressions are the dependence on the individuals, denoted as “ i ”, and at the same time on the time “ t ” (Baltagi, 2015):

Equation 3: Panel Data Regression

$$\gamma_{it} = \alpha + X'_{it} \beta + u_{it} \quad (i=1,\dots, N; t = 1,\dots, T)$$

Source: Own development based on Baltagi (2015).

“ i ” stands for the cross-section component and “ t ” for the time-series component explaining the statement made in the introduction that described panel data as a mixture of the former types. The error component “ u_{it} ” consists itself of two further components in the panel data regression models (Baltagi, 2015):

Equation 4: Error Component

$$u_{it} = \mu_i + \vartheta_{it}$$

Source: Own development based on Baltagi (2015).

The term “ μ_i ” stands for the unobservable heterogeneity, which is specific to the individual and time-invariant. It contains all the individual-specific effects that are not included in the regression. “ ϑ_{it} ” stands for the idiosyncratic error (Baltagi, 2015).

“ μ_i ” and the unobservable heterogeneity lead to the fact that the application of a pooled Ordinary Least Squared (OLS) regression would not yield consistent results. As for the OLS, the covariance of the error term and the independent variables need to equal zero. This must hold for all “ i ” and “ t ”. The requirement might hold true for the idiosyncratic part of the equation, but as “ μ_i ” contains all specific individual effects that are not part of the regression itself the requirement

that it does not correlate with the independent variables is highly unlikely. Therefore, OLS regression estimators do not consistently estimate panel data models (Baltagi, 2015). However, there are several different linear estimators for panel data analysis, namely First-Difference-estimator-, Fixed Effects- as well as Random Effects-estimators, which account for this problem (Battaglia & Gallo, 2015).

The difference between the three estimators is how they handle the unobservable heterogeneity within the regression. If the assumption holds true that:

Equation 5: Covariance of the Independent Variables and the Unobservable Heterogeneity not Equal to Zero

$$cov(X'_{it}, \mu_i) \neq 0$$

Source: Own development based on Baltagi (2015).

First Difference or Fixed Effects estimators are the most efficient tools for analysis (Wooldridge, 2002). The First Difference estimator handles the issue of unobservable heterogeneity by transforming the regression by applying the first difference to the whole regression and since the unobservable heterogeneity term does not vary over time, the term is erased. Therefore, the estimator can now estimate the dependent variable in a robust manner without the interference of the error term “ μ_i ” (Baltagi, 2015).

The Fixed Effects estimator handles the issue by wiping out the error term “ μ_i ” by subtracting the average overtime of any variable in the term. Again, as in the case of the First Difference estimator, the error term does not vary over time and is therefore wiped out of the regression. Furthermore, Fixed Effects estimators are robust for unbalanced panels, omitted variables, cross-sectional correlation as well as heteroskedasticity across panels (Battaglia and Gallo, 2015). Nevertheless, the Fixed Effects estimator, also called Least Squared Dummy Variable (LSDV) estimator, comes with certain costs (Wooldridge, 2002). For example, a larger loss of degrees of freedom as well as the fact that the estimator cannot be used in case of time-invariant variables e.g. sex, race, religion (Baltagi, 2015).

However, if the assumption:

Equation 6: Covariance of the Independent Variables and the Unobservable Heterogeneity Equal to Zero

$$\text{cov}(X'_{it}, \mu_i) = 0$$

Source: Own development based on Baltagi (2015).

holds true, one could apply as outlined above a pooled OLS regression. The assumption might, for example, hold true if the effect of “ μ_i ” is very small or if the regression contains all factors that are relevant for the model. Nevertheless, even if the above assumption holds true there might still be issues with an OLS being a consistent estimator. This is due to the serial correlation within the error term (Wooldridge, 2002). In order to control for serial correlation, the most common technique is to apply a Generalised Least Squared estimator. For panel data, the technique is called Random Effects estimator. The estimator also applies time averages for all variables but multiplies all of them with a factor, usually denoted as “ λ ”, which is dependent on the variances of the unobservable heterogeneity and the idiosyncratic error (Baltagi, 2015). In extreme cases, the Random Effects estimator can be simply a pooled OLS or a Fixed Effects estimator. If “ λ ” equals zero, the Random Effects estimator is a pooled OLS as the terms that reflect the averages over time are wiped out by multiplying with zero. If “ λ ” equals one, the Random Effects estimator is simply a Fixed Effects estimator as the terms for the average over time are multiplied by one and equal, therefore, the ones in the Fixed Effects estimator (Wooldridge, 2002).

However, in case of the above made assumption that there is zero covariance between the independent variables and the error term, the First Difference and Fixed Effects estimators can still be applied, but they will not be as efficient as the Random Effects estimator due to the limitations in both models, e.g. loss of one observation period in the First Difference estimator or the loss of degrees of freedom in Fixed Effects estimator (Wooldridge, 2002).

In order to find out, which of the above outlined consistent estimators is the most efficient, literature (e.g. Baltagi, 2015) suggests applying the Durbin–Wu–Hausman test. Based on the test a researcher can then determine which of the models should be used. The test assesses endogeneity between the predictor

variable and the error term. If endogeneity is present, the Fixed Effects model should be used rather than the Random Effects model (Hausman, 1978).

As discussed in the academic analysis Fixed Effects estimators were the most common used tools in the studies that were in scope. Underlining that these tools are commonly applied in Corporate Governance research. Therefore, the author decided to use the estimator and if necessary, the Random Effects estimator in his study to analyse the before described data set.

5.4.1 Static Panel Data Analysis

Based on the methods described before as well as the structure of the data set a panel data analysis over 16 years (1999-2015) across 157 European banks should be performed. In order to find out which of the estimators introduced before is consistent and efficient the Durbin-Wu-Hausman test will be applied. Afterwards, the relevant estimator will be used to assess the influence of the Risk Governance mechanisms on the risk as well as performance measures outlined in the previous chapters and the hypotheses section.

As a statistical tool, Stata/MP version 15 from StataCorp LLC has been used by the author for empirical tests and regressions.

5.4.1.1 Fixed and Random Effects Estimator

As outlined above in a first step tests must be carried out to find the consistent as well as efficient estimator for the analysis and to differentiate between a Fixed- and a Random Effects estimator. The test applied is Durbin-Wu-Hausman test that assesses the differences between a Fixed and Random Effects estimator with the specific dependent and independent variables and how they account for the endogeneity steaming from the unobserved heterogeneity (Durbin, 1954; Hausman, 1978; Wu, 1973). In the test, both estimators are consistent but under the null hypothesis of the model the Random Effects estimator is efficient. The model basically tells if the unique errors are correlated with the independent variables and under the null hypothesis of the model they are not (Baltagi, 2015).

The table below shows the results of the Durbin-Wu-Hausman test conducted in Stata with the six dependent variables and all the previous shown independent variables as well as control variables.

Table 20: Durbin-Wu-Hausman Test Statistics

Dependent Variable	Pre-Tax ROE	Buy and Hold Returns	Beta	LLPs to Average Loans	Daily Standard Deviation	Tier1 Capital
DWH Test Statistic	54.29***	17.60	32.28**	16.77	23.53	45.02**
P-Value	0.0001	0.5495	0.0291	0.6676	0.2148	0.0011
Degrees of Freedom	20	19	19	20	19	20
Result	H ₀ rejected	H ₀ not rejected	H ₀ rejected	H ₀ not rejected	H ₀ not rejected	H ₀ rejected
Restrictions	Not positive definite	none	none	Not positive definite	none	Not positive definite

Source: Own development.

The statistics derived from the Durbin-Wu-Hausman test for the specific settings with each dependent variable show mixed results. According to the test, a Random Effect estimator should be used in the case of Buy and Hold returns, Beta as well as the Daily Standard Deviation of Returns. For the three other dependent variables, the test supports the use of a Fixed Effect estimator. However, in three of the six cases, the test shows that the difference of the variance of both estimators is not definitely positive and that results can be biased by that. In such cases, the Mundlak approach can be employed to further assess which estimator should be employed (Mundlak, 1978). Within the test setting a usual Random Effects regression is being run and a further a second regression is run that contains additional regressors that consist of the panel means of the original regressors; and the idea behind the approach is that the only time-invariant part of the regressors must be the time average for each regressor (Mundlak, 1978). The table below shows the results derived from the application of the test in Stata.

Table 21: Mundlak Test Statistics

Dependent Variable	Pre-Tax ROE	Buy and Hold Returns	Beta	LLPs to Average Loans	Daily Standard Deviation	Tier1 Capital
Mundlak Test Statistic	196.69***	22.35	62.36***	4.17	124.56***	161.53***
P-Value	0.0000	0.3793	0.0000	1.0000	0.0000	0.0000
Degrees of Freedom	23	21	21	22	21	22
Result	FE supported	RE supported	FE supported	RE supported	FE supported	FE supported

Source: Own development.

The results of the Mundlak test support the Durbin-Wu-Hausman test results in all but one case. For the regression setting with the dependent variable Daily Standard Deviation of returns, the Mundlak test supports the use of the Fixed Effects estimator instead. Following the Mundlak test results is the more conservative way from the author's point of view as the Fixed Effects estimator would still be consistent, as under the Random Effects assumptions both estimators, the Fixed- and the Random Effects, are consistent, but the Random is more efficient.

In the next sub-chapters, the Fixed and Random Effects estimators as well as their outcomes, following the above-described test results, will be further explained.

5.4.1.2 Fixed Effects Regressions

In following the test results of the previous sub-chapter, a Fixed Effects estimator needs to be applied for four of the independent variables to test the hypotheses of this study. Therefore, the estimator will be applied to one performance and three risk proxies that the author has defined in line with prior literature on the topic.

The equation model that should be used for the Fixed Effects estimator is shown below.

Equation 7: Fixed Effects Estimator Equation

$$Y_{it} = \alpha + RG_{it} \beta + CV_{it} \gamma + \mu_t + \vartheta_{it}$$

Source: Own development.

“ i ” indicates the single banks ($= 1, \dots, 157$) and “ t ” denotes the years (1999, ..., 2015) in the panel. “ Y ” stands for the performance as well as risk measures depending on the test setting. “ RG ” is the vector of the Risk Governance variables and “ CV ” is the vector for the control variables that account for the firm- and country- as well as culture-specifics as outlined in the previous sub-chapters. The error term “ μ_i ” represents the unobservable heterogeneity and the error term “ ϑ_{it} ” stands for the idiosyncratic error.

As the hypotheses of the dissertation ask for the effect of Risk Governance measures within a crisis as well as outside of such, the effects should be grouped by the crisis years that are grounded in academic theory and the results of the descriptive statistics in this study.

For the regressions, the author used the “ $xtreg$ ” function with Fixed Effects in Stata. Results for the regressions have been clustered by the crisis indicators and therefore the author did not include further time dummies in the regression to account for year effects. It must be mentioned that the regression results will show the significance of measures on 1%, 5% and 10% level. However, the author will in the following only discuss the effects that show statistical significance at 1% and 5% level, which indicate more robust results.

Table 22: Fixed Effects Estimator Results for Pre-Tax ROE

Pre-Tax ROE	Crisis = 0		Crisis = 1	
	Coef.	Std. Err.	Coef.	Std. Err.
Audit Risk Com	-0.2455	0.1611	-0.0101	0.2747
Audit Com	0.0028	0.0290	-0.0178	0.0380
Risk Com	-0.0166	0.1513	0.1137	0.2485
Ch RC Ch another Com	-0.0597*	0.0343	0.0133	0.0572
Ch RC Ch of Board	-0.0095	0.0402	-0.1110	0.0711
CRO at Board level	-0.1014***	0.0260	-0.0269	0.0385
Ch RC indep.	-0.1834**	0.0749	-0.3596***	0.1229
Maj Mem RC indep.	0.1727**	0.0689	0.1772*	0.0987
Meet Freq Year	-0.0015	0.0014	0.0006	0.0030
Qual RC IT	0.0776	0.0678	0.1273	0.0967

Pre-Tax ROE	Crisis = 0		Crisis = 1	
	Coef.	Std. Err.	Coef.	Std. Err.
Qual RC Risk Man		(omitted)		(omitted)
RC Credit Risk		(omitted)		(omitted)
RC Market Risk	-0.0459	0.0601	-0.0377	0.1711
RC Operational Risk	0.0080	0.0611	-0.1251	0.1074
RC Rep Risk	-0.0107	0.0448	0.2294***	0.0748
RC Discusses RAS	-0.0199	0.0998	-0.1965***	0.0656
RC Backtesting RAS		(omitted)		(omitted)
RC risk policies annual	0.0554	0.1443	0.0794	0.1708
Code of Conduct	-0.0249	0.0275	0.0196	0.0336
RAF	-0.0492	0.0315	-0.0255	0.0376
RAS	-0.0305	0.0964		(omitted)
Uncertainty Avoidance		(omitted)		(omitted)
Long Short Orientation		(omitted)		(omitted)
WGI	0.1593*	0.0874	0.2427**	0.1208
Deposit Growth	-0.0034	0.0068	-0.0017	0.0012
L to D Ratio	-0.0019	0.0033	-0.0014	0.0058
Loan Growth	0.0385*	0.0217	0.0041**	0.0017
Operating Leverage	0.0351	0.0224	0.2040***	0.0294
Securities Earnings	0.1234*	0.0682	0.0409	0.1016
Total Assets	-2.35e-8	0.0000	-8.93e-8	0.0000
Observations	914		282	
R²	0.1579		0.4776	

Note: Significant values are denoted with *, ** and *** for 10%, 5% and 1% levels respectively
Source: Own development.

The table above shows the results of the linear Fixed Effects regression for the dependent performance variable Pre-Tax ROE grouped by the crisis variables. The left-hand side of the table shows the results for the time periods outside of the defined crises and the right-hand side the results for time periods in which a crisis has been defined. Several independent and control variables have been omitted from the regression due to collinearity. This is not consistent across the groups as for example the RAS has only been omitted in the crisis group and can

be explained by the fact that this group takes a different time horizon and, therefore, observations into account as the other group, which could lead to a different occurrence of collinearities as well. A further cause for omittance especially in the Fixed Effects model is if a variable does not vary over time. If this is the case, the effects of that variable will be wiped out by the regression as it relies on means of the regressors. This holds true in the case of the culture variables from Hofstede, which are not useful as control variables in a Fixed Effects setting due to their invariance.

R^2 is stronger for the crisis group and the independent variables explain 47.76% of the variance of the dependent variable, which is a strong result. In the no-crisis group, the R^2 is weaker with only 16% of explanatory power. The number of observations is higher for the no-crisis group than for the crisis group, 914 to 282. However, this is explained by the fact that years with no crisis clearly outnumber the years with a crisis within the data set.

Both groups show significant results for the defined Risk Governance mechanisms on Pre-Tax ROE, which is consistent with the findings of Ellul and Yerramilli (2013), Magee et al. (2013) and Gontarek (2016). The detailed results are explained in the following. When it comes to the outside of a crisis period, three Risk Governance mechanisms show significant results on 1% and 5% levels for the Pre-Tax ROE.

The only Risk Governance structure component that has a significant influence on the dependent variable is the CRO. The installation of CRO at board level decreases the Pre-Tax ROE of a bank outside of a crisis by 0.1014% at a 1% significance level. Other studies e.g. Ellul and Yerramilli (2013), Aebi et al. (2012) and Magee et al. (2013) have found a significant influence as well of a CRO on the performance of a bank measured by ROE or ROA of the respective financial institution. However, not all of the before mentioned results were derived based on the assessment of single variables but rather based on an index e.g. Ellul and Yerramilli (2013) and Magee et al. (2013). Due to this difference, the results are not comparable. Nevertheless, this study finds that the CRO at board level is an important part of the Risk Governance and his positioning on this level leads to a lower return outside of a crisis, which is in line with the authors

hypothesis. This effect can be explained by the fact that an independent CRO could more actively influence the risk profile of the bank and prevent too high risk levels, which might lead to lower income for the bank due to the inverse risk and return relationship compared to its peers. The result supports the proposals of the regulators (FSB, 2013b; BCBS, 2015; FINMA, 2016; EBA 2017) as well and furthermore the ones of the experts interviewed for this study, who all see the CRO function as the main counterpart for the risk committee as well as the person driving the Risk Governance Framework in the bank.

The other two significant components are related to the oversight quality and cover the independence of the risk committee, namely the independence of the chair as well as the independence of the overall committee. Regression results for both components are on the first glimpse confusing as an independent chair of the risk committee leads to a 0.1834% decrease of the Pre-Tax ROE at a 5% significance level whilst a risk committee with a majority of independent members leads to an increase of 0.1727% of the Pre-Tax ROE at a 5% significance level. This result is counterintuitive as one would expect that oversight quality increases if more independent members are part of the committee. Especially as regulators advocate (FSB, 2013b; BCBS, 2015; FINMA, 2016; EBA 2017) for a committee with a majority of independent directors as well as an independent chair. Also, the experts during their interviews did not recommend a different setup of the committee regarding independence. However, one can say that the independence of the chair leads to the expected outcome of a lower Pre-Tax ROE, which could be linked to the fact that the independent chair favours less risk over high return leading to a lower Pre-Tax ROE in the end. Nevertheless, it is hard to explain why a majority of members in the risk committee leads to a different result, which contradicts expert as well as regulatory expectations. However, other studies have detected similar results e.g. Pathan and Faff (2013), who found that banks with more independent directors performed worse. This is further supported by Erkens et al. (2012) who found that banks with more independent boards performed less good based on the stock returns in times of financial crisis. One explanation, supported by Fernandes et al. (2017) and also explained in the theoretical part of this study, is that boards fulfil two main roles, which are monitoring as well as advising. Independence should enhance the effectiveness of

the monitoring of bank management by the supervisory function of the board (Hermalin & Weisbach, 1998). The more effective the advisory capabilities are, the more the supervisory function of the board understands the specific business of the corporation (Fernandes et al., 2017). Understanding of the firm specifics is most of the time higher for dependent directors as these have deeper insights in the company. In following Fernandes et al. (2017) there seems to be a point in the effectiveness of supervising a bank, where the advisory capabilities outweigh the monitoring capabilities especially in the context of banks which are more complex and opaque, as described in the section about bank specifics for Corporate Governance, making it even worse for independent directors to give proper advice to bank management. This means that a too high quota of independent directors, in this specific case, the majority, could lead to negative outcomes from a governance perspective due to a loss of effectiveness of the advisory capabilities of the board.

Within the crisis group, also three measures have led to significant outcomes at 1% and 5% levels and only one of them, independence of the chair of the risk committee, has been significant as well in the no-crisis group.

Especially the Risk Governance structure variables do not have a significant influence on the performance during times of financial crisis on its own, which contradicts the view of the regulators (FSB, 2013b; BCBS, 2015; FINMA, 2016; EBA 2017) that see the setup of a stand-alone risk committee as a major component of Risk Governance preventing further break downs of banks during times of financial crisis. The results show that no specific setup of the risk committee is significant during times of financial crisis, meaning that neither the combined nor the stand-alone risk committee structure have a significant influence on performance. However, the fact that an independent chair of a risk committee, as well as two other risk committee measures, have a significant influence on the Pre-Tax ROE of a bank during a financial crisis advocates statistically for the setup of such a committee.

An independent chair of a risk committee leads to a 0.3596% decrease of the Pre-Tax ROE at a 1% significance level during times of financial crisis. This result is counterintuitive and not in line with the view of the regulators and experts, who

all argued that banks with stronger Risk Governance would be more profitable during a financial crisis as they are less risky and would, therefore, face fewer losses during those times. However, this could also be driven by the fact that independent chairs of risk committees push on a faster de-risking of banks during a financial crisis. The off-loading of the balance sheet would lead then to higher losses and therefore a lower Pre-Tax ROE, but to a faster clean-up, which could lead to a better position of the bank after the crisis. One can see this effect in banks of the European Union that still struggle with the heritage of the global financial crisis of 2008 (Strategy&, 2017) and un-healthy balance sheets, mainly driven by a delayed off-loading of the balance sheets.

The other two significant components are as well related to Risk Governance oversight quality, namely the components that account for the fact that the risk committee covers reputational risk and that the committee discusses the Risk Appetite Statement. If a risk committee covers reputational risk, the Pre-Tax ROE increases by 0.2294% at a 1% significance level during a financial crisis. This result is in line with the regulatory and expert expectation that Risk Governance mechanisms lead to a higher performance during times of financial crisis. The specific component speaks to reputational risk and supports the view that a risk committee that takes reputational risk into account would force the organisation to conduct business in a manner that saves the bank from reputational damage by acting against social or stakeholder interests. By taking bad publicity and reputational damage into account it seems to be the case that banks at least in times of financial crisis are able to increase their profits during those times.

If a risk committee discusses the Risk Appetite Statement of the bank the Pre-Tax ROE decreases by 0.1965% at a 1% significance level during times of financial crisis. This finding is as well as the independence of the chair result not in line with regulatory as well as expert expectation as these assumed that the measure would lead to better performance during times of financial crisis. However, the effect can be explained by the rationale provided for the chair as well. As soon as a Risk Appetite is defined and discussed within the committee, this might lead to higher transparency as well as discipline by off-loading the balance sheet during a financial crisis and therefore higher losses followed by a lower Pre-Tax ROE.

Table 23: Fixed Effects Estimator Results for Beta

Beta	Crisis = 0		Crisis = 1	
	Coef.	Std. Err.	Coef.	Std. Err.
Audit Risk Com	0.7731	0.7830	0.3510	1.0820
Audit Com	0.1116	0.1509	0.1790	0.1582
Risk Com	0.2575	0.7346	-0.4328	0.9537
Ch RC Ch another Com	0.2659	0.1660	-0.0008	0.2630
Ch RC Ch of Board	0.0861	0.2021	0.0730	0.3138
CRO at Board level	0.1897	0.1296	0.0075	0.1593
Ch RC indep.	-0.6859*	0.3594	-0.1310	0.5152
Maj Mem RC indep.	0.0711	0.3313	0.1357	0.4046
Meet Freq Year	-0.0024	0.0069	0.0281**	0.0123
Qual RC IT	-0.2126	0.3271	0.5576	0.4120
Qual RC Risk Man		(omitted)		(omitted)
RC Credit Risk		(omitted)		(omitted)
RC Market Risk	-0.0785	0.3026		(omitted)
RC Operational Risk	0.2504	0.3306	-0.4369	0.6674
RC Rep Risk	-0.3925*	0.2185	-0.5569*	0.3073
RC Discusses RAS	0.2920	0.7447	0.3664	0.2745
RC Backtesting RAS		(omitted)		(omitted)
RC risk policies annual	0.0458	0.6913	0.6621	0.7028
Code of Conduct	0.2366*	0.1428	0.0077	0.1415
RAF	-0.0572	0.1551	0.1310	0.1564
RAS	-0.6032	0.7358		(omitted)
Uncertainty Avoidance		(omitted)		(omitted)
Long Short Orientation		(omitted)		(omitted)
WGI	-0.9607**	0.4257	1.0346**	0.4973
Deposit Growth	-0.0113	0.0326	-0.0094**	0.0046
L to D Ratio	-0.0093	0.0159	-0.0294	0.0238
Loan Growth	0.1263	0.1108	0.0001	0.0071
Operating Leverage	0.2362**	0.1094	0.2486**	0.1222
Securities Earnings	0.3821	0.3398	-0.1232	0.4216
Total Assets	0.0000***	0.0000	0.000*	0.000
Observations	837		261	
R²	0.0884		0.1978	

Note: Significant values are denoted with *, ** and *** for 10%, 5% and 1% levels respectively.

Source: Own development.

The table above shows the results of the linear Fixed Effects regression for the dependent Risk variable Beta, grouped by the crisis variables. On the left-hand side, the table shows the results for the time periods outside of the defined crises and on the right-hand side the results for time periods in which a crisis has been defined. Also, in the case of this regression several independent and control variables have been omitted from the regression due to collinearity. This phenomenon is not consistently spread across the two groups and can be explained by the fact that the groups take different time horizons into account, which could lead to a different occurrence of collinearities. Furthermore, a cause for the omittance in the Fixed Effects model is if a variable does not vary over time. The effect will be wiped out by the regression as it relies on means of the regressors. This holds true as already described above for the culture variables.

R^2 is stronger for the crisis group and the independent variables explain 19.78% of the variance of the dependent variable, which is not such a strong result as observed in the case of the Pre-Tax ROE. In the no-crisis group, the R^2 is even weaker with only 8.84% of explanatory power. The number of observations is also in case of the Beta regression higher for the no-crisis group than for the crisis group, 837 to 261. This is explained by the fact that years with no crisis clearly outnumber the years with a crisis within the data set.

Overall and as already indicated by the low R^2 for both groups the estimation for Beta does not explain much of the variance in the dependent variables. Only one independent variable showed significant results on a 5% significance level, which is also a very low number of variables compared to the results that were observed for Pre-Tax ROE. Based on this it means that compared to the Pre-Tax ROE results the influence of Risk Governance variables can be better observed in the case of a dependent variable that is based on accounting data than in case of a market data-driven measure.

No independent variables have an influence on the dependent risk variable outside of the crisis. For the crisis group, the only independent variable showing significant results on 5% level is the meeting frequency of the audit committee. A percentage change in the meeting frequency leads to a 0.0281% increase of Beta for the relevant bank at a 5% significance level. A higher Beta indicates an

increase in risk from a market perspective. The result is counterintuitive to what academics, experts and regulators advocate as in this case, the risk for a relevant bank increases the higher the meeting frequency is. Higher meeting frequency should usually enhance the oversight by the board as they take more time to conduct their monitoring role and these types of boards are called proactive boards (Andres & Vallelado, 2008). Nevertheless, a further explanation might be the direction of the causality, meaning that the banks with the worst performance during the crisis had boards that met more often to increase their coverage during the turbulent time. In other words, the committees had more reasons to meet than in banks that had performed better. This would rather be a sign of a reactive board and would indicate that a bad governance is linked to the higher frequency (Andres & Vallelado, 2008). However, all practitioners argued for a higher frequency as they see the need for an in-depth discussion of risk topics especially taking the complexity as well as the opaqueness of banks into account. Nevertheless, the Fixed Effects model is not able to control for the direction of causality, which is a further type of endogeneity sufficiently answer this question.

Table 24: Fixed Effects Estimator Results for Standard Deviation of Daily Returns

Standard Deviation of Daily Returns	Crisis = 0		Crisis = 1	
	Coef.	Std. Err.	Coef.	Std. Err.
Audit Risk Com	0,0810	0.1487	0.3210	0.4503
Audit Com	-0.0423	0.0278	0.0189	0.0654
Risk Com	-0.0348	0.1384	-0.1643	0.4025
Ch RC Ch another Com	0.0348	0.0312	-0.1192	0.1061
Ch RC Ch of Board	-0.0244	0.0386	0.1176	0.1265
CRO at Board level	0.0575**	0.0243	0.0622	0.0643
Ch RC indep.	0.0531	0.0676	0.0157	0.2088
Maj Mem RC indep.	-0.0908	0.0623	0.0908	0.1639
Meet Freq Year	0.0000	0.0013	0.0012	0.0050
Qual RC IT	-0.1210*	0.0616	0.1452	0.1672
Qual RC Risk Man		(omitted)		(omitted)
RC Credit Risk		(omitted)		(omitted)
RC Market Risk	-0.0125	0.0599		(omitted)
RC Operational Risk	0.1327**	0.0635	0.0618	0.2688
RC Rep Risk	-0.0813**	0.0411	-0.3719***	0.1234
RC Discusses RAS	-0.0192	0.1403	0.2362**	0.1109
RC Backtesting RAS		(omitted)		(omitted)
RC risk policies annual	0.0402	0.1302	0.1188	0.2939
Code of Conduct	0.0047	0.0260	0.0747	0.0575
RAF	-0.0058	0.0301	-0.0192	0.0646
RAS	0.0293	0.1386		(omitted)
Uncertainty Avoidance		(omitted)		(omitted)
Long Short Orientation		(omitted)		(omitted)
WGI	-0.1603**	0.0803	-0.1925	0.2010
Deposit Growth	-0.0019	0.0062	0.0027	0.0374
L to D Ratio	0.0013	0.0030	-0.0010	0.0101
Loan Growth	-0.0786***	0.0273	-0.0011	0.0039
Operating Leverage	0.0892***	0.0230	0.0287	0.0512
Securities Earnings	-0.1930***	0.0660	-0.1633	0.1995
Total Assets	0.0000	0.0000	0.0000	0.0000
Observations	828		255	
R²	0.1476		0.2363	

Note: Significant values are denoted with *, ** and *** for 10%, 5% and 1% levels respectively
Source: Own development.

The above table shows the results of the linear Fixed Effects regression for the dependent risk variable Standard Deviations of the Daily Returns grouped by the crisis variables. The measure is a dependent variable that accounts for risk from a capital market's perspective and is a measure for the volatility of a stock as explained in the previous chapters.

The left-hand side of the table shows the results for the time periods outside of the defined crises and the right-hand side the results for time periods in which a crisis has been defined. Again, several independent and control variables have been omitted from the regression due to collinearity or since they do not vary over time.

R^2 is also stronger in the case of this regression for the crisis group and the independent variables explain 23.63% of the variance of the dependent variable, which is a stronger result compared to Beta but still lower than in the case of the Pre-Tax ROE. In the no-crisis group, the R^2 is weaker with only 14.76% of explanatory power. The number of observations is again higher for the no-crisis group than for the crisis group, 828 to 255. However, this is explained by the fact that years with no crisis clearly outnumber the years with a crisis within the data set.

In the case of the Standard Deviation of Daily Returns both groups show significant results for the defined Risk Governance mechanisms. Within the crisis group, two Risk Governance mechanisms show significant results on 1% and 5% levels for the Standard Deviation of Daily Returns and outside of a crisis, three mechanisms show significant results.

The only Risk Governance Structure component that has a significant influence is the CRO. The installation of CRO at board level increases the Standard Deviation of Daily Returns of a bank outside of a crisis by 0.0575% at a 5% significance level. This finding indicates that the CRO at board level is an important part of the Risk Governance. However, his positioning on this level leads to a higher risk profile outside of a crisis from a capital markets perspective. This could be explained by the assumption that an independent CRO could more actively influence the risk profile of the bank and that might lead to higher

volatility of stock returns. However, this result is counterintuitive since the proposals of the regulators e.g. BCBS (2015) and FSB (2013b) and furthermore the ones of the experts interviewed for this study, judge the CRO as a main driver to reduce risk of a bank in and outside of a financial crisis. Furthermore, the regression of the Pre-Tax ROE indicates from an accounting perspective that the installation of a CRO at board level leads to lower returns and therefore in turn to a lower risk profile.

The other four significant components are related to the oversight quality and speak to the coverage of the risk committee, namely the operational and reputational risk as well as the discussion of the Risk Appetite Statement.

The regression results show that if the risk committee covers operational risk in their meetings it leads to a 0.1327% increase of the Standard Deviation of Daily Returns at a 5% significance level outside of a crisis. This result is counterintuitive as well, as the coverage of this risk type should according to regulators (FSB, 2013b; BCBS, 2015; FINMA, 2016; EBA 2017) and the experts interviewed for this study lead to more robustness. However, one explanation, used for the results of two other independent variables discussed before, might be used in this case as well. The market could judge the increased transparency by covering this risk type as a driver of increased risk, as increased transparency might lead to more active monitoring and steering of the risk type by the committee and therefore leading to a higher risk profile. In this case, the other regressions do not indicate contradicting results. The mechanism does not lead to significant results in the crisis group and has, therefore, no significant results of the Standard Deviation of Daily Returns during times of financial crisis.

The next mechanism of oversight quality that shows significant results is the coverage of reputational risk by the risk committee. Regression results show that the coverage leads to a 0.0813% decrease of the Standard Deviation of Daily Returns at a 5% significance level outside of a crisis and to a 0.3719% decrease of the Standard Deviation of Daily Returns at a 1% significance level in times of a crisis. These results indicate that coverage of the reputational risk significantly lowers the risk profile of a bank from a capital markets perspective and increases, therefore, the oversight quality of the committee. This is in line with the relevant

regulators e.g. BCBS (2015) and the experts interviewed for this thesis. The result is supported by the findings derived in the Pre-Tax ROE regression where the coverage of reputational risk led to a higher return in times of financial crisis.

The results show that banks which have risk committees that cover the reputational risk, meaning damages that are based on the firm's reputation (BCBS, 2009), are less risky outside of financial crises and especially in times of financial crisis based on market measures. Risk committees of these banks take the impact of negative perceptions of stakeholders and especially the markets into account.

A further oversight quality factor that yields significant results in this regression is if the risk committee discusses the Risk Appetite Statement of a bank. When a risk committee discusses the Risk Appetite Statement this leads to an increase of the Standard Deviation of Daily Returns of a bank at times of financial crisis by 0.2362% at a 5% significance level. This finding is not in line with regulatory as well as expert expectation as these assumed that the measure would lead to less risk during times of financial crisis. However, the effect can be explained by the fact used for other measures as well, namely that the definition and discussion of a Risk Appetite Statement leads to higher transparency as well as discipline by off-loading the balance sheet of a bank during a financial crisis and therefore higher losses followed by higher risk profile from a capital markets perspective. The finding is in line with regression results for the Pre-Tax ROE, which indicated that the discussion of the Risk Appetite Statement by the risk committee has a significant negative influence on the performance of a bank during times of financial crisis.

Table 25: Fixed Effects Estimator Results for Tier 1 Capital

Tier 1 Capital	Crisis = 0		Crisis = 1	
	Coef.	Std. Err.	Coef.	Std. Err.
Audit Risk Com	0.0270	0.0528	-0.0126	0.0454
Audit Com	0.0177**	0.0077	0.0180**	0.0069
Risk Com	0.0245	0.0511	-0.0039	0.0433
Ch RC Ch another Com	0.0192**	0.0077	0.0273**	0.0116
Ch RC Ch of Board	0.0269***	0.0092	-0.0162	0.0151

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Tier 1 Capital	Crisis = 0		Crisis = 1	
	Coef.	Std. Err.	Coef.	Std. Err.
CRO at Board level	0.0214***	0.0066	0.0022	0.0073
Ch RC indep.	-0.0108	0.0168	-0.0311	0.0228
Maj Mem RC indep.	-0.0238	0.0152	-0.0177	0.0166
Meet Freq Year	-0.0002	0.0003	-0.0002	0.0005
Qual RC IT	-0.0137	0.0149	-0.0402	0.0261
Qual RC Risk Man		(omitted)		(omitted)
RC Credit Risk		(omitted)		(omitted)
RC Market Risk	-0.0227	0.0138		(omitted)
RC Operational Risk	0.0235*	0.0137	-0.0202	0.0301
RC Rep Risk	0.0174	0.0106	0.0825***	0.0200
RC Discusses RAS	-0.0162	0.0262	-0.0392**	0.0158
RC Backtesting RAS		(omitted)		(omitted)
RC risk policies annual	-0.0067	0.0499	0.0634	0.0337
Code of Conduct	0.0068	0.0077	-0.0045	0.0066
RAF	-0.0380***	0.0086	-0.0149*	0.0078
RAS	0.0245	0.0251		(omitted)
Uncertainty Avoidance		(omitted)		(omitted)
Long Short Orientation		(omitted)		(omitted)
WGI	-0.0253	0.0253	-0.0127	0.0228
Deposit Growth	0.0044***	0.0016	-0.0129	0.0125
L to D Ratio	-0.0013	0.0010	0.0010	0.0012
Loan Growth	0.0025	0.0071	-0.0100	0.0073
Operating Leverage	0.0292***	0.0057	0.0166***	0.0055
Securities Earnings	0.0045	0.0173	0.0200	0.0206
Total Assets	0.0000	0.0000	0.0000	0.0000
Observations	688		200	
R²	0.2361		0.4090	

Note: Significant values are denoted with *, ** and *** for 10%, 5% and 1% levels respectively
Source: Own development.

The table above shows the results of the linear Fixed Effects regression for the Tier 1 capital measure grouped by the crisis variables. The measure is an

independent variable that accounts for risk based on accounting numbers and is commonly used by regulators as well as capital market analysts to measure the risk-bearing capacity of a bank. As well as in the case of the other regressions the left-hand side of the table shows the results for the time periods outside of the defined crises and the right-hand side the results for time periods in which a crisis has been defined. Again, several independent and control variables have been omitted from the regression due to collinearity. This is not consistent across the groups as for example the RAS has only been omitted in the crisis group and can be again explained by the fact that this group takes a different time horizon and therefore observations into account as the other group, which could lead to a different occurrence of collinearities. Furthermore, certain other variables have been omitted since they do not vary over time. This holds true in the case of the culture variables.

R^2 is stronger for the crisis group and the independent variables explain 41% of the variance of the dependent variable, which is a strong result. In the no-crisis group, the R^2 is weaker with only 24% of explanatory power. The number of observations is higher for the no-crisis group than for the crisis group, 688 to 200. This is explained by the fact that years with no crisis clearly outnumber the years with a crisis within the data set. The overall picture of the regression is based on this in line with the regressions described before.

Both groups, crisis and no-crisis, show significant results for the defined Risk Governance mechanisms on Tier 1 capital, which is in line with the results from Iselin (2016) and Gontarek (2016).

Within the non-crisis period, five Risk Governance mechanisms show significant results on 1% and 5% levels for the Tier 1 capital, whilst for the crisis period, four measures show significant results at those levels. Especially the structural components of the Risk Governance model have a significant influence according to the regression results.

The first structural Risk Governance component that yields significant results is the audit committee and it does so in both groups. Based on the regression a stand-alone audit committee leads to a 0.0177% increase of the Tier 1 capital at a 5%

significance level in times without a financial crisis and to a 0.0180% increase of the Tier 1 capital at a 5% significance level in times with a financial crisis. Neither the combined audit and risk committee nor the stand-alone risk committee have a direct significant influence on the Tier 1 capital ratio. This could be explained by the fact that the ratio is driven by accounting measures and can, therefore, be mainly influenced by the audit committee, whose major task is to oversee the financial reporting and being the interface to internal as well as external auditors (BCBS, 2015). The findings indicate that the setup of a dedicated audit committee increases the Tier 1 capital ratio through the economic cycle, in and outside of a financial crisis.

However, besides the fact that the risk committee has no direct impact on the ratio, it can be stated that the regression results for other structural components, which indirectly assess the influence of the risk committee, yield significant results.

One of the structural components of the risk committee that yields significant results in both groups is the independent variable that measures if the chair of the risk committee is the chair of another committee of the board. Based on the regression the fact that the chair of the risk committee is also the chair of another committee leads to a 0.0192% increase of the Tier 1 capital at a 5% significance level in times without a financial crisis and to a 0.0273% increase of the Tier 1 capital at a 5% significance level in times with a financial crisis. These results are counterintuitive as some regulators (FSB, 2013b; BCBS, 2015; EBA 2017) judge this setting as suboptimal as it might lead to a too high workload as well as the loss of independence of decisions, e.g. in case of the audit committee (Deloitte, 2017). However, based on the results of the regression it can be shown that the dual role of the chair of the risk committee leads to better results from a risk perspective through the cycle. An explanation might be that due to the dual role the chair has increased knowledge from other committees e.g. the audit committee, which might lead to better oversight and decision making in the context of the risk committee. The dual role and the supposed resulting increase in information and know-how is welcomed by some of the experts who are in dual-hatting positions as well, as it increases the transparency of information across different board committees and yields better decision-making results from

their perspective. The result further supports FINMA's (2016) regulation, which does not explicitly rule out this type of dual-hatting.

The same rationale might hold true for the explanation of the result regarding the dual-hatting of the risk committee and the overall board. Based on the regression if such dual-hatting is present it leads to a 0.0269% increase of the Tier 1 capital at a 1% significance level in times without a financial crisis. However, this pushing against all regulatory-driven Corporate Governance recommendations (FSB, 2013b; BCBS, 2015; FINMA, 2016; EBA 2017) as it conflicts with the independence of the chair of the board and might support a too powerful position of the chair by this dual-hatting. However, statistical results do show a different result and advocate *ceteris paribus* for the dual-hatting.

Another structural component of the Risk Governance framework that shows significant results is the setup of a CRO on the board level. A CRO at board level increases the Tier 1 capital of a bank outside of a crisis by 0.0214% at a 1% significance level. Based on the regression the CRO at board level is an important part of the Risk Governance and his positioning on this level leads to a higher risk-bearing capacity outside of a financial crisis. This could be explained by the fact that an independent CRO could more actively influence the risk profile of the bank which might lead to the development of a stronger capital position of it. The result supports the proposals of the regulators e.g. FSB (2013b) and BCBS (2015) and furthermore, the ones of the experts interviewed for this study, who supported the setup of an independent CRO function at board level. However, in times of financial crisis, the measure does not yield significant results based on the regression carried out by the author.

The last independent variable that shows significant influence outside of a financial crisis on Tier 1 capital is the setup of a Risk Appetite Framework. It is the first time in the regressions that one of the Risk Governance tools directly yields significant results. Based on the regression the setup of such a framework leads to a 0.0380% decrease of the Tier 1 capital at a 1% significance level in times without a financial crisis. The influence of the tool is counterintuitive to what would have been expected by the author based on the expert interviews as well as the regulatory analysis as the setup of a Risk Appetite Framework leads

to a lower Tier 1 capital ratio instead of a higher one. An explanation for this could be that the setup of such a framework helps to more effectively steer risks across the bank due to increased transparency. Based on that it might be possible to better measure as well as analyse the risk profile of the bank and therefore more efficiently steer the needed risk-bearing capacity of the bank. This is important as Tier 1 capital is expensive for a bank since it needs to be raised from shareholders or to be accrued over time from profits.

The other two significant components are related to the oversight quality and are only significant during times of financial crisis. Both variables have yielded significant results in other regressions before. If a risk committee covers reputational risk, it leads to a 0.0825% increase of the Tier 1 capital at a 1% significance level in a crisis. This result indicates that coverage of the reputational risk increases the oversight quality of the committee and leads to stronger Tier 1 capital ratios in times of financial crisis. This is in line with the relevant regulators e.g. BCBS (2015) or EBA (2017), the experts interviewed for this thesis and with other regression results of this thesis e.g. Standard Deviation of Daily Returns.

A further oversight quality factor that yields significant results in this regression is if the risk committee discusses the Risk Appetite Statement of a bank. However, the result is counterintuitive as the variable leads to significantly lower Tier 1 capital ratios during times of financial crisis. Therefore, when a risk committee discusses the Risk Appetite Statement this leads to a decrease of the Tier 1 capital of a bank during times of financial crisis by 0.0392% at a 5% significance level. The finding is in line with regression on Standard Deviation of Daily Returns, which has also yielded a risk increasing result during times of financial crisis and therefore seems to show a consistent pattern, even if it is not in line with regulatory as well as expert expectation as these assumed that the measure would lead to less risk during times of financial crisis. Furthermore, the finding is in line with regression results for the Pre-Tax ROE as well, which indicated that the discussion of the Risk Appetite Statement by the risk committee has a significant negative influence on the performance of a bank during times of financial crisis. The effect may be explained by the fact that the definition and discussion of a Risk Appetite Statement lead to higher transparency as well as discipline by off-loading the

balance sheet of a bank during a financial crisis and therefore higher losses followed by higher risk profile or better said lower Tier 1 capital ratios.

In the following paragraph, the results of the four tests regarding the hypotheses and the expectations lined out in Chapter 5.3.9 should be discussed.

As a first step, the results for the Risk Governance mechanisms related to the Risk Governance Structure are being discussed in line with the hypotheses developed in this study. In the below table the results of four regressions are put into the context of the expected outcomes of the single Risk Governance Structure measures regarding risk and performance as outlined in the introduction of the empirical chapter.

Table 26: Results on Expected Influence of the Risk Governance Structure Variables on the Outcome of the Dependent Variables

No.	Name	Area	Expected Outcome Risk No-Crisis	Expected Outcome Risk Crisis	Expected Outcome Performance No-Crisis	Expected Outcome Performance Crisis
1	<i>Board has a stand-alone Risk Committee</i>	Risk Governance Structure	-	-	-	+
2	<i>Board has a stand-alone Audit Committee</i>	Risk Governance Structure	- Confirmed	- Confirmed	-	+
3	<i>Board has a combined Audit and Risk Committee</i>	Risk Governance Structure	-	-	-	+
4	<i>Chair of Risk Committee is also Chair of the Board</i>	Risk Governance Structure	+ Not confirmed	+	+	-
5	<i>Chair of Risk Committee is also Chair of another Committee</i>	Risk Governance Structure	+ Not confirmed	+ Not confirmed	+	-
6	<i>Chief Risk Officer at board level</i>	Risk Governance Structure	- Not confirmed	-	- Confirmed	+

Source: Own development.

The first hypothesis covering the Risk Governance Structure reads the following:

H_{1a} = The existence of Risk Governance mechanisms related to the Risk Governance Structure in European banks at board level is negatively related to the risk profile of a bank in times of a financial crisis.

Based on the regressions the results for the hypothesis are of a mixed nature and the hypothesis cannot be fully supported in all cases. Whilst the setup of an audit committee reduces significantly the risk of a bank in times of a financial crisis, the risk enhancing and therefore negative outcome of a dual-hatting of the chair of the risk committee cannot be proven, instead, it lowers the risk of banks in times of financial crisis.

The second hypothesis sets the Risk Governance Structure in the context of bank performance and reads:

H_{2a} = The existence of Risk Governance mechanisms related to the Risk Governance Structure in European banks at board level is positively related to the performance of a bank in times of a financial crisis.

This hypothesis cannot be proven as no significant results regarding the measures have been derived and, therefore, H_0 cannot be dismissed.

The third hypothesis covers the influence of Risk Governance Structure on risk in times outside a financial crisis:

H_{3a} = The existence of Risk Governance mechanisms related to the Risk Governance Structure in European banks at board level is negatively related to the risk profile of a bank in times outside a financial crisis.

Results are mixed in this case as well and the hypothesis can, therefore, not be fully supported. Whilst the installation of an audit committee leads to a significantly lower risk profile, the expected “negative” outcome and, therefore, risk increasing effect of dual-hatting with respect to the risk committee chair might it be the board or other committees cannot be proven, but instead, this leads to lower risks. Furthermore, the installation of a CRO at board level leads to

significant results as well, but with a differing result from the expectations, namely leading to a higher risk profile.

H_{4a} = The existence of Risk Governance mechanisms related to the Risk Governance Structure in European banks at board level is negatively related to the performance of a bank in times outside a financial crisis.

The last hypothesis of this group can be supported based on one measure showing significant results, which is the CRO again and this time its installation is leading to the expected performance reducing the outcome in times outside a financial crisis.

All in all, the results for the four regressions are mixed and do not really favour regulatory proposals. The dual-hatting, is however special, even if contradicts regulatory expectations (FINMA, 2016; EBA, 2017) when it comes to the chair of the board, it does support the standpoint from FINMA (2016), who does not specifically argue against the dual-hatting in case of another committee. Furthermore, it supports the view of some interviewees, who found this setting optimal in order to have an efficient information exchange between the committees.

Below is the outcome of the four regressions in terms of Risk Governance oversight quality shown, covering the second category of interest setup by the author.

Table 27: Results on Expected Influence of the Risk Committee Oversight Quality Variables on the Outcome of the Dependent Variables

No.	Name	Area	Expected Outcome Risk No-Crisis	Expected Outcome Risk Crisis	Expected Outcome Performance No-Crisis	Expected Outcome Performance Crisis
1	<i>Chair of Risk Committee is independent</i>	Risk Committee Oversight Quality	-	-	- Confirmed	+ Not confirmed
2	<i>Majority of Members of the Risk Committee independent</i>	Risk Committee Oversight Quality	-	-	- Not confirmed	+
3	<i>Meeting Frequency of the Risk Committee per Year</i>	Risk Committee Oversight Quality	-	- Not confirmed	-	+
4	<i>IT Qualification is available in Risk Committee</i>	Risk Committee Oversight Quality	-	-	-	+
5	<i>Risk Management and Banking Experience is available in the Risk Committee</i>	Risk Committee Oversight Quality	-	-	-	+
6	<i>Risk Committee discusses Risk Appetite Statement</i>	Risk Committee Oversight Quality	-	- Conflicting Results (Based on Accounting and Market measures)	-	+ Not confirmed
7	<i>Risk Committee makes Backtesting of Risk Appetite Statement</i>	Risk Committee Oversight Quality	-	-	-	+

No.	Name	Area	Expected Outcome Risk No-Crisis	Expected Outcome Risk Crisis	Expected Outcome Performance No-Crisis	Expected Outcome Performance Crisis
8	<i>Risk Committee covers Credit Risk</i>	Risk Committee Oversight Quality	-	-	-	+
9	<i>Risk Committee covers Market Risk</i>	Risk Committee Oversight Quality	-	-	-	+
10	<i>Risk Committee covers Operational Risk</i>	Risk Committee Oversight Quality	- Not confirmed	-	-	+
11	<i>Risk Committee covers Reputational Risk</i>	Risk Committee Oversight Quality	- Confirmed	- Confirmed	-	+ Confirmed
12	<i>Risk Committee reviews the bank's Risk Policies annually</i>	Risk Committee Oversight Quality	-	-	-	+

Source: Own development.

The first hypothesis covers oversight quality and its impact on the risk profile of a bank in times of financial crisis and reads:

H_{1b} = The existence of Risk Governance mechanisms related to the risk committee oversight quality in European banks at board level is negatively related to the risk profile of a bank in times of a financial crisis.

Results of the regressions for this hypothesis are mixed and can, therefore, not be fully supported. Whilst for three measures significant results are yielded the actual outcome does not align with the expected outcome. The coverage of reputational risk by the risk committee leads as expected to a lower risk profile in times of a financial crisis. However, the meeting frequency does not, as expected, reduce risk if it meets more often, but rather increases the respective. For the discussion of the Risk Appetite Statement not only the expected outcome is different overall

but as well the outcome is different between the regressions depending on the dependent variable and if the respective is based on markets or accounting measures. For accounting measures as dependent variable, the expected outcome, namely negative, is supported, however, for market-based measures the effect is positive.

The second hypothesis covers the impact on performance in times of a financial crisis and reads:

H_{2b} = The existence of Risk Governance mechanisms related to the risk committee oversight quality in European banks at board level is positively related to the performance of a bank in times of a financial crisis.

Based on the four regressions significant results are derived, however with mixed results, leading again to the fact that the hypothesis cannot be fully supported. Only one measure, the coverage of reputational risk shows the expected positive result on performance during a financial crisis. The independence of the chair and its expected positive impact on the performance could not be proven, but instead that it lowers the profits during a crisis. This supports some of the interviewees that made the point that a chair who understands the bank better through having ties to the bank itself could control and advise it better through a higher degree of specific know-how. Moreover, it supports FINMA's (2016) view on the topic, who as the sole regulator in scope does not require explicitly the chair to be independent. Furthermore, the discussion of the Risk Appetite Statement also does not lead to higher profits as expected, but to lower instead.

The third hypothesis covers the impact of oversight quality on the risk profile in times outside a financial crisis and reads:

H_{3b} = The existence of Risk Governance mechanisms related to the risk committee oversight quality in European banks at board level is negatively related to the risk profile of a bank in times outside a financial crisis.

Results are again mixed also for this hypothesis and only two measures show significant results. Again, the coverage of reputational risk leads to the expected outcome and therefore to lower risk in times outside a financial crisis and through

that supports the hypothesis. However, the coverage of operational risk does not yield the expected result but rather indicates that the coverage leads to a higher risk during times outside a financial crisis. Therefore, the hypothesis cannot be fully supported.

The last hypothesis in this context sets the oversight quality in the context of performance in times outside a financial crisis and reads:

H_{4b} = The existence of Risk Governance mechanisms related to the risk committee oversight quality in European banks at board level is negatively related to the performance of a bank in times outside a financial crisis.

Also, in this case, only two measures yield significant results and again lead to mixed results in terms of the expected outcome. Whilst the independence of the chair leads to the expected negative influence on performance, the case of the majority of members being independent leads to an increased performance thereby leading to an unexpected outcome. As discussed, other studies also found that in this case, the advisory function of the supervisory body is more important than the controlling function. Therefore, the hypothesis cannot be fully supported.

Overall based on the regression results a clear picture on the impact of Risk Governance mechanisms as proposed by the regulators (FINMA, 2016; EBA 2017) cannot be derived. The only consistent measure is the coverage of reputational risk, which leads in all but one regression to significant results and matching in all these the expected outcome. Furthermore, the results of other studies could be confirmed regarding the impact of a risk committee with a majority of independent members.

The next table shows the outcome of the four regressions in terms of Risk Governance Tools and therefore, covering the third category of interest setup by the author.

Table 28: Results on Expected Influence of the Risk Governance Tool Variables on the Outcome of the Dependent Variables

No.	Name	Area	Expected Outcome Risk No-Crisis	Expected Outcome Risk Crisis	Expected Outcome Performance No-Crisis	Expected Outcome Performance Crisis
1	<i>Code of Conduct in place</i>	Risk Governance Tools	-	-	-	+
2	<i>Risk Appetite Framework in place</i>	Risk Governance Tools	- Not confirmed	-	-	+
3	<i>Risk Appetite Statement in place</i>	Risk Governance Tools	-	-	-	+

Source: Own development.

The first hypothesis in focus covers the impact of Risk Governance tools on the risk profile of a bank in time of a financial crisis and reads:

H_{1c} = The existence of Risk Governance mechanisms related to the Risk Governance tools in European banks at board level is negatively related to the risk profile of a bank in times of a financial crisis.

Based on the results of the regressions the H_0 hypothesis cannot be rejected as no significant results have been yielded.

The second hypothesis sets the tools in the context of performance in times of a financial crisis and reads:

H_{2c} = The existence of Risk Governance mechanisms related to the Risk Governance tools in European banks at board level is positively related to the performance of a bank in times of a financial crisis.

Again, based on the results of the regressions the H_0 hypothesis cannot be rejected as no significant results have been yielded.

The third hypothesis covers the impact of the Risk Governance tools on the risk profile in times outside a financial crisis and reads:

H_{3c} = The existence of Risk Governance mechanisms related to the Risk Governance tools in European banks at board level is negatively related to the risk profile of a bank in times outside a financial crisis.

For this hypothesis, one measure shows significant results. However, the significant measure, namely the Risk Appetite Framework does not show the expected outcome and increases risk in times outside a financial crisis instead of decreasing it.

The last hypothesis sets the Risk Governance tools in the context of performance in times outside a financial crisis and reads:

H_{4c} = The existence of Risk Governance mechanisms related to the Risk Governance tools in European banks at board level is negatively related to the performance of a bank in times outside a financial crisis.

Again, based on the results of the regressions the H₀ hypothesis cannot be rejected as no significant results have been yielded.

Overall the results for the Risk Governance tools show the weakest results of all measures as only one yielded a significant result. Therefore, three out of four H₀ could not be rejected.

After having seen the impact of the results of the four Fixed Effects regressions on hypotheses of the author, the missing two dependent variables have to be assessed by applying a Random Effects estimator, namely the Buy and Hold returns as well as the Loan Loss Provisions.

5.4.1.3 Random Effects Regressions

In the following paragraph, the Random Effects estimator will be applied, based on the Durbin-Wu-Hausman as well as the Mundlak test results, to one performance and one risk proxy that the author has defined in line with prior literature on the topic.

The equation model that should be used for the Random Effects regressions is shown below.

Equation 8: Random Effects Estimator

$$Y_{it} = \alpha + RG_{it} \beta + CV_{it} \gamma + \mu_i + \vartheta_{it} + \varepsilon_{it}$$

Source: Own development.

“*i*” indicates the single banks (= 1, ...,157) and “*t*” denotes the years (1999, ..., 2015) in the panel. “*Y*” stands for the performance as well as risk measures depending on the test setting. “*RG*” is the vector of the Risk Governance variables and “*CV*” is the vector for the control variables that account for the firm- and country- as well as culture-specifics as outlined in the previous chapters. The error term “ μ_i ” represents the unobservable heterogeneity and the error term “ ϑ_{it} ” stands for the idiosyncratic error. In contrast to the Fixed Effects model, a third error-term has been introduced to the model, which accounts for the differences between the banks and is expressed as the in-between bank error “ ε_{it} ”.

As the hypotheses of the dissertation ask for the effect of Risk Governance measures within a crisis and not over time, the effects should be grouped by the crisis years that are grounded in academic theory and the results of the descriptive statistics in this study.

For the regressions, the author used the “*xtreg*” function with Random Effects in the statistics software Stata. All the independent variables, explained in the previous chapters, related to Risk Governance as well as control variables have been used in this case as well to regress the two dependent variables. Results for these regressions have been clustered by the crisis indicators and therefore the author did not include further time dummies in the regression to account for year effects. As in the case of the Fixed Effects regressions it must be mentioned that

the regression results will show the significance of measures on 1%, 5% and 10% level. However, the author will in the following only discuss the effects that show statistical significance at 1% and 5% level, which indicate more robust results.

Table 29: Random Effects Estimator Results for Buy and Hold

Buy and Hold	Crisis = 0		Crisis = 1	
	Coef.	Std. Err.	Coef.	Std. Err.
Audit Risk Com	-0.0120	0.2164	-0.2764	0.4392
Audit Com	-0.0283	0.0433	-0.1994***	0.0545
Risk Com	-0.0589	0.2026	0.7204	0.4458
Ch RC Ch another Com	0.0364	0.0473	0.0012	0.0862
Ch RC Ch of Board	0.0450	0.0552	-0.1243	0.0986
CRO at Board level	-0.0144	0.0348	-0.0354	0.0561
Ch RC indep.	-0.2408***	0.0889	-0.0418	0.1519
Maj Mem RC indep.	0.1530*	0.0848	-0.0530	0.1417
Meet Freq Year	-0.0018	0.0014	0.0006	0.0021
Qual RC IT	0.0388	0.0878	0.0531	0.1367
Qual RC Risk Man		(omitted)		(omitted)
RC Credit Risk		(omitted)		(omitted)
RC Market Risk	0.1465	0.0932	-0.6905***	0.2684
RC Operational Risk	-0.0681	0.1030	-0.1708	0.1974
RC Rep Risk	-0.0477	0.0601	0.1889*	0.1062
RC Discusses RAS	-0.0624	0.2191	-0.0936	0.1094
RC Backtesting RAS		(omitted)		(omitted)
RC risk policies annual	0.0730	0.1705	0.0518	0.2926
Code of Conduct	-0.0205	0.0413	-0.0293	0.0527
RAF	-0.0126	0.0413	-0.1277**	0.0520
RAS	0.0235	0.2132		(omitted)
Uncertainty Avoidance	-0.0019	0.0008	0.0004	0.0012
Long Short Orientation	0.0018	0.0022	-0.0048	0.0035
WGI	-0.0585	0.0428	0.0675	0.0663
Deposit Growth	-0.0195	0.0122	0.0004	0.0018
L to D Ratio	0.0035	0.0048	0.0048	0.0068
Loan Growth	0.0375	0.0397	0.0043*	0.0024
Operating Leverage	0.2004***	0.0396	0.0792*	0.0458

Buy and Hold	Crisis = 0		Crisis = 1	
	Coef.	Std. Err.	Coef.	Std. Err.
Securities Earnings	0.1499*	0.0847	0.1813	0.1213
Total Assets	0.0000	0.0000	0.0000	0.0000
Observations	851		258	
R²	0.0568		0.3211	

Note: Significant values are denoted with *, ** and *** for 10%, 5% and 1% levels respectively
Source: Own development.

The table above shows the results of the linear Random Effects regression for Buy and Hold capital market returns of the banks in the sample grouped by the crisis variables. The measure is an independent variable that accounts for performance based on capital market results and is commonly used by capital market analysts to measure the performance of bank stock. As in the case of the Fixed Effects regressions, the left-hand side of the table shows the results for the time periods outside of the defined crises and the right-hand side the results for time periods in which a crisis has been defined. Also, in the Random Effects model, several independent variables have been omitted from the regression due to collinearity. This is not consistent across the groups as for example the RAS has only been omitted in the crisis group and this can be explained by the fact that this group takes into account a different time horizon and therefore observation compared to the other group, which could lead to a different occurrence of collinearities. However, in contrast to the Fixed Effects estimator, the variables that do not vary over time are not omitted as the “Fixed Effects” are not removed in this regression. Therefore, the culture variables are considered in this regression even if they do not yield significant results. However, they can effectively control for cultural differences in this regression.

R² is strong for the crisis group and the independent variables explain roughly 32% of the variance of the dependent variable, which is also compared to other regressions a strong result. In the no-crisis group, the R² is a lot weaker with only about 6% of explanatory power. The number of observations is higher for the no-crisis group than for the crisis group, with 851 to 258. This is explained by the fact that years without a crisis clearly outnumber the years with a crisis within the

data set. The above characteristics are in line with the ones described before in the case of the Fixed Effects regressions.

Both groups, crisis and no-crisis, show significant results for the defined Risk Governance mechanisms on Buy and Hold returns. Within the no-crisis group, only one Risk Governance measure shows a significant result on the 1% level, whilst for the crisis group, three measures show significant results at the 1% level.

The only Risk Governance Structure component that yields a significant result in the crisis period is the stand-alone audit committee. Based on the regression a stand-alone audit committee leads to a 0.1994% decrease of the Buy and Hold return at a 1% significance level in times with a financial crisis. This result shows that in times of crisis the audit committee has a major influence on the Buy and Hold returns of banks in the sample. This is from an expert as well as regulatory perspective counterintuitive as the committee should help to make banks more robust and stronger in these times (e.g. FSB, 2013b; EBA, 2017). However, the result could be explained by the fact that the committee focuses on accounting driven data and might create therefore more transparency on the balance sheet quality and based on that drive de-risking faster in times of financial crisis leading to lower returns which might signal fewer earnings potential to the capital markets; leading in the end to lower Buy and Hold returns. Furthermore, the Tier 1 capital measure indicates a lower risk profile for a bank that sets up a stand-alone audit committee and therefore supports the result of this regression based on the risk-return relationship.

The first oversight quality measure that yields a significant result is the variable that measures if a risk committee covers market risk, showing that the risk committee has an influence as well on the performance of a bank, even if it is indirectly. If the market risk is covered, it leads to a 0.6905% decrease of the Buy and Hold returns at a 1% significance level in times with a financial crisis. It is the first time in all regressions that this variable shows a significant influence. It might be related to the fact that the measure is related to market risk and the independent variable is driven by market risk as well. However, the risk committee should rather focus on the overall market risk that sits with the balance sheet of the bank than on the market risk of the stock of the bank, which is

basically the basis of the Buy and Hold return. Nevertheless, as most of the crises as explained in the Chapter 3 of this study were driven by market risk, e.g. ABS or Eurobonds, and therefore the products linked to these crises were actively steered by the committee within the banks. Therefore, as in other cases, the increased transparency on risk types might help with steering and controlling this risk types, leading to a faster clean up during a financial crisis, which might lead to a lower performance accounting wise, which might be priced into capital market returns as well.

A further oversight quality measure that shows a significant result does so only in times of a financial crisis. The variable measures if the chair of the risk committee is independent. If it is so, it leads to a 0.2408% decrease of the Buy and Hold return at a 1% significance level in times without a financial crisis. The result aligns with the rationale of regulators and experts before, that banks with a better oversight quality, in this case, the independent chair of the risk committee might not be willing to take excessive risk and therefore face lower returns from accounting as well as markets perspective. This especially holds true in times outside a financial crisis, when other banks invest in products carrying higher risk e.g. subprime mortgage papers and therefore grow their baseline whilst more risk-averse banks refrain from this and will, therefore, face lower profits. This aligns as well with the theory of the controlling function of the supervisory body, which is increased by independent members e.g. an independent chair of the risk committee (Fernandes et al., 2018). However, it also contradicts FINMA (2016) not explicitly asking for an independent chair.

Only one Risk Governance tool mechanism yields a significant result and the variable measures if a Risk Appetite Framework exists. If this is the case, it leads to a 0.1227% decrease of the Buy and Hold return at a 5% significance level in times with a financial crisis. The variable has shown significant influence already in case of the Tier 1 capital variable, but in this case, it had a decreasing influence on the ratio outside of a crisis and, therefore, led to a lower risk. However, this time it is significant in a crisis and decreases the market returns. This is at the first sight counterintuitive as one might expect based on the regulatory as well as expert analysis that banks that have Risk Appetite Frameworks in place are more

robust in times of financial stress. Nevertheless, as discussed in other cases it could be the case that banks with proper Risk Appetite Frameworks start to off-board bad assets at a very early time and would, therefore, also face losses in a crisis and the measure showing significance does not state the magnitude of the overall losses these banks face.

Table 30: Random Effects Estimator Results for Loan Loss Provisions to Average Loans

LLPs to Average Loans	Crisis = 0		Crisis = 1	
	Coef.	Std. Err.	Coef.	Std. Err.
Audit Risk Com	0.0042	0.0127	-0.7821	1.6020
Audit Com	0.0040***	0.0014	-0.4073*	0.2318
Risk Com	-0.0003	0.0124	-0.2752	1.4514
Ch RC Ch another Com	-0.0008	0.0016	0.1811	0.3308
Ch RC Ch of Board	-0.0004	0.0018	-0.0400	0.3735
CRO at Board level	0.0018	0.0012	-0.0220	0.2104
Ch RC indep.	-0.0033	0.0031	0.1423	0.6036
Maj Mem RC indep.	0.0014	0.0029	-0.0978	0.5510
Meet Freq Year	0.0000	0.0001	0.0006	0.0091
Qual RC IT	-0.0002	0.0030	-0.1644	0.5381
Qual RC Risk Man		(omitted)		(omitted)
RC Credit Risk	0.0042	0.0136	-0.5913	1.8178
RC Market Risk	0.0020	0.0027	0.2119	0.7071
RC Operational Risk	-0.0009	0.0030	0.4136	0.6910
RC Rep Risk	-0.0021	0.0021	0.0748	0.4321
RC Discusses RAS	0.0029	0.0047	-0.0633	11304.0000
RC Backtesting RAS		(omitted)		(omitted)
RC risk policies annual	-0.0029	0.0058	-0.0171	1.1171
Code of Conduct	-0.0006	0.0013	0.1877	0.2135
RAF	0.0009	0.0015	0.2229	0.2313
RAS	-0.0037	0.0046	0.0272	1.0280
Uncertainty Avoidance	-0.0001***	0.0000	0.0017	0.0053
Long Short Orientation	-0.0001	0.0001	-0.0068	0.0157
WGI	-0.0045**	0.0020	0.2154	0.2900
Deposit Growth	0.0003	0.0005	-0.0004	0.0069
L to D Ratio	0.0002	0.0003	-0.0136	0.0349
Loan Growth	0.0028**	0.0012	-0.0010	0.0066
Operating Leverage	0.0026**	0.0011	0.0133	0.1001

LLPs to Average Loans	Crisis = 0		Crisis = 1	
	Coef.	Std. Err.	Coef.	Std. Err.
Securities Earnings	0.0060*	0.0032	1.3647**	0.5506
Total Assets	0.0000	0.0000	0.0000	0.0000
Observations	828		244	
Audit Risk Com	0.0728		0.0237	

Note: Significant values are denoted with *, ** and *** for 10%, 5% and 1% levels respectively
Source: Own development.

The table above shows the results of the linear Random Effects regression for the independent variable Loan Loss Provisions as a % of Average Loans of the banks in the sample grouped by the crisis variables. It accounts for risk based on accounting measures and is commonly used by capital market analysts to measure the credit book quality and, therefore, the risk of a bank. As in the other cases, the left-hand side of the table shows the results for the time periods outside of the defined crises and the right-hand side the results for time periods in which a crisis has been defined. Also, in this model, several independent variables have been omitted from the regression due to collinearity. The culture variables are considered in this regression and they even yield a significant result and, therefore, control for cultural differences in this regression.

R^2 is much stronger for the non-crisis group and the independent variables explain 7% of the variance of the dependent variable, which is compared to the other regressions a very weak result. In the crisis group, the R^2 is even weaker with only 2% of explanatory power. The number of observations is higher for the no-crisis group than for the crisis group, with 828 to 244. This is explained by the fact that years with no crisis clearly outnumber the years with a crisis within the data set. Overall this regression yields the lowest explanatory power of all regressions analysed in the context of the study.

Based on what has been mentioned before, it is not surprising that just one independent variable yields a significant result in this regression, which is the setup of a stand-alone audit committee in times without a financial crisis. If such a committee is installed at board level it leads to a 0.0040% increase of Loan Loss Provisions at a 1% significance level outside of a financial crisis. The fact that

this variable shows a significant result is not a surprise as the Loan Loss Provisions are purely driven by accounting practices. However, the result itself is counterintuitive as it indicates that the quality of the credit book is worse if an audit committee is installed. Nevertheless, one could argue that the audit committee forces the banks in contrast to the peers where it is not established to have a more risk-averse view on the credit portfolio and to build up more rather than fewer provisions in order to make the respective bank more robust from a risk perspective.

Also, for the Random Effects model, the author wants to summarise the results of the regressions and their impact on the hypotheses developed based on regulatory as well as professional proposals. The table below shows the results as well as the expected outcome for the single Risk Governance Structure mechanisms.

Table 31: Results on Expected Influence of the Risk Governance Structure Variables on the Outcome of the Dependent Variables

No.	Name	Area	Expected Outcome Risk No-Crisis	Expected Outcome Risk Crisis	Expected Outcome Performance No-Crisis	Expected Outcome Performance Crisis
1	<i>Board has a stand-alone Risk Committee</i>	Risk Governance Structure	-	-	-	+
2	<i>Board has a stand-alone Audit Committee</i>	Risk Governance Structure	- Not confirmed	-	-	+ Not confirmed
3	<i>Board has a combined Audit and Risk Committee</i>	Risk Governance Structure	-	-	-	+
4	<i>Chair of Risk Committee is also Chair of the Board</i>	Risk Governance Structure	+	+	+	-
5	<i>Chair of Risk Committee is also Chair of another Committee</i>	Risk Governance Structure	+	+	+	-
6	<i>Chief Risk Officer at board level</i>	Risk Governance Structure	-	-	-	+

Source: Own development.

The first hypothesis in focus covers the impact of Risk Governance Structure mechanisms on the risk profile of a bank in times of a financial crisis and reads:

H_{1a} = The existence of Risk Governance mechanisms related to the Risk Governance Structure in European banks at board level is negatively related to the risk profile of a bank in times of a financial crisis.

Based on the results of the regressions the H₀ hypothesis cannot be rejected as no significant results have been yielded.

The second hypothesis sets the Risk Governance Structure in the context of performance in times of a financial crisis and reads:

H_{2a} = The existence of Risk Governance mechanisms related to the Risk Governance Structure in European banks at board level is positively related to the performance of a bank in times of a financial crisis.

There is only one measure that shows significant results and it is the installation of an audit committee on a stand-alone basis. However, the measure does not return the expected positive output in times of a crisis but rather decreases the performance during those times. Therefore, Risk Governance Structure has an impact on performance in this case, but an opposite effect than expected based on regulatory proposals. Therefore, the hypothesis cannot be fully supported.

The third hypothesis covers the impact of the Risk Governance Structure on the risk profile in times outside a financial crisis and reads:

H_{3a} = The existence of Risk Governance mechanisms related to the Risk Governance Structure in European banks at board level is negatively related to the risk profile of a bank in times outside a financial crisis.

Also, in this case, the stand-alone audit committee is the only measure showing significant results and again the effect is opposite to the expected one. Whilst it was thought, based on regulatory as well as practitioner proposals that the committee reduces risk, it actually increases it significantly. Therefore, the hypothesis cannot be fully supported as well.

The last hypothesis sets the Risk Governance Structure in the context of performance in times without a financial crisis and reads:

H_{4a} = The existence of Risk Governance mechanisms related to the Risk Governance Structure in European banks at board level is negatively related to the performance of a bank in times outside a financial crisis.

Based on the results of the regressions the H₀ hypothesis cannot be rejected as no significant results have been yielded.

Overall, only one of the six measures showed significant results, though contrary to the expectations of the author. Compared to the Fixed Effects model, results are, therefore, not promising to support the hypotheses and therefore regulatory proposals as well.

The table below shows the results of the Random Effects regression compared to the expected outcomes for the Risk Governance oversight quality measures.

Table 32: Results on Expected Influence of the Risk Committee Oversight Quality Variables on the Outcome of the Dependent Variables

No.	Name	Area	Expected Outcome Risk No-Crisis	Expected Outcome Risk Crisis	Expected Outcome Performance No-Crisis	Expected Outcome Performance Crisis
1	<i>Chair of Risk Committee is independent</i>	Risk Committee Oversight Quality	-	-	- Confirmed	+
2	<i>Majority of Members of the Risk Committee independent</i>	Risk Committee Oversight Quality	-	-	-	+
3	<i>Meeting Frequency of the Risk Committee per Year</i>	Risk Committee Oversight Quality	-	-	-	+
4	<i>IT Qualification is available in Risk Committee</i>	Risk Committee Oversight Quality	-	-	-	+

No.	Name	Area	Expected Outcome Risk No-Crisis	Expected Outcome Risk Crisis	Expected Outcome Performance No-Crisis	Expected Outcome Performance Crisis
5	<i>Risk Management and Banking Experience is available in the Risk Committee</i>	Risk Committee Oversight Quality	-	-	-	+
6	<i>Risk Committee discusses Risk Appetite Statement</i>	Risk Committee Oversight Quality	-	-	-	+
7	<i>Risk Committee makes Backtesting of Risk Appetite Statement</i>	Risk Committee Oversight Quality	-	-	-	+
8	<i>Risk Committee covers Credit Risk</i>	Risk Committee Oversight Quality	-	-	-	+
9	<i>Risk Committee covers Market Risk</i>	Risk Committee Oversight Quality	-	-	-	+ Not confirmed
10	<i>Risk Committee covers Operational Risk</i>	Risk Committee Oversight Quality	-	-	-	+
11	<i>Risk Committee covers Reputational Risk</i>	Risk Committee Oversight Quality	-	-	-	+
12	<i>Risk Committee reviews the bank's Risk Policies annually</i>	Risk Committee Oversight Quality	-	-	-	+

Source: Own development.

The first hypothesis in focus covers the impact of Risk Governance oversight quality on the risk profile of a bank in times of a financial crisis and reads:

H_{1b} = The existence of Risk Governance mechanisms related to the risk committee oversight quality in European banks at board level is negatively related to the risk profile of a bank in times of a financial crisis.

Based on the results of the regressions the H_0 hypothesis cannot be rejected as no significant results have been yielded.

The second hypothesis sets the oversight quality in the context of performance in times of a financial crisis and reads:

H_{2b} = The existence of Risk Governance mechanisms related to the risk committee oversight quality in European banks at board level is positively related to the performance of a bank in times of a financial crisis.

The only measure yielding a significant result in this setup is if the risk committee covers the market risk. It was assumed, based on the review of regulatory proposals, that the coverage of this risk type by the risk committee would lead to a higher performance during times of financial crisis. However, the results of the regressions show that it leads to lower performance instead. Therefore, the hypothesis cannot be fully supported.

The third hypothesis covers the impact of the Risk Governance oversight quality on the risk profile in times outside a financial crisis and reads:

H_{3b} = The existence of Risk Governance mechanisms related to the risk committee oversight quality in European banks at board level is negatively related to the risk profile of a bank in times outside a financial crisis.

Based on the results of the regressions the H_0 hypothesis cannot be rejected as no significant results have been yielded.

The last hypothesis sets the Risk Governance oversight quality in the context of performance in times outside a financial crisis and reads:

H_{4b} = The existence of Risk Governance mechanisms related to the risk committee oversight quality in European banks at board level is negatively related to the performance of a bank in times outside a financial crisis.

There is again only one measure leading to significant results in this setting and it is the measure covering the independence of the chair of the risk committee. If the chair is independent, it leads to an increase of performance of banks in the sample outside of a financial crisis, which is in line with the assumption being derived from the research carried out before by the author. Therefore, the hypothesis for the specific measure is supported.

Overall, also in the case of risk committee oversight quality the Random Effects regressions only return a very low number of significant results. Furthermore, the two significant results are only related to performance showing no influence at all on the risk profile of a bank in regard to the oversight quality.

The below table shows the results as well as the expectations defined by the author for the last three measures grouped under Risk Governance tools based on the Random Effects estimator.

Table 33: Results on Expected Influence of the Risk Governance Tool Variables on the Outcome of the Dependent Variables

No.	Name	Area	Expected Outcome Risk No-Crisis	Expected Outcome Risk Crisis	Expected Outcome Performance No-Crisis	Expected Outcome Performance Crisis
1	<i>Code of Conduct in place</i>	Risk Governance Tools	-	-	-	+
2	<i>Risk Appetite Framework in place</i>	Risk Governance Tools	-	-	-	+ Not confirmed
3	<i>Risk Appetite Statement in place</i>	Risk Governance Tools	-	-	-	+

Source: Own development.

The first hypothesis in focus covers the impact of Risk Governance tools on the risk profile of a bank in times of a financial crisis and reads:

H_{1c} = The existence of Risk Governance mechanisms related to the Risk Governance tools in European banks at board level is negatively related to the risk profile of a bank in times of a financial crisis.

Based on the results of the regressions the H₀ hypothesis cannot be rejected as no significant results have been yielded.

The second hypothesis sets the tools in the context of performance in times of financial crisis and reads:

H_{2c} = The existence of Risk Governance mechanisms related to the Risk Governance tools in European banks at board level is positively related to the performance of a bank in times of a financial crisis.

In this case, one mechanism shows a significant result and it is the setup of a Risk Appetite Framework. If such a framework is installed, it leads to a decrease in performance in times of a financial crisis, which contradicts the expectation of the author. Therefore, the results do not fully support the hypothesis of the author.

The third hypothesis covers the impact of the Risk Governance tools on the risk profile in times outside a financial crisis and reads:

H_{3c} = The existence of Risk Governance mechanisms related to the Risk Governance tools in European banks at board level is negatively related to the risk profile of a bank in times outside a financial crisis.

Based on the results of the regressions the H₀ hypothesis cannot be rejected as no significant results have been yielded.

The last hypothesis sets the Risk Governance tools in the context of performance in times outside a financial crisis and reads:

H_{4c} = The existence of Risk Governance mechanisms related to the Risk Governance tools in European banks at board level is negatively related to the performance of a bank in times outside a financial crisis.

Again, based on the results of the regressions the H₀ hypothesis cannot be rejected as no significant results have been yielded.

Overall the results for the Risk Governance tools show only a minor influence of the mechanisms on risk and performance of banks through the cycle.

However, before diving too deep into the discussion and implications of the Fixed and Random Effects regressions on practice and theory, the author has to introduce further criticism against the two estimators and, therefore, also against their results, which will be explained in the Chapter 5.4.2.

5.4.2 Dynamic Panel Data Analysis

In Chapter 5.4.1 the author employed Fixed Effects as well as Random Effects estimators to analyse the causal relationship between Risk Governance and risk as well as performance. These tools are widely used throughout Corporate Governance research as pointed out by Love (2010) as well as by Schultz, Tan and Walsh (2010). The academic analysis performed by the author yielded similar results, finding 12 applications of Fixed and Random Effects estimators and 10 applications of OLS estimators for the analysis of Corporate Governance variables and their impact on risk and/or performance variables.

However, these estimators have been criticised by a group of authors (Wintoki, Linck & Netter, 2012, Love, 2010; Schultz et al. 2010) for not properly accounting for endogeneity in the context of Corporate Governance and therefore positively overestimating its influence on risk or performance. The endogeneity problem has been introduced by the author already in the model section of the Fixed and Random Effects estimators, especially regarding the unobserved heterogeneity. In order to account for endogeneity, the Durbin-Wu-Hausman test has been carried out to test if endogeneity is present in the research setup and if it needs to be accounted for. As these tests have shown unclear results for some of the regressions, the author applied a further test based on the Mundlak test statistic. Based on the tests carried out the author decided depending on the result to use either a Fixed or a Random Effects model instead of an OLS regression.

However, unobserved heterogeneity, which is being controlled for by applying Fixed or Random Effects estimators, is not the only source of endogeneity according to e.g. Lilling (2006). Other sources of endogeneity present in

Corporate Governance and risk as well as performance relationships can be simultaneity and dynamic endogeneity (Schultz et al., 2010).

In detail the three sources can be described following Schultz et al (2010) in the manner below:

- *Unobserved heterogeneity*: Introduced in the Fixed and Random Effects chapter and relates to unobservable factors that influence the relation between the independent and the dependent variable, for example, the talent of a CEO (Love, 2010). As this effect does not vary over time and is firm-specific the omitted factor is called a firm fixed effect (Love, 2010). Therefore, Fixed Effects estimators account for this type of endogeneity as they eliminate the fixed effects in the regression.
- *Simultaneity*: This type of endogeneity occurs if one variable is determined together with another variable or better said co-determined (Schultz et al., 2010). For example, the independent variables, as well as the control variables in this study, could be determined simultaneously by the risk or the performance measures used.
- *Dynamic endogeneity*: Is present if the value of a variable in t_1 is influenced by the value of another variable in a previous time period (Wintoki et al., 2012). For example, the Risk Governance mechanisms of a specific bank in the sample could be dependent not on the current performance of a bank but could be dependent on the performances or Risk Governance mechanisms from past periods.

The ordinary Fixed Effects estimator does not account for the two latter types of endogeneity as it relies on strict exogeneity, but the two further sources of endogeneity violate this assumption. Therefore, the results described in the preceding chapter might be biased if one assumes that all three sources of endogeneity are present in the Risk Governance and risk as well as performance relationship. This is true if one follows the assumptions laid out by a significant group of authors (Love 2010; Schultz et al. 2010; Wintoki et al., 2012) criticising Corporate Governance research relying on panel data analysis that is based on OLS as well as Fixed and Random Effects estimators. Based on this criticism the

results discussed by the author before in the Fixed Effects as well as the Random Effects section must be understood with caution, as they did not account for two out of the three sources of endogeneity. Therefore, the author decided to employ further statistical methods to test the so far derived results of this study for robustness.

To overcome the problem introduced before, the authors (Wintoki et al., 2009, Schultz et al. 2010) recommend applying a dynamic General Method of Moments (GMM) estimator, which can account for all three sources of endogeneity simultaneously. This estimator was developed by a group of authors in the last 15 years of the 20th century (Holtz-Eakin, Newey & Rosen, 1988; Arellano & Bond, 1991; Arellano & Bover, 1995; Blundell & Bond, 1998). Dynamic GMM estimators can tackle the sources of endogeneity by accounting for fixed firm effects as well as by allowing past values of Risk Governance or risk/performance to influence current Risk Governance (Wintoki et al., 2009). Furthermore, the estimator can cope with dynamic economic processes and uses internal instruments to account for simultaneity and therefore does not need to rely on external instruments, which are hard to identify for most research settings (Love, 2010). The estimator is further robust to autocorrelation as well as heteroskedasticity (Schultz et al. (2010). Moreover, it is especially useful for panels with small T and high N, which means shorter time periods but a high number of observations (Roodman, 2007). The underlying panel data set used by the author for this study can be interpreted to fit into that pattern. Furthermore, as indicated in the academic analysis section the estimator has been used seven times in the assessed papers, especially in the more current papers.

In order to provide an overview of the dynamic GMM estimator, the author will start with the introduction of the dynamic difference GMM estimator, which has been developed by Holtz-Eakin et al. (1988) and Arellano and Bond (1991). The difference GMM estimator uses, as the name indicates, time differenced variables in order to account for firm fixed effects as well as lags of the dependent variable to account for dynamic endogeneity (Schultz et al. 2010). Furthermore, as already stated the difference GMM estimator can use internal models to cope with simultaneity problems.

Therefore, the regression equation regarding the specific case of this thesis is as follows:

Equation 9: GMM Equation for Risk Governance

$$\Delta Y = L \cdot \Delta Y \alpha + \Delta RG \beta + \Delta CV \gamma + \Delta E$$

Source: Own development based on Schultz et al. (2010).

In line with Schultz et al. (2010, p. 148): “ ΔY ” is a $(n - i) \times 1$ vector of the differenced performance or risk variable of “ n ” observations and “ i ” firms. “ L ” denominates, in this case, a one-period lag operator; “ α ” is a 1×1 scalar of the coefficient for the lag time differenced performance or risk measure. “ ΔRG ” is a $(n - i) \times 1$ vector of the differenced Risk Governance variables of “ n ” observations and “ i ” firms. “ β ” is a 1×1 scalar of the coefficient for the time differenced Risk Governance measures. “ ΔCV ” is a $(n - i) \times 1$ vector of the differenced control variables of “ n ” observations and “ i ” firms. “ γ ” is a 1×1 scalar of the coefficient for the time differenced Risk Governance measures. “ ΔE ” is a $(n - i) \times 1$ vector of error terms of “ n ” observations and “ i ” firms.

Furthermore, a valid instrument set must be derived for the above-shown equation according to Wintoki et al. (2009). Therefore, the risk and performance measures of the banks in the sample must be assumed to be orthogonal to their future representations and this needs to hold true for the Risk Governance variables as well as control variables. However, they might be correlated with their past and current values, which is assumed to be sequential endogeneity. This is less a strong condition as the strict exogeneity that was assumed for the Fixed Effects estimators (Schultz et al., 2010).

Furthermore, according to Schultz et al. (2010) persistence in the variables is assumed and therefore past values of these may serve as valid instruments for the GMM estimator regression.

Taking the above described into account, the following moment conditions below must be specified, which include the available instruments:

Equation 10: Moment Conditions

$$d_T = \frac{1}{N} \Sigma \begin{bmatrix} (\Delta Y - L. \Delta Y \alpha - \Delta RG \beta - \Delta CV \gamma) * L2. RG \\ \vdots \\ (\Delta Y - L. \Delta Y \alpha - \Delta RG \beta - \Delta CV \gamma) * LJ. RG \\ (\Delta Y - L. \Delta Y \alpha - \Delta RG \beta - \Delta CV \gamma) * L. CV \\ \vdots \\ (\Delta Y - L. \Delta Y \alpha - \Delta RG \beta - \Delta CV \gamma) * LB. CV \\ (\Delta Y - L. \Delta Y \alpha - \Delta RG \beta - \Delta CV \gamma) * L2. CV \\ \vdots \\ (\Delta Y - L. \Delta Y \alpha - \Delta RG \beta - \Delta CV \gamma) * LV. Y \end{bmatrix}$$

Source: Own development based on Schultz et al. (2010).

where in accordance with Schultz et al (2010, p. 149): “*L*” is a one period lag operator; “*L_w.CV*” is the *w*-th-lag operator on variable “*CV*”; “ ΔY ” is a $(n - i) \times I$ vector of the differenced firm performance or risk variable, across *n* observations and “*i*” firms; “ α ” is a $I \times I$ scalar of the coefficient for the lag time differenced performance measure, “*L.ΔY*”, across *n* observations; “ ΔRG ” is an $(n - i) \times H$ matrix of the *H* differenced Risk Governance variables, across “*n*” observations and “*i*” firms; “ β ” is a $H \times I$ vector of coefficients for the *H* differenced Risk Governance variables; “ ΔCV ” is an $(n - i) \times Q$ matrix of the *Q* differenced firm and country control variables, across “*n*” observations and “*i*” firms; “ γ ” is a $Q \times I$ vector of coefficients for the *Q* differenced firm and country control variables; and, “*J*”, “*B*”, and “*V*” are the maximum lag length of instruments created by the Risk Governance, control, risk and performance variables respectively.

The moment conditions should according to Schultz et al. (2010) converge to zero, which is impossible if the moment conditions outnumber the estimation parameters and lead therefore to overidentification. One solution to overcome this is the minimisation of the matrix shown before based on the introduction of a weighting (Schultz et al. 2010). This weighting procedure is called the two-step GMM procedure (Roodman, 2009) and the inverse variance-covariance matrix of the moment conditions introduced before is used to achieve this. Based on this orthogonally correlated as well as highly variant conditions will gain less weight in the equation (Schultz et al., 2010).

However, Arellano and Bover (1995) and Blundell and Bond (1998) have presented an alternative method in their studies. They have developed an equation system that adds a level equation to the difference equation. According to Wintoki et al. (2009) as well as Schultz et al. (2010), the system is more efficient as the pure difference GMM.

The estimator applied to this study would look the following way:

Equation 11: Dynamic Systems GMM Estimator for Risk Governance

$$Y = L.Y\alpha + RG\beta + CV\gamma + \Delta E$$
$$\Delta Y = L.\Delta Y\alpha + \Delta RG\beta + \Delta CV\gamma + \Delta E$$

Source: Own development based on Schultz et al. (2010).

As one can easily notice the difference equation is kept the way as it was for the difference GMM estimator, but a level equation that contains the lagged “*Y*” is added and therefore a dynamic systems GMM is being created. The model is more efficient as it also accounts for the possibility that the relation between Risk Governance and the dependent variables is in levels instead of differences. Furthermore, another level of instruments is being created based on the introduction of the level equation as new conditions of moments are established by this (Wintoki et al., 2009). However, a further condition must be set up if one uses the dynamic systems GMM and this relates to the correlations between the regressors and the fixed-firm effects, which must be constant. Based on this the new conditions of moments will look the following way:

Equation 12: Moment Conditions for the Dynamic Systems GMM Estimator

$$d_T = \frac{1}{N} \Sigma \begin{bmatrix} (\Delta Y - L.\Delta Y\alpha - \Delta RG\beta - \Delta CV\gamma) * L2.RG \\ \vdots \\ (\Delta Y - L.\Delta Y\alpha - \Delta RG\beta - \Delta CV\gamma) * LJ.RG \\ (\Delta Y - L.\Delta Y\alpha - \Delta RG\beta - \Delta CV\gamma) * L.CV \\ \vdots \\ (\Delta Y - L.\Delta Y\alpha - \Delta RG\beta - \Delta CV\gamma) * LB.CV \\ (\Delta Y - L.\Delta Y\alpha - \Delta RG\beta - \Delta CV\gamma) * L2.CV \\ \vdots \\ (\Delta Y - L.\Delta Y\alpha - \Delta RG\beta - \Delta CV\gamma) * LV.Y \\ (Y - L.Y\alpha - RG\beta - CV\gamma) * L.\Delta RG \\ \vdots \\ (Y - L.Y\alpha - RG\beta - CV\gamma) * LC.\Delta RG \\ (Y - L.Y\alpha - RG\beta - CV\gamma) * \Delta CV \\ \vdots \\ (Y - L.Y\alpha - RG\beta - CV\gamma) * L.U\Delta RG \\ (Y - L.Y\alpha - RG\beta - CV\gamma) * L.\Delta Y \\ \vdots \\ (Y - L.Y\alpha - RG\beta - CV\gamma) * LR.\Delta Y \end{bmatrix}$$

Source: Own development based on Schultz et al. (2010).

where in accordance with Schultz et al (2010, p. 151): “ $E(d_T)$ ” = O ; “ L ” is a one-period lag operator; “ $L_w.CV$ ” is the w -th-lag operator on variable “ CV ”; “ ΔY ” is an $(n - i) \times 1$ vector of the differenced firm performance or risk variable, across “ n ” observations and “ i ” firms; “ α ” is a 1×1 scalar of the coefficient for the lag time differenced performance measure, “ $L.\Delta Y$ ”, across “ n ” observations; “ ΔRG ” is an $n \times H$ matrix of the H differenced Risk Governance variables, across “ n ” observations; “ β ” is a $H \times 1$ vector of coefficients for the H Risk Governance variables; “ ΔCV ” is an $n \times Q$ matrix of the Q differenced firm and country control variables, across “ n ” observations; “ γ ” is a $Q \times 1$ vector of coefficients for the Q firm and country control variables; and, “ J ”, “ B ”, and “ V ” are the maximum lag length of instruments created by the Risk Governance, control, risk and performance variables respectively. Furthermore, “ C ”, “ U ”, and “ R ” are standing for the maximum lag length of the differenced instruments for Risk Governance, control, risk and performance variables with regard to the levels equation.

The dynamic systems GMM estimator follows the same two-step approach as the dynamic difference GMM estimator in order to reduce the number of instruments and to cope with overidentification. Based on what has been mentioned before,

the model should produce more efficient estimates for the Risk Governance and risk/performance relationship, which are robust for unobserved heterogeneity, simultaneity and dynamic endogeneity.

Nevertheless, the dynamic GMM estimator has its limitations as well, which should be considered by a researcher when using these estimators (Roodman, 2007). The most critical limitation that is cited by several authors (e.g. Roodman, 2007; Wintoki et al., 2009; Schultz et al., 2010) is the overidentification which might occur if a large number of instruments is used and leads to weak instruments in the end. According to Roodman (2008), this is based on two components: The first one is related to the simple fact that too many instruments might overfit the endogenous variables, which has been shown by Tauchen (1986) or by Arellano (2003). The second component speaks to the weighting matrix introduced before, which is the inverse of an estimate in the second step of a two-step GMM approach, which following Roodman's logic (2008) creates difficulties with the calculations of moments conditions as soon as the number of instruments reaches the number of observations due to a singularity problem. Considering both components of the problem Rodman (2007; 2008) as well as Schultz et al. (2010) recommend as a rule of thumb, to use less or instruments equal to groups or observations present in the model, otherwise the validity of the model might not be achieved, and results might be biased. Furthermore, the Hansen (1982) test of instrument validity should be applied according to several authors to test for the robustness of the results (e.g. Wintoki et al., 2009). The test is positive if the H_0 hypothesis that the instruments are uncorrelated with the error term and, furthermore, the excluded instruments are correctly excluded from the equation cannot be rejected (Roodman, 2008). However, one must take care if instruments are outnumbering groups or observations as this might lead to inflated test results of nearly perfect p-values of 1.000 (Rodman, 2008). On top of the test for the full instrument set, a Difference-in-Hansen test can be applied to assess the validity of subcomponents of the instruments (Roodman, 2009). This is especially useful if it is a GMM type instrument, thus endogenous instruments as well as exogenous instruments are used in the same model. The test computes the increase of the Hansen test statistic by adding the specific instrument component to the model and applies the same H_0 as discussed before (Roodman, 2008).

Furthermore, following Wintoki et al. (2009) the dynamic GMM estimator does not solve all the issues that come with endogeneity in Corporate Governance research as it purely relies on internal instruments and therefore the best way to estimate the risk/performance and Risk Governance relationship would be by using exogenous instruments.

A further critique brought forward by Love (2009) is that governance variables might not change frequently and that lagged variables would need to go far back into the past in order to provide valid results. However, as discussed above too many instruments weaken the results as well and every lag adds additional instruments and thus inflating potentially the p-value of the Hansen test.

5.4.2.1 GMM Estimator for Risk Governance

Based on the critiques on OLS, Fixed and Random Effects estimators in the context of panel data analysis in Corporate Governance research as well as based on the before discussed advantages of the dynamic GMM estimators, the author decided to apply these estimators in the context of the study. The key question is, which estimator to apply: the difference or the system GMM? Researchers (e.g. Gretzinger and Royer, 2015) prefer to use the systems GMM estimator as it has two main advantages compared to the difference GMM estimators. Firstly, it can handle unbalanced panels very well (Roodman, 2009), which is especially in the context of this study important as an unbalanced panel is used. Secondly, the model allows the inclusion of more instruments due to the level equation (Gretzinger & Royer, 2015) and increases, therefore, the efficiency of the estimator. Therefore, the author decided to use the dynamic systems GMM estimator for further analysis of the risk/performance and Risk Governance relationship.

The dynamic systems GMM estimator used by the author is based on the *xtabond2* functionality in the software tool Stata which was introduced in 2003 and developed by David Roodman a Researcher at the Centre for Global Development Washington DC. The estimator can cope with large instruments sets and reports all common test statistics that are needed to understand the instrument validity of the relevant estimator (Gretzinger & Royer, 2015).

The estimator used by the author is split into two regressions, one is the model without the “external shock” crisis and the other one is the model with the “external shock” being present in the regression in order to test the hypotheses, which assume an impact of Risk Governance measures in times of a financial crisis. The “external shock” is expressed as a dummy variable with the values 1 and 0. Furthermore, the crisis years have been defined in the context of the study before.

Using `xtabond2` the author will construct, a model within Stata to test the hypotheses of this study, based on the following two equations:

Equation 13: Risk Governance GMM Estimator Equations used for the Study

$$(1) Y = L.Y\alpha + RG\beta + CV\gamma + \Delta E$$

$$(2)\Delta Y = L.\Delta Y\alpha + \Delta RG\beta + \Delta CV\gamma + \Delta E$$

Source: Own development.

The applied models are shown beneath and will be discussed in more detail in the following paragraph:

1. `xtabond2 Y L(1/2).Y AuditRiskCom AuditCom RiskCom
ChRCChanotheCo ChRCChofBoard CROatBoardlevel ChRCindep
MajMemRCinde MeetFreqYear QualRCIT QualRCRiskMan
RCCreditRisk RCMarketRisk RCcoversOperationalRisk RCRepRisk
RCDiscussesRAS RCBacktestingRAS RCriskpoliciesannual
CodeofConduct RAF RAS L(0/0).(LoanGrowth OperatingLeverage
SecuritiesEarnings TotalAssets WGI), gmm(Y LoanGrowth
OperatingLeverage SecuritiesEarnings TotalAssets WGI, lag(1 .)
collapse) robust small`
2. `xtabond2 Y L(1/2).Y AuditRiskCom AuditCom RiskCom
ChRCChanotheCo ChRCChofBoard CROatBoardlevel ChRCindep
MajMemRCinde MeetFreqYear QualRCIT QualRCRiskMan
RCCreditRisk RCMarketRisk RCcoversOperationalRisk RCRepRisk
RCDiscussesRAS RCBacktestingRAS RCriskpoliciesannual
CodeofConduct RAF RAS L(0/0).(LoanGrowth OperatingLeverage`

*SecuritiesEarnings TotalAssets WGI), gmm(Y LoanGrowth
 OperatingLeverage SecuritiesEarnings TotalAssets WGI, lag(1 .)
 collapse) iv(Crisis, equation(level)) robust small*

Model 1 is the no crisis setup, where “Y” stands as a place holder for one of the six risk or performance variables of this study and is basically the left-hand side of the equations shown before also known as the dependent variable of the regression. “L(1/2)Y” stands for the first and second lag of the dependent variable, which is being used as a measure for the past realisation in this model. Greene (2012) states that this leads to the fact that the influence on the dependent variable is only dependent on the new information added by the independent variables. However, it is important to determine how many lags should be used in order to have a viable equation. If one uses just one lag, it might be the case that an important variable is omitted as a further lag might contain more relevant information for the estimator. However, too many lags might add no further value to the system as they are too far away from a time perspective, to influence the investigated relationship (Schultz et al., 2010). Furthermore, every lag adds a further instrument to the estimator, which weakens the estimator overall due to overidentification (Roodman, 2008). Therefore, the author decided to use only the first and second lag of the dependent variables following the advice from Wintoki et al. (2012), because these two are enough to fully account for the persistence of risk or performance over time. This means that later lags do not contain more information, which would influence the current risk or performance of a bank in our case but would lead to an overall weakening of the estimator.

The following 21 terms starting with “*AuditRiskCom*” and ending with “*RAS*” reflect the independent variables of the study, which are not lagged in the model and therefore always represent the current values in the respective years. Starting with “L(0/0)” the term in brackets contains the control variables for the models, which are in the first step not being lagged as shown above in the first and second equation of the Risk Governance specific GMM model. However, the attentive reader will notice that not all control variables introduced before are part of the regression. This is due to the fact, that as Roodman (2008) has shown an overidentification problem might arise if too many instruments are used. If the

author would have kept all control variables, the instrument count would have been above the count of groups in the model and the Hansen J statistic would have delivered unreliable good results of a p-value of 1.000, which according to Roodman (2008) heavily impacts the validity of the model. Therefore, the culture variables, which have no influence as they do not vary over time, have been excluded, but the WGI measure is still part of the model to control for country specifics. Furthermore, the author has chosen to remove two control variables which are significantly correlated with other control variables to further reduce the instrument number. Therefore, Deposit Growth and the Loan to Deposit Ratio have been removed.

Starting after the comma with “*gmm*” the variables, which represent the internal or endogenous instruments are listed, and they contain all control variables as well as “*Y*” which is used as an internal instrument as well. These will be used to construct the moment conditions matrix. The author instructed “*xtabond2*” to use all available lags of the instruments, which is explained by “*lag (1 .)*”. However, having the problem of too many instruments in mind the author decided to use the “*collapse*” function of “*xtabond2*” in order to reduce the number of lags and to increase the efficiency of the model. The function creates only one lag per instrument per time period rather than a lag for each time period, a lag distance as well as variable according to the Stata built-in help. The term “*robust*” indicates that the author used robust standard errors, which are consistent in case of heteroskedasticity and autocorrelation. Furthermore, the “*small*” functionality has been chosen, which uses t-statistics instead of the z-statistics to account for the small panel data set, which is being used in this study.

The difference between model 1 and 2 is the “*iv*” term, which contains the exogenous variable “*Crisis*” and is defined as the occurrence of a financial crisis which is been found to be an external shock in the context of this. “*Equation (Level)*” indicates that the variable is just used in the level equation by which the author follows Roodman’s advice (2009) for time dummies.

Several authors (e.g. Roodman, 2009, Gretzinger and Royer, 2015) point out that one of the most important recommendations a researcher must follow in order to show the robustness of his or her model is to transparently report the test statistics

of the dynamic systems GMM model applied. The most important ones are the Arellano-Bond estimators for autocorrelation as well as the Hansen-J statistics and the Difference-in-Hansen test.

5.4.2.2 Dynamic Systems GMM Estimator Specifics and Results

The modified *xtabond2* estimator, as described before, has been used by the author for all six dependent variables, which have defined in the chapters before, in order to test the relationship of risk/performance measures and Risk Governance taking the three described sources of endogeneity into account.

Before discussing the results of the regressions for the dependent variables in detail the author follows the advice of researchers (e.g. Roodman, 2009; Gretzinger & Royer, 2015) and discusses the results of the test statistics first. The table below shows the relevant details and tests of the first three dependent variables, namely Pre-Tax ROE, Tier 1 capital and Beta.

Table 34: Dynamic Systems GMM Test Statistics Part 1

	(1)	(2)	(3)	(4)	(5)	(6)
	No Crisis	Crisis	No Crisis	Crisis	No Crisis	Crisis
VARIABLES	Pre-Tax ROE	Pre-Tax ROE	Tier1	Tier1	Beta	Beta
Observations	1,310	1,310	815	815	1,173	1,173
Number of Groups	142	142	106	106	125	125
Number of Instruments	103	104	103	104	103	104
AR (1)	0.014	0.014	0.001	0.001	0.000	0.000
AR (2)	0.333	0.353	0.163	0.156	0.268	0.231
Hansen-J	0.146	0.159	0.855	0.834	0.064	0.047
Difference in Hansen (null H = exogenous) GMM	0.792	0.779	0.199	0.041	0.726	0.635
Difference in Hansen (null H = exogenous) IV		0.749		0.179		0.643

Source: Own development.

Starting with Pre-Tax ROE, the no-crisis equation (1) and the no-crisis equation (2) are shown in the above table. Overall 1,310 observations, as well as 142 groups of variables, are used by the model for the Pre-Tax ROE regression. The critical number of instruments is lower than the number of groups with 103 in the no-crisis group and 104 in the crisis group. Due to the addition of the crisis variable as an exogenous variable in the setting and only applying it to the level function, the instrument count only increases by one. The instrument count for the no-crisis and crisis estimators is the same in all 12 regressions as only the dependent variable changes, but not the number of control variables or lags being used. The H_0 of Arellano-Bond estimator for first-order autocorrelation (AR (1)) is being rejected with a low p-value at a 5% level and the H_0 of Arellano-Bond estimator for second-order autocorrelation (AR (2)) cannot be rejected at a 5% level for both models (1 and 2). This gives the first hint of the validity of the model according to Gretzinger and Royer (2015). The Hansen-J statistic is at a low p-value for both estimators, but the H_0 cannot be rejected and therefore further supports the validity even if according to Roodman (2008) a p-value below 0.250 might indicate weak instruments. However, the Difference-in-Hansen test for the GMM instruments shows robust results for both groups and the H_0 cannot be rejected in both cases. For exogenous variables (iv) the Difference-in-Hansen test is only calculated for the no-crisis groups where the crisis variable is used for the estimation. In the case of Pre-Tax ROE, the p-value is very high and therefore the H_0 cannot be rejected. Based on the test described, the estimator for the Pre-Tax ROE is valid for both groups according to the test interpretation of Roodman (2009) and Gretzinger and Royer (2015).

Equation (3) and (4) are related to Tier 1 capital as a dependent variable and 815 observations for this variable are present in the panel data set. The number of groups due to this is 106, however, the number of instruments is 103 and which is still respectively lower. Therefore, Roodman's (2008) rule of thumb is followed. The H_0 cannot be rejected for AR (1) at a 1% level but is being rejected for the AR (2) H_0 , thus in both cases indicating the validity of the instruments being used. Also, the Hansen-J statistic is this time way above 0.250 in both cases further supporting the validity. The Difference-in-Hansen test for the GMM instruments shows robust results for the no-crisis group, but when adding the

exogenous variable to the model the p-value decreases, however, the H_0 can still not be rejected at a 1% level. Nevertheless, for the exogenous variable (*iv*) the Difference-in-Hansen test is more robust with a higher p-value. Therefore, the overall model and the instruments can be judged as valid in accordance with rationales provided by other authors (e.g. Wintoki al., 2012).

When it comes to the dependent variable Beta, the model employs 1,173 observations for the variable and based on that uses 125 groups in both the no-crisis and the crisis model. H_0 is rejected for AR (1) in both cases at a 1% level and the H_0 cannot be rejected for AR (2) for both cases as well, indicating first-order autocorrelation, but no second-order autocorrelation as required for model validity. However, the Hansen-J statistic p-value is in both cases very low and for the no-crisis, the H_0 is only rejected at a 5% level, but not on a 1% level. Nevertheless, the Difference-in-Hansen test for GMM shows robust results with high p-values in both cases. This is further supported by a high p-value of the Difference-in-Hansen test for the exogenous variable. Taking the before described into account one could still judge the estimator to be valid but considering Roodman's advice (2009) regarding low p-values of the Hansen-J statistic, one should take the results of these estimations with caution.

Table 35: Dynamic Systems GMM Test Statistics Part 2

VARIABLES	(7)	(8)	(9)	(10)	(11)	(12)
	No Crisis	Crisis	No Crisis	Crisis	No Crisis	Crisis
	B and H	B and H	SD Daily Returns	SD Daily Returns	LLP of Avg Loans	LLP of Avg Loans
Observations	1,187	1,187	1,145	1,145	1,116	1,116
Number of Groups	125	125	119	119	133	133
Number of Instruments	103	104	103	104	103	104
AR (1)	0.000	0.000	0.002	0.002	0.000	0.000
AR (2)	0.031	0.031	0.460	0.545	0.662	0.643
Hansen-J	0.104	0.133	0.350	0.228	0.565	0.530
Difference in Hansen (null H = exogenous) GMM	0.499	0.921	0.270	0.667	0.185	0.080
Difference in Hansen (null H = exogenous) IV		0.302		0.033		0.139

Source: Own development.

The above table continues to show the details and the test statistics for the three last dependent variables Buy and Hold Return, Standard Deviation of Daily Returns as well as Loan Loss Provisions as a % of Average Loans.

Equation (7) and (8) show the details as well as the test results for the dependent variable Buy and Hold return for the no-crisis and crisis setup. The model contains 1,187 observations of the variable and 125 groups for both setups and therefore outnumbering the instruments, which means that the models follow Roodman's golden rule (2009). H_0 is rejected for AR (1) in both cases at a 1% level and the H_0 cannot be rejected for AR (2) for both cases as well at 1% level, showing first-order autocorrelation, but no second-order autocorrelation, as required for estimator validity. Nevertheless, the p-values Hansen-J statistics are also low for these models. Both H_0 are rejected at 5 % level, but not at 1% indicating that the estimator might not be valid. However, the Difference-in-Hansen tests show robust results in both cases for the GMM instruments as well as the exogenous

variable. Based on the results described before, one could still argue that the estimator is valid, however, the author will only take the results of the estimations with caution as they might be influenced by weak instruments.

For the Standard Deviation of Daily Returns 1,145 observations are used in both equations (9) and (10) leading to 119 groups. Again, the golden rule is followed as groups outnumber instruments employed. H_0 is rejected for AR (1) in both cases at a 5% level and the H_0 cannot be rejected for AR (2) for both cases, showing, therefore, model estimator validity. This time the p-values Hansen-J statistics are more robust and support the validity of instruments being used. The Difference-in-Hansen tests show robust results for the GMM instruments in both cases and support the validity of the exogenous variable as well.

Equation (11) and (12) are modelling the setup for the last dependent variable, which is Loan Loss Provisions as a % of Average Loans. 1,116 observations and 133 groups are used in both models, therefore again outnumbering the instruments as required. H_0 is rejected for AR (1) in both cases at a 1% level and the H_0 cannot be rejected for AR (2) for both cases, therefore, showing model validity. The Hansen-J statistics are robust as well in both cases with high p-values, indicating the validity of the overall instrument set. This is supported on the single instrument set level as well by the Difference-in-Hansen tests, though, with a slightly lower p-value for the GMM instruments in the crisis model, but the value is still above H_0 rejection level.

5.4.2.3 Dynamic Systems GMM Regressions

In the next paragraph, the results of the *xtabond2* function regarding the relevant estimators will be discussed for all six dependent variables and the discussion will be grouped into the three groups of interest: The Risk Governance Structure, the Risk Committee Oversight Quality as well as the Risk Governance Tools.

What becomes clear at first sight of the results of equations (1) to (12) in table 36 and 37 is the fact that after controlling for the further two sources of endogeneity the number of significant independent variables decreased significantly. Furthermore, in the following, it must be considered that the results for the Beta

as well as Buy and Hold Return models might be biased as the model validity might be impacted based on the results of the test statistics discussed before.

Table 36: Dynamic Systems GMM Estimator Results Part 1

	(1)	(2)	(3)	(4)	(5)	(6)
	No Crisis	Crisis	No Crisis	Crisis	No Crisis	Crisis
VARIABLES	Pre-Tax ROE	Pre-Tax ROE	Tier1	Tier1	Beta	Beta
Audit Risk Com	1.2685	-4.5042	1.7511	1.7160	6.9404	7.8490
	(13.6111)	(9.2884)	(3.2119)	(2.5032)	(5.4966)	(5.6766)
AuditCom	-0.3848*	-0.3656*	0.0812	0.0813	1.5639	1.2304
	(0.2136)	(0.2068)	(0.0506)	(0.0494)	(1.2000)	(1.3011)
Risk Committee	2.2304	-3.6106	1.6890	1.6536	3.8900	5.0243
	(13.4935)	(9.0905)	(3.2422)	(2.5172)	(5.1151)	(5.2365)
Ch RC Ch another Co	-0.1849	-0.1867	0.0333	0.0332	2.8178**	2.6693**
	(0.2269)	(0.2180)	(0.0350)	(0.0341)	(1.2285)	(1.2304)
Ch RC Ch of Board	-0.2893	-0.4099	0.0410	0.0409	0.3871	0.3520
	(0.3648)	(0.3777)	(0.0319)	(0.0320)	(1.6357)	(1.6713)
CRO at Board level	0.1430	0.1230	0.0443*	0.0443*	-0.5723	-0.7227
	(0.2867)	(0.2845)	(0.0252)	(0.0252)	(0.8748)	(0.9100)
Ch RC indep.	-1.2167	-1.4262	0.0225	0.0212	-6.6046	-6.9175
	(1.4258)	(1.5391)	(0.1450)	(0.1498)	(4.2732)	(4.4165)
Maj Mem RC indep.	2.0064	2.1749	0.0679	0.0683	4.2788	3.9059
	(1.3014)	(1.4101)	(0.1211)	(0.1240)	(4.3666)	(4.3417)
Meet Freq Year	0.0301	0.0243	0.0038*	0.0039	-0.0664	-0.0797
	(0.0292)	(0.0287)	(0.0022)	(0.0027)	(0.0566)	(0.0578)
Qual RC IT	1.3683	1.3382	-0.0412	-0.0414	-4.1374	-3.7774
	(1.1700)	(1.1561)	(0.0346)	(0.0370)	(3.9332)	(3.6990)
Qual RC Risk Man	-0.6681	-0.4024	-0.1988	-0.1984		
	(1.1845)	(1.2147)	(0.2210)	(0.2221)		
RC Credit Risk	-3.3161	2.4759	-1.5664	-1.5315		
	(13.6842)	(8.8096)	(3.2370)	(2.5182)		
RC Market Risk	0.2608	0.2407	-0.0078	-0.0078	0.3707	0.3714
	(0.6971)	(0.6785)	(0.0688)	(0.0690)	(2.3831)	(2.3922)
RC Operational Risk	0.1629	0.0202	0.1526	0.1524	-6.6900	-7.6209

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	(1)	(2)	(3)	(4)	(5)	(6)
	No Crisis	Crisis	No Crisis	Crisis	No Crisis	Crisis
VARIABLES	Pre-Tax ROE	Pre-Tax ROE	Tier1	Tier1	Beta	Beta
	(0.8617)	(0.7962)	(0.0929)	(0.0938)	(4.8230)	(4.9972)
RC Rep Risk	0.0011	0.0167	-0.0359	-0.0358	0.4353	0.3571
	(0.3057)	(0.3097)	(0.0389)	(0.0378)	(1.0878)	(1.1477)
RC Discusses RAS	0.1755	0.0236	0.0106	0.0100	-1.0299	-1.1853
	(0.8157)	(0.7974)	(0.0781)	(0.0803)	(4.0361)	(4.0256)
RC risk policies annual	0.6037	0.6935	-0.1637**	-0.1629**	3.0130	3.8843
	(1.0401)	(1.0586)	(0.0813)	(0.0786)	(2.7543)	(2.8806)
Code of Conduct	0.4512***	0.3757***	-0.0275	-0.0277	-1.3796*	-1.6281**
	(0.1622)	(0.1406)	(0.0317)	(0.0313)	(0.7314)	(0.7102)
RAF	-0.1725	-0.0775	-0.1547**	-0.1546**	1.0693	1.8787
	(0.3393)	(0.3105)	(0.0622)	(0.0627)	(1.5355)	(1.7503)
RAS	-0.0769	0.0764	0.0697	0.0703	0.4460	0.6149
	(0.8165)	(0.7986)	(0.0860)	(0.0856)	(4.0035)	(4.0173)
Loan Growth	0.0049**	0.0052**	-0.0064	-0.0064	-0.0184**	-0.0182**
	(0.0020)	(0.0021)	(0.0067)	(0.0067)	(0.0088)	(0.0090)
Operating Leverage	0.1081*	0.1149*	0.0096*	0.0096*	0.2279**	0.2379**
	(0.0596)	(0.0593)	(0.0050)	(0.0050)	(0.1105)	(0.1072)
Securities Earnings	0.3789	0.4402	0.0052	0.0050	-2.5699	-2.6063
	(0.4051)	(0.3983)	(0.0304)	(0.0312)	(1.6174)	(1.6532)
Total Assets	-0.0000	-0.0000	-0.0000*	-0.0000*	0.0000	0.0000
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
WGI	0.9568**	0.8548**	0.0306	0.0310	-1.2780	-1.7461
	(0.3896)	(0.3311)	(0.0326)	(0.0327)	(1.4134)	(1.2668)
L.Pre-Tax ROE	-0.0328	-0.0223				
	(0.0791)	(0.0809)				
L2.Pre-Tax ROE	-0.2164*	-0.2120*				
	(0.1142)	(0.1127)				
L.Tier1			-0.0456	-0.0460		
			(0.1205)	(0.1265)		
L2.Tier1			0.1896	0.1895		

	(1)	(2)	(3)	(4)	(5)	(6)
	No Crisis	Crisis	No Crisis	Crisis	No Crisis	Crisis
VARIABLES	Pre-Tax ROE	Pre-Tax ROE	Tier1	Tier1	Beta	Beta
			(0.1436)	(0.1451)		
L.Beta					-0.4463***	-0.4463***
					(0.0647)	(0.0647)
L2.Beta					-0.3392***	-0.3349***
					(0.0620)	(0.0634)
Constant	-1.0068*	-0.9357*	0.1346*	0.1340**	3.0773	3.3104
	(0.5839)	(0.5318)	(0.0691)	(0.0669)	(2.0678)	(2.0745)

Notes: Significant values are denoted with *, ** and *** for 10%, 5% and 1% levels respectively. Rows indicating the variable name are showing the coefficient and rows below always the robust standard error.

Source: Own development.

Exhibit 34 above shows the results of the dynamic systems GMM estimator configured in the way described in the preceding chapters for the three dependent variables Pre-Tax ROE, Tier 1 capital and Beta. From a formal point of view it has to be noted that in the regressions (5) and (6) for the dependent variable Beta two independent variables have been dropped due to collinearity, namely the risk management qualification of the risk committee members as well as if the risk committee covers credit risk within its scope. All other four regressions have been carried out for all independent variables. Furthermore, the author will continue to only report robust significance results at 5% and 1% level.

For the Risk Governance structures being tested only one variable shows significant results, which is that the chair of the risk committee is the chair of another committee. The significance occurs in equation (5) and (6) for the dependent variable measure, whose results must be discussed with caution as the validity of the overall model for this variable might not be ensured.

Nevertheless, based on the regression, if the chair of the risk committee is the chair of another committee this leads to a 2.8178% increase of Beta at a 5% significance level in times without a financial crisis and to a 2.6693% increase of Beta at a 5% significance level in times of a financial crisis. The degree of

influence is very high with over 2% of the influence on the variation of a dependent variable compared to the regression results seen so far.

The results are in line with what one group of regulators (FSB, 2013b; BCBS, 2015; EBA 2017) postulates as they see the setting of simultaneously chairing the risk committee together with another committee as suboptimal as it might lead to a too a high workload as well as the loss of independence, e.g. in case of the audit committee (Deloitte, 2017). However, FINMA (2016) does not explicitly argue against this setting and does not provide specific guidance. Based on the results of the regression it can be stated that a dual role of the chair of the risk committee leads to worse results from a market risk perspective through the economic cycle. It indicates that the dual-hatting does not increase effectiveness based on information sharing between committees as argued for by some of the interviewees, but rather supports the inefficiency and ineffectiveness postulated by the first group of regulators (FSB, 2013b; BCBS, 2015; EBA 2017), meaning that a board should prevent installing a dual-hatting setup. The risk increase might come from two sources either bad decisions are being made by the risk committee with the dual-hatting chair impacting the stock return profile of a bank compared to the market or the market judges the information about the dual-hatting as negative based on good Risk Governance rules postulated by regulators and, therefore, a risk premium is priced in by the market based on the increased risk due to this setting and in the end leading to a higher Beta.

Furthermore, only one risk committee oversight quality measure shows a significant result in all three equations, which is the variable that measures if a risk committee reviews the risk policies of a bank annually. The significant results are yielded in the Tier 1 capital equations for crisis as well as no-crisis settings and the model is also valid for the instruments being used according to the tests carried out and discussed before. Therefore, if a risk committee reviews the risk policies of a bank annually it leads to a 0.1637 % decrease of the Tier 1 capital at a 5% significance level in times without a financial crisis and to a 0.1629 % decrease of the Tier 1 capital at a 5% significance level in times with a financial crisis. At the first sight, these results seem to be counterintuitive as this result states that if a board frequently reviews and adjusts the risk policy framework of

a bank it increases the risk profile of the bank by lowering the Tier 1 capital ratios through the economic cycle. This is from an expert as well as regulatory perspective counterintuitive as both state that this is a core task of the risk committee and that it makes the Risk Governance more robust by creating transparency to the board on how policies and procedures are structured around risk management but also provides the possibility to adjust the framework if necessary frequently. An explanation for the occurrence of these results might be that frequently reviewing and adjusting the policy framework helps to more effectively steer risks across the bank due to increased transparency and faster possibilities to react to changes in the environment. Based on that it might be possible to better measure as well as analyse the risk profile of the bank and, therefore, more efficiently steer the desired risk-bearing capacity of the bank. As discussed in the Fixed Effects estimator section, Tier 1 capital is expensive for a bank as it needs to be raised from shareholders or to be accrued over time from profits and, therefore, better and more efficient steering of the measures might be a competitive advantage in the banking industry. However, the market, as well as regulators (e.g. BCBS, 2017), see higher Tier 1 capital ratios as a major indicator of the robustness of a bank and lower ratios indicating, therefore, a lower one. Another explanation might be that by the active involvement of the supervisory function in the risk policy process the advisory function of the board might outweigh the monitoring function of the board. This means that by the active involvement the independence, as well as an effective oversight, might be hampered, leading to counterproductive impacts as observable in the results of the afore mentioned regressions.

The high scorers in the dynamic systems GMM setting for the first three dependent variables are clearly the Risk Governance tools as they score significant results for all three variables. The first measure with significant results is the Code of Conduct, which when set up within a bank should lead to employees following the core ethical and social values of a bank whilst serving their customers or executing their duties (BCBS, 2015). If a bank implements such a Code of Conduct it leads to a 0.4512 % increase of the Pre-Tax ROE at a 1% significance level in times without a financial crisis and to a 0.3757 % increase of the Pre-Tax ROE at a 1% significance level in times with a financial crisis; both

can be observed in the equations (1) and (2). These results indicate that providing an ethical as well as social value framework to the organisation leads to higher profits in and outside of a financial crisis, which might be counterintuitive as one could think that if the organisation follows law as well as ethics, highly profitable business to the bank might not be conducted and, therefore, profits should decrease at least outside of a financial crisis. For times of a financial crisis the results are logical and in line with the expectations of regulators as well as experts as profits for those banks that did not engage in questionable business e.g. subprime mortgage lending due to their social and ethical values have faced fewer losses during times of financial crisis.

Furthermore, the mechanism shows significant results for Beta in equation (6) in the financial crisis setting. In this case, the implementation of a Code of Conduct leads to a 1.6281 % decrease of Beta at a 5% significance level in times of a financial crisis. However, as discussed before the results must be understood with caution as the model validity for Beta might not be given based on the tests carried out. The high degree of influence shown by this, but also by the other two significant independent variables which have been discussed before for Beta, might further indicate that the results for this dependent variable should be taken with caution. Nevertheless, the result itself indicates that implementing a Code of Conduct will decrease the risk profile from a markets perspective and leads to the fact that the stock of the specific bank will fluctuate less than the one of banks which have not implemented such a code. This is in line with regulatory as well as expert expectations. Overall, the implementation of a Code of Conduct seems to be positive from a Risk Governance perspective, not only for performance but for risk measures as well.

The second Risk Governance tool mechanism, which yields significant results is the Risk Appetite Framework in the context of equation (3) and (4) regarding the dependent variable Tier 1 capital. According to the regression, if a bank implements a Risk Appetite Framework it leads to a 0.1547 % decrease of the Tier 1 capital at a 5% significance level in times without a financial crisis and to a 0.1546 % decrease of the Tier 1 capital as well at a 5% significance level in times with a financial crisis. The result itself is again counterintuitive as the capital

ratio indicating the risk-bearing capacity is decreasing by implementing the Risk Appetite Framework whilst one would, based on the regulatory as well on the expert analysis, expect that at least in times of financial stress the ratio is increased by having a proper framework implemented. However, the author could just assume as in the case of the risk policy review that by the implementation of the framework greater transparency is created and thus increasing the ability to steer the ratio better and, therefore, decrease the margin of safety compared to banks that are not able to efficiently steering the ratio. But still one would expect that in times of crisis the same transparency and steering ability might lead to higher ratios as needed during those times.

Table 37: Dynamic Systems GMM Estimator Results Part 2

	(7)	(8)	(9)	(10)	(11)	(12)
	No Crisis	Crisis	No Crisis	Crisis	No Crisis	Crisis
VARIABLES	B and H	B and H	SD Daily Returns	SD Daily Returns	LLP of Avg Loans	LLP of Avg Loans
Audit Risk Com	-0.4497	0.6999	0.0391	0.2404	-0.0287	0.0697
	(2.3386)	(2.1541)	(1.1575)	(0.9492)	(0.8327)	(0.5469)
Audit Com	-1.4542***	-1.3448***	0.6317**	0.6421**	0.0082	0.0086
	(0.5097)	(0.5061)	(0.2828)	(0.2868)	(0.0147)	(0.0152)
Risk Com	1.1606	2.1483	-1.1880	-1.0027	-0.0318	0.0676
	(2.0898)	(1.9472)	(1.0390)	(0.8598)	(0.8415)	(0.5513)
Ch RC Ch another Co	-0.4125	-0.3698	0.6237**	0.6092**	-0.0142	-0.0147
	(0.5600)	(0.5493)	(0.2710)	(0.2704)	(0.0134)	(0.0133)
Ch RC Ch of Board	0.4432	0.1484	0.2143	0.1630	0.0347	0.0355
	(0.7160)	(0.6424)	(0.4513)	(0.4358)	(0.0230)	(0.0228)
CRO at Board level	0.5939	0.4809	0.2641	0.2302	-0.0265*	-0.0260*
	(0.4375)	(0.4166)	(0.2097)	(0.2086)	(0.0138)	(0.0140)
Ch RC indep.	-4.6544	-4.4059	0.7461	0.7929	-0.0300	-0.0279
	(3.0409)	(2.8042)	(1.2175)	(1.2412)	(0.0618)	(0.0639)
Maj Mem RC indep.	4.9546	4.4160	-1.7713	-1.8760	0.0267	0.0258
	(3.0021)	(2.6964)	(1.2952)	(1.3048)	(0.0653)	(0.0663)
Meet Freq Year	0.0116	0.0071	0.0114	0.0100	-0.0023	-0.0022
	(0.0345)	(0.0326)	(0.0192)	(0.0187)	(0.0016)	(0.0017)
Qual RC IT	2.6661	2.7142	-0.7108	-0.7217	-0.0366	-0.0358
	(2.2014)	(2.2246)	(0.6287)	(0.6381)	(0.0397)	(0.0398)
Qual RC Risk Man					-0.0025	-0.0038

5 EMPIRICAL STUDY

	(7)	(8)	(9)	(10)	(11)	(12)
	No Crisis	Crisis	No Crisis	Crisis	No Crisis	Crisis
VARIABLES	B and H	B and H	SD Daily Returns	SD Daily Returns	LLP of Avg Loans	LLP of Avg Loans
					(0.0576)	(0.0577)
RC Credit Risk					0.0627	-0.0375
					(0.8308)	(0.5327)
RC Market Risk	-0.0352	0.4466	0.3901	0.4989	0.0163	0.0152
	(0.9983)	(1.0798)	(0.6217)	(0.6641)	(0.0335)	(0.0333)
RC Operational Risk	-1.4542	-2.8854	0.5933	0.3019	0.0352	0.0373
	(2.0026)	(1.9753)	(0.9134)	(0.7623)	(0.0374)	(0.0361)
RC Rep Risk	0.5043	0.3831	-0.5321	-0.5658	-0.0040	-0.0035
	(0.6203)	(0.6502)	(0.4117)	(0.4318)	(0.0157)	(0.0152)
RC Discusses RAS	2.1907	1.7034	-0.3076	-0.3904	0.0357	0.0375
	(1.8813)	(1.7710)	(0.8304)	(0.8500)	(0.0327)	(0.0328)
RC risk policies annual	0.1411	0.7660	1.0000	1.1322*	-0.0561	-0.0566
	(1.1483)	(1.1792)	(0.6296)	(0.6540)	(0.0734)	(0.0730)
Code of Conduct	1.4501***	1.2762***	-0.1142	-0.1558	-0.0285**	-0.0284**
	(0.3303)	(0.2849)	(0.1903)	(0.1696)	(0.0113)	(0.0112)
RAF	-0.9158	-0.6687	-0.8811*	-0.7841*	0.0190	0.0171
	(0.7201)	(0.6080)	(0.4938)	(0.4586)	(0.0238)	(0.0262)
RAS	-1.9166	-1.4503	0.0504	0.1466	-0.0495	-0.0522
	(1.9636)	(1.7995)	(0.8200)	(0.8479)	(0.0353)	(0.0361)
Loan Growth	0.0072*	0.0077*	-0.0020	-0.0020	-0.0049*	-0.0050*
	(0.0042)	(0.0040)	(0.0024)	(0.0024)	(0.0030)	(0.0030)
Operating Leverage	0.0901*	0.1030**	-0.0074	-0.0048	0.0008	0.0008
	(0.0491)	(0.0509)	(0.0223)	(0.0223)	(0.0023)	(0.0023)
Securities Earnings	0.3824	0.4864	-0.2538	-0.2476	-0.0295	-0.0314
	(0.8344)	(0.7871)	(0.4412)	(0.4414)	(0.0270)	(0.0277)
Total Assets	-0.0000**	-0.0000**	0.0000	0.0000	0.0000*	0.0000**
	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)	(0.0000)
WGI	0.5662	0.3857	0.0713	0.0334	-0.0666***	-0.0653***
	(0.4819)	(0.4507)	(0.3255)	(0.3052)	(0.0212)	(0.0192)
L.B and H	-0.3807***	-0.3581***				
	(0.0726)	(0.0702)				
L2.B and H	-0.3722***	-0.3617***				
	(0.0597)	(0.0585)				
L.SD daily Returns			0.0340	0.0364		

	(7)	(8)	(9)	(10)	(11)	(12)
	No Crisis	Crisis	No Crisis	Crisis	No Crisis	Crisis
VARIABLES	B and H	B and H	SD Daily Returns	SD Daily Returns	LLP of Avg Loans	LLP of Avg Loans
			(0.0856)	(0.0864)		
L2.SD daily Returns			-0.3414***	-0.3322***		
			(0.1113)	(0.1054)		
L.LLP of Avg Loans					-0.1084	-0.1078
					(0.1250)	(0.1242)
L2.LLP of Avg Loans					-0.0005	-0.0004
					(0.0011)	(0.0011)
Constant	-0.0283	-0.1006	0.5581	0.5246	0.1071***	0.1067***
	(0.8836)	(0.8346)	(0.5316)	(0.5263)	(0.0353)	(0.0346)

Notes: Significant values are denoted with *, ** and *** for 10%, 5% and 1% levels respectively. Rows indicating the variable name are showing the coefficient and rows below always the robust standard error.

Source: Own development.

The table above shows the results of the dynamic systems GMM model configured in the way described in the preceding chapters for the last three dependent variables: Buy and Hold Return, Standard Deviation of Daily Returns as well as Loan Loss Provisions as a % of Average Loans. Again, two independent variables have been dropped due to collinearity, namely the risk management qualification of the risk committee members as well as if the risk committee covers credit risk within its scope. This holds true for the equations (7) to (10) and is related to the models for the Buy and Hold Return as well as the Standard Deviation of Daily Returns. The other two regressions (11) and (12) related to the Loan Loss Provisions as a % of Average Loans have been carried out for all independent variables. As before, the author will continue to only report robust significant results at 5% and 1% level.

In the case of the last three dependent variables, the dynamic systems GMM model returns two significant variables regarding the Risk Governance Structure, namely the stand-alone audit committee as well as again the variable if the chair of the risk committee is also the chair of another committee.

Starting with the stand-alone audit committee, if it is present it leads to a 1.4542 % decrease of Buy and Hold returns at a 1% significance level in times without a financial crisis and to a 1.3448 % decrease of Buy and Hold returns at a 1% significance level in times with a financial crisis. This means that the setup of such a committee decreases the performance of a bank from a financial market's perspective throughout the economic cycle. Furthermore, the setup of a stand-alone audit committee leads in this model to a 0.6317 % increase of the Standard Deviation of Daily Returns at a 5% significance level in times without a financial crisis and to a 0.6421 % increase of the Standard Deviation of Daily Returns as well at a 5% significance level in times with a financial crisis. Therefore, this means that if such a committee is implemented it leads to an increase of risk from a financial market's perspective. The results are counterintuitive also from a risk-return relationship as higher risk from a markets perspective is not being paid off by higher returns. An explanation for this might be that increased oversight on internal controls as well as on accounting processes leads to decisions that would influence the risk profile from a capital markets perspective especially impacting the volatility of the stock market returns. However, one would expect the opposite as increased oversight should be priced with lower risk from a markets perspective. A further direct relationship between accounting measures overseen by the committee as in the case of the Tier 1 capital or Pre-Tax ROE is not given in the case of the capital markets driven Standard Deviations of the Daily Returns of a stock. Another explanation could lie in the tasks as well as the focus of an audit committee. As explained in the previous chapters the focus of the audit committee is rather on the past, namely accounting measures. However, risks, as discussed in a risk committee, are emerging, meaning that they are driven by future developments. Therefore, it could be the case that an audit committee, which would just measure performance and risk, based on past realisations as for example subprime mortgages, which yielded over the years decent profits and carried low risks from an accounting perspective, would underestimate, by not taking into account emerging risks, the current situation of a bank and would therefore favour further investments in this product. This might, in the end, lead to counterproductive impacts especially in situations of a financial crisis, which could increase the risks of a bank and lower performance at the same time.

Nevertheless, as explained in the test section of the chapter, the results derived from the Buy and Hold regressions have to be interpreted with caution as the validity of the estimator might not be given.

However, not only the audit committee has a significant influence, the risk committee does so too and has a significant influence on the Standard Deviation of Daily Returns when referring to the case where its chair is the chair of another committee as well. If the chair of the risk committee is also the chair of another committee, it leads in this regression to a 0.6237 % increase of the Standard Deviation of Daily Returns at a 5% significance level in times without a financial crisis and to a 0.6029% increase of the Standard Deviation of Daily Returns as well at a 5% significance level in times with a financial crisis. As the measure increases risk from a markets perspective it is in line with the expectations of one group of regulators (BCBS, 2015; EBA, 2017), who see this as an improper governance setting leading to a too high workload as well as the loss of independence, e.g. if it is the audit committee (Deloitte, 2017). However, as explained before, FINMA (2016) in contrast does not explicitly rule this setting out. Based on the results of the regression it is shown that a dual role of the chair of the risk committee leads to worse results from a financial markets perspective through the economic cycle with regard to risk. These results further support the results having been discussed before in the case of the Beta measure, where the dual-hatting by the chair of the risk committee led to an increased risk from a capital markets perspective as well.

Again, as with the regressions discussed before a high scorer in the dynamic systems GMM setting is related to the Risk Governance tools and scores significant results in the case of two of the variables discussed here as well. The mechanism with these significant results is again the Code of Conduct, which directs employees to follow the core ethical and social values of a bank whilst serving their customers or executing their duties (BCBS, 2015). If a bank implements such a Code of Conduct it leads to a 1.4501 % increase of the Buy and Hold returns at a 1% significance level in times without a financial crisis and to a 1.2762 % increase of the Buy and Holds returns at a 1% significance level in times with a financial crisis; which can be observed in equations (7) and

(8). However, the results of these two equations must be understood with caution as pointed out in the test section of this paragraph. Furthermore, its installation leads to a 0.0285 % decrease of the Loan Loss Provisions as a % of Average Loans at a 5% significance level in times without a financial crisis and to a 0.0284 % decrease of the Loan Loss Provisions as a % of Average Loans at a 5% significance level in times with a financial crisis, observable in equation (11) and (12). Both regressions, for the Buy and Hold returns as well as the Loan Loss Provisions indicate that the implementation of a Code of Conduct leads to higher stock return and, therefore, performance through the economic cycle with an even greater and more significant impact in times of financial crisis as well as less risk, based on Loan Loss Provisions due on a better credit quality through the economic cycle. The results indicate, therefore, that providing an ethical as well as a social value framework to the organisation adds value throughout the cycle even if it is at the first sight counterintuitive outside of a financial crisis for the performance measure as discussed before. The result further supports what has been discussed in the case of Pre-Tax ROE as well as Beta and it seems to be the case that the Code of Conduct becomes the secret star of this study, showing and consistent significant results for performance as well as risk measures more than once. Nevertheless, as explained in the test section of the chapter, the results derived from the Buy and Hold regressions have to be interpreted with caution as the validity of the estimator might not be given.

In the following paragraphs, the results of the regressions regarding the author's hypotheses and the expectations should be discussed. The basis will be again the coding table used before.

As a first step, the results for the Risk Governance mechanisms related to the Risk Governance Structure are being discussed in line with the hypotheses developed in this study. In the below table the results of the regressions are put into the context of the expected outcomes of the single Risk Governance Structure measures regarding risk and performance.

Table 38: Results on Expected Influence of the Risk Governance Structure Variables on the Outcome of the Dependent Variables

No.	Name	Area	Expected Outcome Risk No-Crisis	Expected Outcome Risk Crisis	Expected Outcome Performance No-Crisis	Expected Outcome Performance Crisis
1	<i>Board has a stand-alone Risk Committee</i>	Risk Governance Structure	-	-	-	+
2	<i>Board has a stand-alone Audit Committee</i>	Risk Governance Structure	- Not confirmed	- Not confirmed	- Confirmed	+ Not confirmed
3	<i>Board has a combined Audit and Risk Committee</i>	Risk Governance Structure	-	-	-	+
4	<i>Chair of Risk Committee is also Chair of the Board</i>	Risk Governance Structure	+	+	+	-
5	<i>Chair of Risk Committee is also Chair of another Committee</i>	Risk Governance Structure	+ Confirmed	+ Confirmed	+	-
6	<i>Chief Risk Officer at board level</i>	Risk Governance Structure	-	-	-	+

Source: Own development.

The first hypothesis in focus covers the impact of Risk Governance Structure measures on the risk profile of a bank in times of a financial crisis and reads:

H_{1a} = The existence of Risk Governance mechanisms related to the Risk Governance Structure in European banks at board level is negatively related to the risk profile of a bank in times of a financial crisis.

For the specific setting, two variables yield significant results, on the one hand, the stand-alone audit committee and on the other hand the variable measuring if the chair of the risk committee is also the chair of another committee. However,

the results are mixed in terms of aligning with the defined expectations. Whilst the dual-hatting is leading to the expected negative results, meaning that it increases risk in times of a financial crisis, the stand-alone audit committee increases risk as well contrary to the expectation. Therefore, the hypothesis cannot be fully supported.

The second hypothesis sets the Risk Governance Structure in the context of performance in times of financial crisis and reads:

H_{2a} = The existence of Risk Governance mechanisms related to the Risk Governance Structure in European banks at board level is positively related to the performance of a bank in times of a financial crisis.

There is only one measure that shows significant results and it is again the installation of an audit committee on a stand-alone basis. However, the measure does not return the expected positive output in times of a crisis but rather decreases the performance during those times. Therefore, Risk Governance Structure has an impact on performance in this case, but an opposite effect than expected based on regulatory proposals, therefore, the hypothesis cannot be fully supported.

The third hypothesis covers the impact of the Risk Governance Structure on the risk profile in times outside a financial crisis and reads:

H_{3a} = The existence of Risk Governance mechanisms related to the Risk Governance Structure in European banks at board level is negatively related to the risk profile of a bank in times outside a financial crisis.

As observable in the case of the other hypothesis addressing the risk profile of a bank, again two variables yield significant results. The two variables are, on the one hand, the stand-alone audit committee and on the other hand the variable measuring if the chair of the risk committee is also the chair of another committee. However, the results are mixed again in terms of aligning with the defined expectations. Whilst the dual-hatting is leading to the expected negative results, meaning that it increases risk in times of a financial crisis, the stand-alone audit committee increases risk as well contrary to the expectation. Therefore, the hypothesis cannot be fully supported as in the case of hypothesis H_{1a}.

The last hypothesis sets the Risk Governance Structure in the context of performance in times outside a financial crisis and reads:

H_{4a} = The existence of Risk Governance mechanisms related to the Risk Governance Structure in European banks at board level is negatively related to the performance of a bank in times outside a financial crisis.

There is only one measure that shows significant results and it is the installation of an audit committee on a stand-alone basis and the measure returns the expected negative output in times outside of a crisis. Therefore, the hypothesis can be supported by the results of the estimator.

Overall, the regressions again do show mixed results for the hypotheses defined by the author. However, compared to the Fixed Effects model fewer effects are observable, supporting the view that if one controls for most sources of endogeneity in Corporate Governance settings effects are diminishing. On top of that, the results derived in these regressions contradict the results from the Fixed Effects model as in the case of this estimator the stand-alone audit committee yielded supporting results while the measure if the chair of the risk committee is the chair of another board did not. In case the of the dynamic systems GMM model the results are as shown above are mostly the other way around.

The below table shows the results of the dynamic systems GMM regression compared to the expected outcomes for the Risk Governance oversight quality mechanisms.

Table 39: Results on Expected Influence of the Risk Committee Oversight Quality Variables on the Outcome of the Dependent Variables

No.	Name	Area	Expected Outcome Risk No-Crisis	Expected Outcome Risk Crisis	Expected Outcome Performance No-Crisis	Expected Outcome Performance Crisis
1	<i>Chair of Risk Committee is independent</i>	Risk Committee Oversight Quality	-	-	-	+
2	<i>Majority of Members of the</i>	Risk Committee	-	-	-	+

No.	Name	Area	Expected Outcome Risk No-Crisis	Expected Outcome Risk Crisis	Expected Outcome Performance No-Crisis	Expected Outcome Performance Crisis
	<i>Risk Committee independent</i>	Oversight Quality				
3	<i>Meeting Frequency of the Risk Committee per Year</i>	Risk Committee Oversight Quality	-	-	-	+
4	<i>IT Qualification is available in Risk Committee</i>	Risk Committee Oversight Quality	-	-	-	+
5	<i>Risk Management and Banking Experience is available in the Risk Committee</i>	Risk Committee Oversight Quality	-	-	-	+
6	<i>Risk Committee discusses Risk Appetite Statement</i>	Risk Committee Oversight Quality	-	-	-	+
7	<i>Risk Committee makes Backtesting of Risk Appetite Statement</i>	Risk Committee Oversight Quality	-	-	-	+
8	<i>Risk Committee covers Credit Risk</i>	Risk Committee Oversight Quality	-	-	-	+
9	<i>Risk Committee covers Market Risk</i>	Risk Committee Oversight Quality	-	-	-	+
10	<i>Risk Committee covers Operational Risk</i>	Risk Committee Oversight Quality	-	-	-	+
11	<i>Risk Committee covers</i>	Risk Committee	-	-	-	+

No.	Name	Area	Expected Outcome Risk No-Crisis	Expected Outcome Risk Crisis	Expected Outcome Performance No-Crisis	Expected Outcome Performance Crisis
	<i>Reputational Risk</i>	Oversight Quality				
12	<i>Risk Committee reviews the bank's Risk Policies annually</i>	Risk Committee Oversight Quality	- Not confirmed	- Not confirmed	-	+

Source: Own development.

The first hypothesis in focus covers the impact of Risk Governance oversight quality on the risk profile of a bank in times of a financial crisis and reads:

H_{1b} = The existence of Risk Governance mechanisms related to the risk committee oversight quality in European banks at board level is negatively related to the risk profile of a bank in times of a financial crisis.

In this setting, only one variable shows significant results, and this is if the risk committee reviews the bank's risk policies annually. However, the mechanism does not show the expected outcome as it leads to an increase of risk in a time of a financial crisis, which is not in line with regulatory expectations as well as expert opinions. Therefore, the hypothesis cannot be fully supported.

The second hypothesis sets the oversight quality in the context of performance in times of financial crisis and reads:

H_{2b} = The existence of Risk Governance mechanisms related to the risk committee oversight quality in European banks at board level is positively related to the performance of a bank in times of a financial crisis.

Based on the results of the regressions the H_0 hypothesis cannot be rejected as no significant results have been yielded.

The third hypothesis covers the impact of the Risk Governance oversight quality on the risk profile in times outside a financial crisis and reads:

H_{3b} = The existence of Risk Governance mechanisms related to the risk committee oversight quality in European banks at board level is negatively related to the risk profile of a bank in times outside a financial crisis.

As in the case of H_{1b}, only one variable shows significant results, and this is if the risk committee reviews the banks risk policies annually. However, the mechanism again does not show the expected outcome as it leads to an increase of risk in times outside a financial crisis, rather than to a decrease. Therefore, the hypothesis cannot be fully supported.

The last hypothesis sets the Risk Governance oversight quality in the context of performance in times outside a financial crisis and reads:

H_{4b} = The existence of Risk Governance mechanisms related to the risk committee oversight quality in European banks at board level is negatively related to the performance of a bank in times outside a financial crisis.

Based on the results of the regressions the H₀ hypothesis cannot be rejected as no significant results have been yielded.

Overall, the number of significant results for the oversight quality of the risk committee is very low compared to the Fixed Effects model. However, the measure showing significant results under the more robust setting of the dynamic systems GMM model does so persistently in the context of the risk profile of a bank. Nevertheless, it does so with a contradictory outcome than expected as the annual review of the bank's risk policies by the risk committee increases the risk profile through the cycle instead of decreasing it. Possible causes for this have been discussed in the context of this chapter already.

The table below shows the results as well as the expectations defined by the author for the last three measures grouped under Risk Governance Tools based on the dynamic systems GMM model.

Table 40: Results on Expected Influence of the Risk Governance Tool Variables on the Outcome of the Dependent Variables

No.	Name	Area	Expected Outcome Risk No-Crisis	Expected Outcome Risk Crisis	Expected Outcome Performance No-Crisis	Expected Outcome Performance Crisis
1	<i>Code of Conduct in place</i>	Risk Governance Tools	- Confirmed	- Confirmed	- Not confirmed	+ Confirmed
2	<i>Risk Appetite Framework in place</i>	Risk Governance Tools	- Not confirmed	- Not confirmed	-	+
3	<i>Risk Appetite Statement in place</i>	Risk Governance Tools	-	-	-	+

Source: Own development.

The first hypothesis in focus covers the impact of Risk Governance tools on the risk profile of a bank in times of a financial crisis and reads:

H_{1c} = The existence of Risk Governance mechanisms related to the Risk Governance tools in European banks at board level is negatively related to the risk profile of a bank in times of a financial crisis.

Two out of three measures for this setting showing significant results. These are, on the one hand, the Code of Conduct and on the other hand side the Risk Appetite Framework. However, mixed results have been derived in terms of the expected outcomes. Whilst the Code of Conduct shows the expected risk decreasing influence, the Risk Appetite Framework does not do so but instead increases the risk. Therefore, the hypothesis cannot be fully supported based on the results derived.

The second hypothesis sets the tools in the context of performance in times of a financial crisis and reads:

H_{2c} = The existence of Risk Governance mechanisms related to the Risk Governance tools in European banks at board level is positively related to the performance of a bank in times of a financial crisis.

In this case, one measure shows a significant result and it is again the Code of Conduct. The measure increases the performance of the bank during times of financial crisis as expected. Therefore, the hypothesis can be supported based on the results of the regression regarding this specific measure.

The third hypothesis covers the impact of the Risk Governance tools on the risk profile in times outside a financial crisis and reads:

H_{3c} = The existence of Risk Governance mechanisms related to the Risk Governance tools in European banks at board level is negatively related to the risk profile of a bank in times outside a financial crisis.

Again, two out of three measures show significant results for this setting, that is, on the one hand, the Code of Conduct and on the other hand side the Risk Appetite Framework. However, as in the case of hypothesis H_{1c}, mixed results have been derived in terms of the expected outcomes. Whilst the Code of Conduct shows the expected risk decreasing influence, the Risk Appetite Framework does not do so but instead increases the risk. Therefore, the hypothesis cannot be fully supported based on the results derived. Nevertheless, the results are consistent through the cycle.

The last hypothesis sets the Risk Governance tools in the context of performance in times outside a financial crisis and reads:

H_{4c} = The existence of Risk Governance mechanisms related to the Risk Governance tools in European banks at board level is negatively related to the performance of a bank in times outside a financial crisis.

In this case, again only one measure shows a significant result and is once more the Code of Conduct. However, in this case, it does not support the expected outcome as the measure increases the performance of the bank also in times without a financial crisis. Therefore, the hypothesis cannot be fully supported based on the results of the regression regarding this specific measure.

Overall, the Risk Governance tools are clearly the drivers in the case of the dynamic systems GMM estimator. The number of significant results in this category is higher for this estimator than in all other regression. In detail, whilst

the Risk Appetite Framework shows consistent significant results, even if contradicting the expected outcomes, through the cycle for risk measures, the Code of Conduct yields significant results in all four settings. Interestingly, it even positively influences the performance of banks outside of a financial crisis.

5.4.2.4 Summary of the Panel Data Analysis

After having discussed the specific results of the dynamic systems GMM estimator, the author has to state that the application of this estimator instead of the Fixed and Random effects estimators made a major difference when it comes to the amount of statistically significant variables. Thereby, the results clearly support the critiques brought forward by a group of authors (Wintoki, Linck & Netter, 2009, Love 2010; Schultz et al., 2010), which state that these estimators do not account for all sources of endogeneity and, therefore, leading to upwards biased results or the regressions. Based on the dynamic systems GMM results Risk Governance as such is, as indicated throughout the study, a relevant topic in the market of financial institutions. However, whilst regulators and experts advocate for the implementation of the throughout the study described Risk Governance mechanisms, from an empirical point of view the evidence for the effectiveness of these measures based on the data set used by the author is limited. When it comes to the Risk Governance Structure in the end only two measures showed statistically significant results, the audit committee and the whether the chair of the risk committee is as well the chair of another committee. Starting with the audit committee, the regressions show that if it is implemented in a bank it leads to an increase of risk in times outside of and within a financial crisis as well as at the same time to a decrease of performance in times of financial crisis. However, it also reduces the performance of a bank in times outside of a financial crisis. The results are, with the exception of the latter, contradicting the expectations of the author as it was assumed based on the analysis conducted throughout the study that an audit committee would lead to an overall lower risk through the cycle and that therefore the performance of a bank with such a committee would be higher as for other banks in times of a financial crisis, due to less impaired assets. Whether the chair of the risk committee is chair of another committee at the same time is the second measure showing significant results. The

result confirms the expectation of the author that such setup would have a negative impact on risk management and therefore increasing the risk profile of a bank through the cycle and are in line with what some of the relevant regulators (FSB, 2013b; BCBS, 2015; EBA 2017), postulate as they see the setting of simultaneously chairing the risk committee together with another committee as suboptimal. Moreover, the result also contradicts the view of some of the practitioners stating that the dual-hatting would increase effectiveness of the committee. Furthermore, the results also contradict FINMA's (2016) view on the specific mechanism as this setting is not prohibited under its rule set.

With regard to risk committee oversight quality only one variable shows significant results, and this is whether the risk committee reviews the risk policies of a bank annually. Nevertheless, instead of decreasing the risk profile of a bank outside and within a financial crisis the regressions show that the implementation of the measure rather increases the risk profile through the cycle. This is from an expert as well as regulatory perspective counterintuitive as both groups, except EBA (2017) state that this is a core task of the risk committee and that it makes the Risk Governance more robust by creating transparency to the board on how policies and procedures are structured around risk management but also provides the possibility to adjust the framework e.g. in case of a crisis.

For the last group of variables, the Risk Governance Tools, two of the three mechanisms show statistically significant results. The first mechanism, which yields significant results is the Risk Appetite Framework and leads in contrast to the author's expectation to an increase instead of a decrease of the risk profile of a bank in times outside as well as inside a financial crisis. The result itself also contradicts the regulator's (FINMA, 2016; EBA, 2017) as well as the expert's view that assumes a risk reduction by the implementation of a proper framework. Whether a Code of Conduct is implemented is the second mechanism with significant results. When a bank implements such a Code of Conduct it leads to a statistically lower risk profile and to statistically significant higher performance through the economic cycle based on the regressions. The last finding might be counterintuitive as one could think that if the organisation follows law as well as ethics, highly profitable business to the bank might not be conducted and therefore

profits should decrease at least outside of a financial crisis. For times of a financial crisis the results are logical and in line with the expectations of regulators (BCBS, 2015; EBA, 2017) as well as experts as profits for those banks that did not engage in business e.g. subprime mortgage lending due to their social and ethical values might face fewer losses during times of financial crisis. Nevertheless, as indicated before, FINMA (2016) does not explicitly ask for its implementation. Furthermore, as the Code of Conduct is a Risk Governance mechanism that specifically addresses the alignment of stakeholder and shareholder interests as discussed before. The fact that it shows significant influence on the risk and the performance of a bank through the cycle supports the author's view that next to the shareholder interests, the ones of stakeholders have to be considered as well to make a bank more robust and as seen above even more successful.

6 Concluding Remarks

6.1 Summary

The study aimed to assesses the overarching research question:

How does Risk Governance at board level, performed by the Risk Committee, influence the robustness of European Banks through the economic cycle?

In order to answer the overarching question, three further research questions were developed. The aim was to provide supporting evidence to answer the overarching question.

In order to lay a foundation to answer all three underlying research questions, the author first assessed the current state of the academic discussion regarding Risk Governance. This was done by means of a thorough analysis of the academic literature and the regulatory environment in Europe addressing Risk Governance aspects. One of the first results of the **Academic Analysis** was that the relevance of Risk Governance as a topic increased in academic research, which can be observed in the higher amount of papers published over the last years. Content-wise researchers recognise that Corporate Governance for banks is different from the Corporate Governance in non-financial corporations. This is due to its specific business model, which is more volatile, opaque and complex. Therefore, different Corporate Governance tools are needed to mitigate the negative effects of the business model and other specific governance issues that arise in banks due to their high leverage such as oversight freeriding or misalignment of stakeholder and management interests (Mehran et al., 2011; Fernandes et al.; 2018). The studies analysed found that Risk Governance mechanisms based either on a self-developed governance index (e.g. Ellul & Yerramilli, 2013) or on specific tools such as a CRO being present at board-level and a dedicated risk committee at board level (e.g. Battaglia and Gallo, 2015). These mechanisms proofed to have a positive impact on the risk profile or performance of financial institutions during times of financial crisis. However, the studies did not focus on dedicated mechanisms of Risk Governance, for example the introduction of a Risk Appetite Statement or specific tasks and responsibilities of the risk committee as proposed

by regulators (FINMA, 2016; EBA, 2017). Furthermore, the focus of the studies was mainly on the US banking system. Only a low number of cross-country studies and no study with exclusively European focus had been carried out. This is surprising as the Eurozone crisis would have easily allowed for the testing of the hypotheses grounded on the proposals and requirements of the regulators.

The subsequent **Regulatory Analysis** has shown that since the global financial crisis and its devastating results for the financial markets and the economy as a whole the focus of regulators on Corporate Governance in banks increased, with a special focus on Risk Governance. This is not surprising, as several reports (e.g. Walker, 2009; EU, 2010) judged the Corporate Governance in banks as one of the root causes for the occurrence and driver of the significance of the 2008 crisis. Subsequently both the FSB and the BCBS started to overhaul their frameworks on Corporate Governance of financial institutions and to include specifics on Risk Governance in early in 2013 and 2015 respectively. Examples for this include the implementation of dedicated risk committees, a group-wide Risk Appetite Framework in connection with a Risk Appetite Statement or a Chief Risk Officer at board level. European regulators (FINMA, 2016; EBA, 2017) followed the advice especially from BCBS (2015) in connection with the Basel III (BIS, 2010) accords and introduced updated regulations on Corporate Governance including specific Risk Governance components, which were due for implementation in 2018. While the FINMA (2016) focussed on organisational structures and specific processes and tools, the EBA (2017) also put an emphasis on the risk culture of a bank including setting the tone from the top. Other than that, the measures (FINMA, 2016; EBA, 2017) by the new regulations do not differ materially, based on the analysis of the author.

The focus of the first underlying research question was on the **Expert's View on Risk Governance** and the key obstacles, challenges as well as best practices seen by them. By conducting semi-structured interviews with 10 experts in the field, the author tried to gain an inside perspective in actual day to day work of Risk Governance. The questions were derived from the aforementioned analyses and the interviews showed, that the experts already implemented best practices to a large extent, to overcome the specific obstacles and challenges regarding the

management of risks at board level. This is despite the fact that the interviews took place before the latest enhancements of regulations (FINMA, 2016; EBA, 2017), which came into force in 2018. Additionally, it was shown that with regard to challenges faced with Risk Governance common beliefs amongst regulators, academics and experts were found. However, also critical points with regard to the new regulations were observed during the interviews. These critical aspects were mainly related to the so called dual-hatting with respect to the risk committee. Dual-hatting is strictly prohibited by regulators for the chair of the board (FINMA, 2016; EBA, 2017). Some of the practitioners argued that this is inefficient as well as ineffective due to a loss of information between the different organisational functions of the board. In this particular constellation, the view of the experts is supported by the FINMA (2016) regulations. A further difference has been discovered with regard to the risk types to be covered by the risk committee. Practitioners specifically perceive IT-risks as a relevant risk type due to banks being strongly dependent on IT-systems and -applications. Furthermore, the interviewees made clear that Risk Governance is not about ticking a box, but rather the whole board and the organisation to commit to practising Risk Governance diligently in day by day practice.

Based on the analyses of the regulatory environment in Europe as well as the current academic discussion with respect to Risk Governance and by taking into account the results of the semi-structured interviews the author compiled a set of Risk Governance mechanisms, which is used to answer the two further underlying research questions, based on a panel data analysis.

In order to do so, the author manually collected data of 157 European banks (EU28 and Switzerland) on the 21 defined Risk Governance mechanisms over a time period of 16 years. The time period covers three financial crises, namely the dot.com-, the global financial- as well as the Eurozone-crisis. All three were analysed by the author to determine the relevant facts of the crises. This analysis was needed for the empirical analysis, to determine whether they were exogeneous shocks to the financial institutions. Additionally, the main years of negative impact on the financial markets needed to be determined. To enhance the robustness of the research, the author collected data on market as well as

accounting driven risk and performance measures for each bank in the sample per year.

The thereon derived data set was further analysed by the author from a descriptive, as well as, an empirical perspective. **Descriptive Statistics** of control as well as dependent risk and performance variables support the crises analysis definitions defined by the author. Crisis years in 2001 and 2002 for the dot.com crisis, 2008 for the global financial crisis and 2011 for the Eurozone-crisis. Descriptive analyses of the independent Risk Governance mechanisms according to a grouping defined by the author as Risk Governance Structure, Risk Committee Oversight Quality as well as Risk Governance Tools show for the overall sample that the implementation of Risk Governance mechanisms, even before they were part of regulatory requirements, increased steadily, but at an increasing speed after the global financial crisis. When it comes to the **Board Structure** most of the banks had implemented an audit committee by 2015 as well as a risk committee in about 80%, including combined audit and risk committees at a low-level. Furthermore, the installation of a CRO at a board level became more and more common. From a size perspective, larger banks started to implement the structural components early on and were at a full implementation level at an earlier phase of the sample period for the audit committee. This shows with regard to the regulatory proposals (FINMA, 2016; EBA, 2017) that banks had either started to implement the structural components before, or had reached a full implementation level for them, in 2015 already as indicated by the interviewees. This supports the critique the regulators received during the sounding phase of their new regulations, namely that the regulations are not necessary, as market practices will lead to the implementation of relevant or necessary governance measures. Moreover, the size analysis has shown that especially smaller banks are not yet, and perhaps never will reach full implementation level as their size and complexity do not necessitate full introduction of all measures. The regulators (FINMA, 2016; EBA, 2017) also considered these factors by with the proportionality principle that leaves room for non-compliance depending on business model, size and complexity of a bank. Experts also argued during the sounding phase for these exemptions. Structural approaches, such as dual-hatting either of the board or another committee and the risk committee, are observable

in the sample independently from the size, but with clear focus on the dual-hatting of committees instead of the board and the risk committee, supporting from a market practice perspective the expert's view that such a dual-hatting can be valuable and should therefore be allowed. Regulators, however, judge the dual-hatting differently, while the EBA (2017) makes clear that the chair of the risk committee should neither be the chair of the board nor of another committee. The FINMA (2016) specifically only requires that the chair of the risk committee should not be the chair of the board at the same time.

The **Risk Committee Oversight Quality** has been analysed solely for banks that have implemented the respective measures. What is observable is that banks that installed such a committee since the beginning of the sample period cover the more mature risk types like credit, market as well as operational risk. Reputational risk, however, is gaining attention since the global financial crisis. EBA (2017) and experts judge it as a relevant risk type for coverage whilst FINMA (2016) does not specifically include it in its definition of relevant risk types. Nevertheless, market practice seems to argue in the direction to include reputational risk and attention in the risk committee is increasing. In the context of the oversight quality the independence of the chair as well as the majority of the committee was not just a topic of discussion for experts and regulators, but for researchers as well. Whilst EBA (2017) argues for the independence of both, the chair of the risk committee as well as the majority of members, the FINMA (2016) only requires the independence of the majority of members. Experts fully supported EBA's (2017) requirements during the interviews. However, Academic researchers covering Risk Governance, found that independence might have negative implications due to the decreasing advisory capability of more and more independent committee and found empirical evidence as well for this negative influence (e.g. Erkens et al., 2012). The sample, however, shows that independence has increased since 2007 for the chair as well as the majority of the members, leading to the fact that in 2015 almost 80 % of the risk committees had independence on both levels. Qualification mechanisms and their distribution in the sample show interesting results with two extremes. Whilst risk management and banking experience is present in each risk committee, IT know-how is almost not present in the sample at all. Only in the later years of the sample, 10% of risk

committees had IT know-how present. This fact provides some evidence that the practitioner's view on the IT know-how is not supported from a descriptive analysis perspective. The annual review of the risk policies is clearly part of the best practice based on the evidence of this study. Almost all risk committees implemented yearly review-cycle of risk-related policies. However, just FINMA (2016) but not EBA (2017) requires the yearly review. Further results show that all banks that have implemented Risk Appetite Statements discuss and back-test the respective statements, therefore, providing evidence that the regulatory proposals (FINMA, 2016; EBA, 2017) are already part of the best practice. Last but not least the meeting frequency has been analysed. Whilst regulators (FINMA, 2016; EBA, 2017) do not ask for specific meeting frequencies, all experts stated that time is of the essence to discuss forward-looking risk management. It is observable that the meeting frequency is increasing, starting with a mean of around two meetings per year in 1999 and increasing steadily to around six meetings per year in 2015. Based on the descriptive analysis, it is however not possible to determine whether boards met rather re- than pro-active as the need to meet might have increased in times of financial stress.

The last mechanisms analysed were the **Risk Governance Tools**, which showed that the Code of Conduct, as well as the Risk Appetite Framework, are common tools and best practices in the European banking market. Both mechanisms have been implemented on a broader scale shortly after the dot.com crisis in 2001. The measures reached an 80 to 90 % implementation level in 2015 for banks in the sample. Especially the wide use of the Code of Conduct is an interesting finding as regulatory requirements differ between Switzerland and Europe. Whilst EBA (2017) demands implementation, FINMA (2016) excludes the measure from its regulation, which is more focussed on structures as well as processes instead of risk culture. Experts clearly advocated for the setup of a Code of Conduct and a stringent tone from the top to promote a good risk culture throughout the bank.

The picture looks different for Risk Appetite Statements. While until 2004 no banks implemented Risk Appetite Statements, the implementation rate grew steadily to over 20 % between 2004 and 2015, with a hike in 2013. This seems to be counterintuitive as the Risk Appetite Statement is one of the core elements of a Risk Appetite Framework and almost 90 % of all banks in the sample

implemented a Risk Appetite Framework . This example illustrates one of the limitations of the sample as it relies solely on the disclosure of the banks in their financial statements. Most of the banks stated that they have implemented a Risk Appetite Framework, but only a small proportion mentioned explicitly the setup of Risk Appetite Statement. This means that the Risk Appetite Statement could be or better said must be part of the Risk Appetite Framework according to its definition, even if banks are not disclosing it explicitly. For larger banks the picture looks slightly different as these show implementation levels for this measure of around 50 to 60 %. This might support the hypothesis of the author that larger firms tend to disclose more information than smaller ones, which might be the case here.

In the next step the author conducted a **Panel Data Analysis** that took the independent, dependent, firm– and country control variables into account. The goal of this analysis was to find empirical evidence to answer the two before mentioned research questions regarding influence and drivers. First, the author used Fixed and Random effects models in following a major stream of academic researchers based on the results of the academic analysis. The estimators seemed to be efficient and effective based on specific statistical tests. Furthermore, the Fixed Effects estimator is able to account for unobserved heterogeneity, which is especially relevant in Corporate Governance research as a source of endogeneity. Based on regressions performed with the two estimators, the author derived statistically significant results for a large number of variables. However, the author learned during the course of the study that these estimators have been criticised, as they do not account for all sources of endogeneity (Wintoki, Linck & Netter, 2009; Love, 2010; Schultz et al., 2010). The application of these estimators might hence lead to upward biased results of the regressions. Due to that the author decided to perform further regressions based on a dynamic systems GMM estimator, which accounts for other sources of endogeneity as well. The application of this estimator has led to a significantly lower amount of statistically significant results supporting the critique of Love (2010) and Schultz et al.(2010) that the Fixed and Random effects estimators do not account properly for all relevant sources of endogeneity and that the results of these might be biased upwards.

Following the three before introduced categories, the author found that for the **Board Structure** only two measures showed statistically significant results, i.e. the existence of an audit committee and whether the chair of the risk committee serves as the chair of another committee as well. Starting with the audit committee, the regression analysis show that if implemented in a bank it leads to an increase of risk in times outside of and within a financial crisis and at the same time to a decrease of performance in times of and outside of a financial crisis. The results are, with the exception of the latter, contradicting the expectations of the author. It was assumed that an audit committee would lead to an overall lower risk through the cycle and therefore better performance. One explanation might be the backwards looking focus of the audit committee, namely accounting measures and risks, whereas a risk committee is more forward looking. Therefore, it could be the case that an audit committee would underestimate the current situation of a bank and would therefore favour further investments in products solely based on past risk realisations. One example could be subprime mortgages, which yielded decent profits and carried low risks from an accounting perspective over the years before the crisis. This might, in the end, lead to a counterproductive impact especially in situations of a financial crisis, which could increase the risks of a bank and lower performance at the same time. The finding might also support the idea to set-up a committee like the risk committee that focusses on forward-looking risk management as required by the FINMA (2016) or EBA (2017) and which is advocated by the experts interviewed. Whether the chair of the risk committee simultaneously serves as the chair of another committee as well was the second measure showing significant results with regard to the board structure. It confirmed the expectation of the author that such a setup would have a negative impact on risk management and therefore increase the risk profile of a bank through the cycle. The results are in line with what most of the relevant regulators (FSB, 2013b; BCBS, 2015; EBA 2017), except FINMA (2016), postulate, as they view dual-hatting as suboptimal as it might lead to a workload, which is perceived as too high and loss of independence, e.g. in case of the audit committee (Deloitte, 2017). Furthermore, the results indicate that the dual-hatting does not increase effectiveness based on information sharing between committees as argued for by

some of the interviewees, but rather supports the inefficiency and ineffectiveness postulated by the regulators.

For the **Risk Committee Oversight Quality** mechanism group only one variable showed significant results at all, namely whether the risk committee reviews the risk policies of a bank annually. However, instead of decreasing the risk profile of a bank, the regressions show that the implementation of that mechanism rather increases the risk profile throughout the economic cycle. This is counterintuitive from both, an expert as well as a regulatory perspective. Both state that a regular review is a core task of the risk committee that improves the robustness of Risk Governance by creating transparency to the board on how policies and procedures are structured around risk management. Additionally, it provides the possibility to adjust the framework e.g. in case of a crisis. An explanation for these results can be that frequently reviewing and adjusting the policy framework helps to more effectively steer risks across the bank. Based on that it might be possible to better measure as well as analyse the risk profile of the bank and therefore actively steering higher risks, which should in the end lead to higher returns and, therefore, favour the bank in the market competition. Another explanation might be that by the active involvement of the supervisory function in the risk policy process, the advisory capabilities of the board might outweigh its monitoring capabilities. This means that due to the active involvement independence, as well as an effective oversight, might be hampered leading to counterproductive impacts as observable in the results. When it comes to the regulator's view it differs, whilst the FINMA (2016) specifically requires the annual review of the policies, the EBA (2017) does not.

When it comes to the last group of mechanisms under investigation, namely the **Risk Governance Tools** two of the three mechanisms showed statistically significant results. The first mechanism, which yields significant results is the Risk Appetite Framework and leads in contrast to the author's expectation to an increase instead of a decrease of the risk profile of a bank in times outside as well as inside a crisis. The result itself is again counterintuitive as it contradicts the regulatory (FINMA, 2016; EBA, 2017) and the expert view that assumes a risk reduction by the implementation of a proper framework. However, the author

could assume that the implementation of the framework creates greater transparency and thus increasing the ability to steer the risk profile better, which might decrease the margin of safety. The transparency assumption is for both measures, the Risk Appetite Framework and the policy review, further supported by the regression results. Despite finding a statistically significant increase of risk in banks, which have implemented the measures, the regressions did not find evidence that these banks significantly performed worse through the cycle than other banks. This means that despite increasing the risk profile, the performance was not hit harder within a crisis compared to other banks. Nevertheless, they also did not achieve a statistically significant higher amount of profits when implementing the mechanisms based on the regression results.

The second measure with significant results is the Code of Conduct, which when set up within a bank should lead to employees following the core ethical and social values of a bank whilst serving their customers or executing their duties (BCBS, 2015). If a bank implements a Code of Conduct, it leads to a statistically lower risk profile and to statistically significant higher performance through the cycle. The last finding might be counterintuitive, as one would assume that if the organisation follows laws and ethics, highly profitable business to the bank might not be conducted and, therefore, profits should decrease at least outside of a financial crisis. For times of a financial crisis the results are logical and in line with the expectations of regulators (BCBS, 2015; EBA, 2017) as well as experts. The profits for banks that did not engage in business e.g. subprime mortgage lending due to their social and ethical values might face fewer losses during times of financial crisis. The Code of Conduct has the highest score amongst all measures after applying a robust statistical estimator. This is particularly interesting as the FINMA (2016) focusses on the implementation of structures and processes, but widely ignored the cultural component of Risk Governance. EBA (2017) on the contrary specifically asks for the implementation of such a tool within a bank. Nevertheless, as expert interviews and the descriptive statistics indicate, market practice has already picked up on the tool. The implementation started after the dot.com crisis at an increased speed and almost full implementation across the sample was reached back in 2015.

Overall, the explained results of the regression, which are based on robust statistical tools, provide answers to the research question. Risk Governance as such is a relevant topic for financial institutions. Not only regulators (FINMA, 2016; EBA, 2017) recently started to enhance the framework for it in Europe, but the European banking market has already started and for some of the relevant measures finished the implementation of Risk Governance structures, processes and tools. However, whilst common sense and theory advocate for the implementation of the described Risk Governance mechanisms, the evidence for the effectiveness of these measures is rather limited from an empirical point of view. This is displayed by the data set and the estimators used by the author. When it comes to the drivers of Risk Governance, the risk committee as such does not show a statistically significant influence on the risk profile or performance of a bank through the economic cycle, even if it is the cornerstone of the Risk Governance framework. Nevertheless, for the banks having implemented the committee two out of 14 measures with regard to the risk committee show significant results. Further indicating that the importance of the committee is limited from an empirical perspective. Moreover, the setup of a CRO at board level does not make a difference to the risk profile and performance through the cycle, which is in contrast to other studies (e.g. Ellul & Yerramilli, 2013) and the expectations of regulators (FINMA, 2016; EBA, 2017). Nevertheless, the study finds that the Risk Governance Tools and specifically the Code of Conduct as well as the Risk Appetite Framework, which should be implemented by the board and specified by the risk committee, are statistically significant drivers of the Risk Governance at board level of European banks. This was the case even before the regulatory enhancements were implemented in the European market.

6.2 Theoretical Implications

From an academic point of view, the study contributes to the existing research string evolving around specific Corporate Governance settings in banks called Risk Governance in different ways. First, the study focussed on European banks and the influence of Risk Governance on their risk profile and performance throughout the economic cycle. This group of banks was under-researched in the prevailing academic research on Risk Governance (Fernandes et al., 2018).

Therefore, Risk Governance theories were, based on the author's academic analysis, mainly tested in the US context and have been not yet tested for consistency and validity for European banks. Furthermore, the author covered in his panel data analysis compared to other studies, assessed in the academic analysis section of this study, a longer time period which contains three specific crises, allowing to test the influence of Risk Governance mechanisms through three economic cycles. Based on Fixed and Random Effects estimators, the author was able to find empirical evidence that supports the findings in the US setting (e.g. Ellul & Yerramilli, 2013; Magee et al., 2013; Gontarek, 2016), which state that Risk Governance has an influence on the risk profile as well as the performance of banks through the economic cycle also in the European context. However, after applying more robust empirical methods the results were different, showing only limited evidence for the influence of Risk Governance and especially the risk committee and its processes. The risk committee as such is not showing statistically significant influence. However, two mechanisms addressing the structure and the processes of the committee show statistically significant influence. These two mechanisms are whether the chair of the risk committee is chairing another committee at the same time and whether the risk committee reviews the risk policies of the bank annually. Both variables show a risk increasing influence, which for the dual-hatting supports the view of regulators (BCBS, 2015; EBA, 2017) asking for strict separation of the chairing of committees and the board. For the annual review the outcome was not expected based on regulatory proposals and existing literature. Furthermore, two Risk Governance Tools used by the board and the risk committee showed a significant influence on risk and performance of European banks through the economic cycle, namely the Risk Appetite Framework along with the Code of Conduct. Therefore, this dissertation adds further context to the overall research stream of Risk Governance in banks by assessing the influence of its measures in a European context.

Second, the study particularly focused on Risk Governance mechanisms surrounding the risk committee at board level, which has not been examined in depth. Other research has investigated the topic either by using a broad self-developed Risk Governance index (e.g. Ellul & Yerramilli, 2013) or by focusing

on a small number of specific Risk Governance measures (Gontarek, 2016). The added value of this study is the assessment of specific structures, processes and tools of Risk Governance with regard to their influence on risk as well as performance of European banks, which allows for a more detailed analysis. Based on the results of the study it has not been possible to prove that Risk Governance expressed by the dedicated structures, processes and tools has an overall positive effect on the robustness of a bank through the cycle. Nevertheless, two mechanisms addressing the structure and the processes show statistically significant influence as indicated above, namely whether the chair of the risk committee is as well the chair of another committee and whether the risk committee reviews the risk policies of the bank annually. Furthermore, two specific mechanisms, the Risk Appetite Framework and the Code of Conduct, could be found to have an influence on the risk and in case of the Code of Conduct on performance as well. By this the study adds further value to the existing Risk Governance literature stream by discovering specific factors in Risk Governance, which could influence the risk profile and performance of a bank.

Third, as a mixed-method approach has been applied in the study, the focus was not only, as in other studies assessed during the academic analysis for this dissertation, on quantitative data, but on qualitative data as well. Experts have been heard by the author in form of semi-structured interviews, providing valuable insight into the Risk Governance processes in banks. Based on that the author was able to triangulate the current academic discourse, the regulatory proposals and requirements and expert opinions and by this further develop the hypotheses for the empirical part of the study as well as the single variables in scope. This study adds further value to existing literature on Risk Governance by gaining inside knowledge and expert opinions on Risk Governance, which have been further tested regarding their validity in a broader panel data analysis.

Fourth, after applying the Fixed and Random Effects estimation techniques and finding strong evidence for the influence of Risk Governance measures on the risk profile as well as the performance of European banks through the economic cycle, the author applied more robust empirical methods, namely a dynamic systems GMM estimator. This enabled the author to account for more sources of

endogeneity prevalent in Corporate Governance research settings. Based on that the effects of Risk Governance on risk and performance diminished with some exceptions, namely the Code of Conduct or the Risk Appetite Framework. Thereby, the study adds further value to the existing string of research around endogeneity issues within Corporate Governance research (Wintoki, Linck & Netter, 2012; Love, 2010; Schultz et al., 2010) supporting the hypothesis that endogeneity is present and does not only come from unobservable heterogeneity but could come from other sources like simultaneity or dynamic endogeneity as well.

Fifth, as indicated throughout the academic analysis, Corporate Governance for banks is different from the Corporate Governance of non-financial corporations, as they are more volatile, opaque and complex. Furthermore, banks have a lot more stakeholders than other firms, like borrowers, depositors and society as a whole. Therefore, different Corporate Governance tools are needed to mitigate the negative effects that arise from on the specifics of banks (Mehran et al., 2011; Fernandes et al.; 2018). Most of the papers analysed in this dissertation founded their work on the Principal-Agent Theory, which widely ignores especially the interests of other stakeholders. Only recently the Risk Governance literature started to recognise stakeholder interests as well (Dupire & Slagmulder, 2019). As stated in the theory chapter of the study, the author follows a different approach as well and assumes that there is need to account for both, the interests of stakeholders and shareholders, which is based on the enlightened Shareholder Theory of Pichet (2011). This view is also shared by regulators as for example the BCBS (2015) specifically asks for the consideration of stakeholder interests, which is also expressed by the recommendation to install specific mechanisms of Risk Governance. These recommendations are the coverage of reputational risk and the implementation of a Code of Conduct. The study further found that experts of Risk Governance advocate for banks to aim for long-term profits and, therefore, aligning with stakeholder interests. Based on empirical evidence, the Code of Conduct, which accounts for stakeholder interests, is a significant driver of the robustness of banks through the cycle, hence advocating that next to shareholder also stakeholder interests. With these conclusions, the study adds

further value to the broader Corporate Governance research stream with regard to the underlying theories to be used for assessing governance problems.

6.3 Practical Implications

The practical implications of the study are twofold. On the one hand the results of the study are relevant for the assessment of regulatory requirements regarding Risk Governance. On the other hand, the results provide valuable feedback to boards of European banks regarding the best practices of Risk Governance.

Starting with the regulatory implications, firstly, one can state that banks independently of their size started well in advance of the recent regulatory changes to implement the respective measures. Therefore, the measures now being advocated for by the regulators are nothing new and the implementation efforts for banks will be rather low, based on the data set compiled by the author. This assessment is further supported by the experts interviewed in the context of this study, which saw Risk Governance and the specific measures as an important topic and were driving or already finished the implementation of Risk Governance structures, processes and tools in their banks. This as well supports the critique the regulators received during the sounding phase of their new regulations, namely that these are not necessary as the market practices will lead on its own to the implementation of relevant or necessary governance measures as a lesson learned from the financial crisis.

Secondly, based on robust empirical methods the author finds just limited evidence for the influence of Risk Governance structures, processes and tools through the last three financial crises. Therefore, the introduction of the new regulations (FINMA, 2016; EBA, 2017) might not result in the desired outcome and more robust banks or financial markets in the next crisis. However, as indicated in the expert interviews the focus on Risk Governance at board level has increased over the last years and experts clearly saw the need for enhancements as well. One explanation for the results could also be that banks implemented the measures, but shortcomings in the execution did not allow for a successful implementation. . Nevertheless, as explained in the limitations section, the author was unable to assess the quality of process execution and tool usage as he had to

rely on annual account data which mainly shows, if a mechanism is implemented or not. The results could provide ground for regulators to further think about guidance on what makes structures, processes and tools regarding Risk Governance effective next to purely putting the design components into place.

Thirdly, the author found two mechanisms addressing the structure and the processes that show statistically significant influence. These are on the one hand whether the chair of the risk committee is at the same time chairing another committee and on the other hand whether the risk committee reviews the risk policies of the bank annually. Whilst EBA (2017) forbids dual-hatting, FINMA (2016) only asks for the prevention of the dual-hatting of the board and the risk committee, which was also advocated for by some of the experts. The opposite holds true for the risk policy review. Furthermore, two Risk Governance tools showed statistically significant influence on risk and performance of European banks through the cycle as well, namely the Risk Appetite Framework and the Code of Conduct. As in the case before, the EBA (2017) specifically requires the use of both tools and FINMA (2016) only requires the implementation of a Risk Appetite Framework. The result of this study indicate that it might be useful for FINMA to review its newest regulation on Corporate Governance of banks (2016) with regard to the two specific measures. Especially the Code of Conduct seems to be a powerful tool to promote good business conduct and by that making banks not only less risky but at the same time more successful based on the results of empirical analysis of this study.

Fourth, both relevant regulatory bodies (FINMA, 2016; EBA, 2017) make use of the proportionality principle in their regulations, allowing less complex and smaller banks to implement some of the Risk Governance measures required only partly or not at all. Based on the analysis, smaller banks were lagging behind larger banks at the end of the sample period. This clearly indicates that best practice with regard to Risk Governance is also different for smaller banks and accounting for size and complexity. However, as the results of the study show, only a small proportion of Risk Governance measures show a statistical significance and it supports the idea of the regulators that banks which are smaller and less complex should be exempted from implementing complex and costly

processes and structures. Regulators should focus on the requirement of basic tools and structures, which have shown significant empirical results like the implementation of a Risk Appetite Framework as well as a Code of Conduct. Nevertheless, as indicated before, banks have already implemented both tools to a high degree. This is also true for smaller banks. However, the dual-hatting remains common and could be one of the relevant measures in focus for prevention independently from size and complexity if a bank decides to implement a risk committee.

The practical implications for banks are threefold. Firstly, whilst the author aimed to develop a best practice guide for Risk Governance, he understood based on the interviews of experts and supported by the results of the descriptive analysis of this study that there is limited need for this. Banks already have a good understanding of Risk Governance and are advanced in terms of implementation. However, as outlined before the author could only assess the influence of Risk Governance measures on the robustness of banks based on financial report data. The real day to day work of the boards, which could provide insights into the quality of the process execution and tool application, remained hidden. Therefore, it might be useful for the industry or the regulators to work on a standard of Risk Governance application in the day to day board work.

Secondly, the study showed that experts judge Risk Governance as a relevant topic and saw need for enhancement even in advance to the regulatory proposals. However, the study does not support all mechanisms being implemented based on empirical findings. Only four mechanisms showed significant results. Risk Appetite Framework and Code of Conduct as well as the annual review of risk policies by the risk committee, if it is implemented, are common tools and widely used. With regard to dual-hatting of the risk committee and other committees, however, especially the practitioners judged it as an effective and efficient setting, which could not be supported by the empirical results. The results rather suggest that this setting should be prevented, in order to make a bank less risky through the cycle. Therefore, the setting should be prevented not only from a regulatory, but from a best practice perspective as well.

Thirdly, when it comes to the proportionality principle granted by the regulators, especially smaller banks are free to decide in conjunction with their business model and size, which of the measures to implement. Based on the results of the study, banks should prioritize the implementation of a sound Risk Appetite Framework, which should help to clearly define, articulate, measure and steer the desired Risk Appetite across risk types and asset classes. Furthermore, focus should be put on the implementation of a Code of Conduct promoting good business conduct across the bank and hence supporting the robustness and success of the bank through the cycle as indicated by this study's results.

6.4 Limitations and Future Research

The results of the study come with limitations. These are from the author's perspective two-fold and related to the data set on the one hand and the empirical methods used on the other hand. As the data set covering the Risk Governance mechanisms was manually collected by the author, operational risk exists that the author collected incomplete data. One source of failure could have been that the author overlooked statements regarding Risk Governance within the financial reports as well as annual accounts. A further source of error could have been that the author misinterpreted expressions of Risk Governance within the companies' reports. Furthermore, the author might have wrongly coded the correct information collected from the financial statements as well as annual accounts of the banks in the sample. These risks have been mitigated by performing a quality assessment on the collected data. The quality assessment did not lead to a high number of deficiencies. However, the risk of inconsistent coding of information in the data set still exists. But not only the manually collected data bears the risk of being incorrect, this risk does exist as well for data provided by Thomson Reuters. In order to control this, the author also conducted a quality assessment based on a sample testing of Thomson Reuters data against, on the one hand, the official exchange data for market data as well as comparisons against financial statements of banks for accounting data on the other hand. The sample was inconspicuous in terms of data quality. Furthermore, the data provided by the bank may be incorrect. For example, it might be the case that banks carry out certain tasks or set up Risk Governance structures, but do not disclose the respective

information, which might, in the end, lead to biased results of the conducted empirical analysis. Moreover, the fact that a bank simply sets up a specific structure or discloses that it carries out certain tasks related to Risk Governance does not mean that this is being done in the expected quality or the required care, which might again negatively influence the results described before. For the last two limitations, the author is not able to perform a control as he had to rely on the information provided in financial statements as well as annual accounts. Moreover, the author was unable to assess the specific structures and processes in terms of quality and consistency, which is therefore also not reflected in the results. However, the interviews conducted in the course of the study could at least provide an insight into how serious these settings and processes are being taken by professionals, which strengthens the study regarding this aspect at least partially.

The second limitation is based on the empirical tools used and, in this case, specifically the dynamic systems GMM estimator. Next to the fact that the estimator is able to account for several sources of endogeneity, it has its limitations as well (Roodman, 2009a). The most critical limitation cited by several authors (e.g. Roodman, 2009a; Wintoki et al., 2012; Schultz et al., 2010) is the overidentification which might occur if a large number of instruments is used and leads to weak instruments and, therefore bias the regression results. A further limitation is based on the weighting matrix, which creates according to Roodman (2009b) difficulties with the calculations of moments conditions as soon as the number of instruments reaches the number of observations due to a singularity problem. The author considered both issues by conducting relevant tests e.g. the one from Hansen (1982) to test for validity of the instruments and, furthermore, the author made sure that he sticks to Roodman's (2009a) rule to use less or equal instruments to groups or observations present in the model. However, following Wintoki et al. (2012) the dynamic systems GMM estimator does not solve all the issues that come with endogeneity in Corporate Governance research as it purely relies on internal instruments and that the best way to estimate the risk/performance and Risk Governance relationship would be to use exogenous instruments, which has not been the case in this study.

With regard to future research the study is according to the understanding of the author the first to assess the influence of Risk Governance measures on a broader scale with regard to the European cross-country as well as time period coverage leading to value-adding results as discussed before. However, there is still room for future research based on the results of the study. As the author indicated, the results of the study are based on financial accounting data as well as disclosed information from annual accounts. The author could, therefore, not assess in person the specific structures and processes in terms of quality and consistency. However, the interviews conducted in the course of the study could at least provide an insight into how serious these settings and processes are being taken by professionals. Nevertheless, it might be useful for future research to get access to the board room to assess the quality and performance of the Risk Governance processes and application of tools in order to determine a best practice of Risk Governance. This would add further value for the future development of the Risk Governance framework from a practitioner as well as academic perspective.

Moreover, the results of the study have shown that the Code of Conduct is the most effective tool from a Risk Governance perspective. The study itself could, based on the research setup, only assess the overall effectiveness. This study was not able to deliver the single components that drive the effectiveness of a Code of Conduct, opening up another research possibility in the future. The process of implementation as well as the components of the Code of Conduct are structured in the most effective way from an empirical perspective, adding value to enhancing the Risk Governance framework from a practical perspective and adding further insight to the academic discourse on Risk Governance tools and framework.

Furthermore, the regulatory environment changed in Europe only recently with regulators (FINMA, 2016; EBA, 2017) specifically requiring the implementation of Risk Governance mechanisms. As they came into force (2018) just recently, it would be an opportunity for further research to conduct a difference-in-difference study to assess the influence of the measures before and after the change in regulation. However, ideally in times of a financial crisis to properly assess if

banks behave now differently in these times with the required measures implemented.

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Annex A: Board Types per Country

Country	Board Type
Austria	Mandatory two-tier board structure.
Belgium	One-tier board or mixed structure.
Bulgaria	Choice between one-tier and two-tier board structure.
Croatia	Choice between one-tier and two-tier board structure.
Cyprus	One-tier board structure.
Czech Republic	Mandatory two-tier board structure.
Denmark	Choice between the Nordic model and the German-type two-tier board structure.
Estonia	Mandatory two-tier board structure.
Finland	Choice between the Nordic model and the German-type two-tier board structure.
France	Choice between one-tier and two-tier board structure. In addition, within the one-tier structure, the company may choose the PDG (président-directeur general) model, combining the offices of the CEO and the chair of the board.
Germany	Mandatory two-tier board structure.
Greece	One-tier board structure.
Hungary	Choice between one-tier and two-tier board structure.
Ireland	One-tier board structure.
Italy	Italian company law allows companies to choose between the “traditional” model with a Board of Directors and a board of statutory auditors, as well as a typical two-tier and a typical one-tier system.
Latvia	Mandatory two-tier board structure.
Lithuania	Choice: supervisory board and/or Board of Directors are optional under Lithuanian law.
Luxembourg	Choice between one-tier and two-tier board structure.
Malta	One-tier board structure.
Netherlands	Choice between one-tier and two-tier board structure.
Poland	Mandatory two-tier board structure.
Portugal	Portuguese company law allows companies to choose between the structure with a Board of Directors and an audit board, as well as a typical two-tier and a typical one-tier system.
Romania	Choice between one-tier and two-tier board structure.
Slovak Republic	Mandatory two-tier board structure.

APPENDIX

Country	Board Type
Slovenia	Choice between one-tier and two-tier board structure.
Spain	One-tier board structure.
Sweden	Nordic model.
United Kingdom	One-tier board structure.”

Source: Gerner-Beuerle, Paech, and Schuster (2013, p. 4-5).

APPENDIX

Annex B: Dependent Variables

Year	Descriptive Statistics	B and H Return	Beta	Pre-Tax ROE	Loan Loss Provision of Avg. Loans	SD daily Returns	Tier1 Risk Adjusted Capital Ratio
1999	N	100	103	115	94	104	35
1999	Minimum	-71%	-2.45202	-46%	-13%	.00000	6%
1999	Maximum	607%	2.68925	332%	7%	1.17504	18%
1999	Mean	35%	0.27054	28%	1%	.33148	9%
1999	Standard Deviation	.94777	.80983	.39919	.01867	.19387	.02735
2000	N	104	104	118	94	104	44
2000	Minimum	-71%	-2.63243	-1%	-3%	.00000	0.00%
2000	Maximum	203%	4.28765	178%	6%	2.04272	28.00%
2000	Mean	9%	0.30871	27%	1%	.33126	8.68%
2000	Standard Deviation	.39023	.86127	.25737	.01093	.23903	.04138
2001	N	106	113	122	91	109	64
2001	Minimum	-90%	-1.20042	-89%	-1%	.03638	5%
2001	Maximum	167%	3.49763	175%	8%	1.20773	27%
2001	Mean	-6%	0.69607	16%	1%	.31721	9%
2001	Standard Deviation	.32694	.68800	.23897	.01248	.16351	.03433
2002	N	113	114	127	93	112	73
2002	Minimum	-98%	-4.58253	-41%	-2%	.00000	6%
2002	Maximum	174%	2.69012	176%	17%	4.10137	29%
2002	Mean	-4%	0.56266	15%	2%	.37706	9%
2002	Standard Deviation	.37607	.86176	.20653	.17103	.43520	.03436
2003	N	117	116	131	100	113	78
2003	Minimum	-98%	-1.51274	-123%	-2%	.01923	6%
2003	Maximum	173%	4.60128	514%	23%	4.28226	78%
2003	Mean	30%	0.71389	17%	1%	.32477	11%
2003	Standard Deviation	.38420	.91864	.48900	.02440	.42116	.09517
2004	N	117	118	134	114	115	81
2004	Minimum	-43%	-3.08915	-21%	-1%	.02389	0%

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Year	Descriptive Statistics	B and H Return	Beta	Pre-Tax ROE	Loan Loss Provision of Avg. Loans	SD daily Returns	Tier1 Risk Adjusted Capital Ratio
2004	Maximum	209%	25.49985	380%	13%	1.10669	79%
2004	Mean	26%	1.23256	20%	1%	.22864	11%
2004	Standard Deviation	.40050	2.52542	.33317	.01411	.12579	.09642
2005	N	122	119	139	122	117	89
2005	Minimum	-12%	-0.84133	-9%	-1%	.00000	0%
2005	Maximum	444%	22.89725	136%	6%	1.53840	53%
2005	Mean	40%	1.24578	21%	1%	.24798	10%
2005	Standard Deviation	.48687	2.17574	.13974	.00817	.19536	.07572
2006	N	123	119	133	118	116	89
2006	Minimum	-81%	-1.48724	-23%	-1%	.00827	0%
2006	Maximum	236%	3.36342	148%	7%	1.08864	55%
2006	Mean	29%	1.17772	22%	0%	.26798	11%
2006	Standard Deviation	.33952	.81893	.15070	.00921	.13974	.06985
2007	N	120	121	136	116	116	93
2007	Minimum	-79%	-1.28498	-9%	-1%	.03688	6%
2007	Maximum	87%	5.08097	75%	8%	1.23413	52%
2007	Mean	-2%	1.01308	21%	0%	.28141	11%
2007	Standard Deviation	.26795	1.01090	.10749	.00885	.15307	.07140
2008	N	124	120	136	125	115	97
2008	Minimum	-92%	-0.51961	-377%	0%	.02123	4%
2008	Maximum	29%	2.62567	49%	27%	1.34238	31%
2008	Mean	-53%	1.04827	4%	1%	.54190	10%
2008	Standard Deviation	.24085	.69907	.39365	.02764	.24408	.04428
2009	N	123	122	135	126	116	100
2009	Minimum	-72%	-1.43018	-99%	0%	.04887	6%
2009	Maximum	208%	5.04391	53%	16%	2.02234	33%
2009	Mean	30%	1.55328	5%	2%	.54225	12%

APPENDIX

Year	Descriptive Statistics	B and H Return	Beta	Pre-Tax ROE	Loan Loss Provision of Avg. Loans	SD daily Returns	Tier1 Risk Adjusted Capital Ratio
2009	Standard Deviation	.46062	1.23960	.19157	.01897	.32762	.05033
2010	N	126	122	137	128	116	101
2010	Minimum	-99%	-1.22484	-168%	-1%	.04635	2%
2010	Maximum	208%	5.37804	54%	34%	2.55200	126%
2010	Mean	-8%	1.20585	5%	2%	.38749	13%
2010	Standard Deviation	.35061	1.09379	.21528	.03276	.27453	.12049
2011	N	125	125	136	124	120	92
2011	Minimum	-98%	-2.33179	-1421%	-1%	.02357	0%
2011	Maximum	51%	9.20205	50%	11%	1.71945	32%
2011	Mean	-32%	0.86562	-13%	1%	.44806	12%
2011	Standard Deviation	.26189	1.14653	1.28660	.01746	.27410	.04523
2012	N	125	121	135	125	117	96
2012	Minimum	-89%	-0.92134	-698%	0%	.02489	3%
2012	Maximum	6677%	6.55541	49%	15%	1.81899	34%
2012	Mean	61%	1.51996	-7%	2%	.44237	14%
2012	Standard Deviation	5.98167	1.34586	.76459	.01975	.33223	.04554
2013	N	124	121	131	121	115	100
2013	Minimum	-99%	-7.62178	-116%	0%	.02012	0%
2013	Maximum	147%	25.96883	59%	14%	3.37252	33%
2013	Mean	23%	1.21789	2%	1%	.39470	13%
2013	Standard Deviation	.45317	2.76040	.25180	.01865	.39076	.05349
2014	N	121	118	132	120	113	104
2014	Minimum	-100%	-2.72722	-299%	-1%	.01815	0%
2014	Maximum	353%	6.07901	47%	15%	3.52458	30%
2014	Mean	-1%	0.76024	3%	1%	.36505	14%
2014	Standard Deviation	.44190	1.43349	.31722	.02049	.37981	.04093
2015	N	122	119	130	118	114	107

APPENDIX

Year	Descriptive Statistics	B and H Return	Beta	Pre-Tax ROE	Loan Loss Provision of Avg. Loans	SD daily Returns	Tier1 Risk Adjusted Capital Ratio
2015	Minimum	-98%	-1.25250	-117%	-1%	.02780	7%
2015	Maximum	111%	3.64634	49%	21%	1.64810	31%
2015	Mean	-1%	0.58644	6%	1%	.36965	15%
2015	Standard Deviation	.31569	.74326	.17510	.02460	.29690	.03565

Source: Own development based on Thomson Reuters Eikon data.

Annex C: Control Variables

Year	Descriptive Statistics	Deposit Growth	L to D Ratio	Loan Growth	Operating Leverage	Securities Earnings	TotalAssets	Uncertainty Avoidance	Long vs Short Orientation	WGI
1999	N	109	110	109	110	109	119	154	132	157
	Minimum	-100%	0%	-81%	-102%	0%	29.00	23	13	-.18
	Maximum	85523%	1411%	357%	260%	117%	839.865.00	112	50	1.95
	Mean	807%	118%	25%	5%	26%	77.829.73	66.88	33.86	1.2738
	Standard Deviation	81.90	1.79	.49	.42	.21	154268.71	25.08	8.32	.49
2000	N	113	112	111	116	114	122	154	132	157
	Minimum	-100%	1%	-98%	-256%	0%	4.00	23	13	-.18
	Maximum	289%	2119%	1012%	809%	146%	928.994.00	112	50	1.95
	Mean	25%	143%	32%	7%	27%	95.515.31	66.88	33.86	1.2738
	Standard Deviation	.45	2.96	1.00	.83	.22	185089.95	25.08	8.32	.49
2001	N	117	118	114	118	117	128	154	132	157
	Minimum	-55%	2%	-57%	-119%	0%	5.00	23	13	.00
	Maximum	17521%	4635%	106%	74%	98%	918.222.00	112	50	1.95
	Mean	164%	161%	12%	-10%	25%	99.770.05	66.88	33.86	1.2848
	Standard Deviation	16.19	4.52	.19	.24	.20	199547.87	25.08	8.32	.46
2002	N	122	124	118	126	124	133	154	132	157

Year	Descriptive Statistics	Deposit Growth	L to D Ratio	Loan Growth	Operating Leverage	Securities Earnings	TotalAssets	Uncertainty Avoidance	Long vs Short Orientation	WGI
	Minimum	-70%	0%	-94%	-106%	0%	3.00	23	13	.00
	Maximum	363494%	5320%	13748%	127%	99%	814.725.00	112	50	1.95
	Mean	2993%	155%	128%	-1%	24%	93.109.67	66.88	33.86	1.2848
	Standard Deviation	329.08	5.00	12.65	.22	.20	183894.57	25.08	8.32	.46
2003	N	124	127	124	130	125	134	154	132	157
	Minimum	-55%	12%	-38%	-85%	0%	13.00	23	13	-.04
	Maximum	200%	4976%	5594%	483%	98%	993.118.00	112	50	1.97
	Mean	8%	154%	60%	10%	23%	96.758.73	66.88	33.86	1.2349
	Standard Deviation	.25	4.59	5.02	.54	.19	197537.19	25.08	8.32	.45
2004	N	129	135	130	133	131	139	154	132	157
	Minimum	-92%	5%	-56%	-529%	0%	18.40	23	13	-.01
	Maximum	1545%	4155%	101%	2021%	138%	1.125.875.00	112	50	1.96
	Mean	32%	148%	13%	16%	26%	107.479.09	66.88	33.86	1.2167
	Standard Deviation	1.51	4.09	.22	1.83	.21	225478.41	25.08	8.32	.49
2005	N	137	134	135	138	133	139	154	132	157
	Minimum	-62%	14%	-16%	-86%	0%	41.60	23	13	.01
	Maximum	250%	1912%	1852%	171%	118%	1.343.676.00	112	50	1.89

Year	Descriptive Statistics	Deposit Growth	L to D Ratio	Loan Growth	Operating Leverage	Securities Earnings	TotalAssets	Uncertainty Avoidance	Long vs Short Orientation	WGI
	Mean	21%	129%	40%	6%	26%	139.992.13	66.88	33.86	1.1975
	Standard Deviation	.34	2.17	1.63	.22	.22	300479.98	25.08	8.32	.46
2006	N	130	132	130	132	132	138	154	132	157
	Minimum	-83%	16%	-34%	-64%	0%	108.20	23	13	.11
	Maximum	205%	1773%	348%	94%	100%	1.584.493.00	112	50	1.87
	Mean	19%	128%	27%	5%	23%	156.050.14	66.88	33.86	1.1949
	Standard Deviation	.35	1.91	.46	.17	.19	343552.68	25.08	8.32	.49
2007	N	131	131	133	134	130	137	154	132	157
	Minimum	-98%	12%	-82%	-44%	0%	118.10	23	13	.10
	Maximum	166%	57933%	203%	142%	106%	2.504.310.00	112	50	1.89
	Mean	16%	598%	23%	2%	23%	181.422.29	66.88	33.86	1.1977
	Standard Deviation	.29	50.61	.36	.21	.20	421124.03	25.08	8.32	.50
2008	N	132	133	134	136	129	136	154	132	157
	Minimum	-57%	12%	-54%	-1812%	0%	145.30	23	13	.13
	Maximum	260468%	4361%	736%	77%	165%	2.513.005.00	112	50	1.85
	Mean	2116%	161%	26%	-43%	23%	198.857.22	66.88	33.86	1.1948

Year	Descriptive Statistics	Deposit Growth	L to D Ratio	Loan Growth	Operating Leverage	Securities Earnings	TotalAssets	Uncertainty Avoidance	Long vs Short Orientation	WGI
	Standard Deviation	227.01	4.33	.79	1.93	.21	464152.53	25.08	8.32	.47
2009	N	131	136	135	134	130	138	154	132	157
	Minimum	-81%	14%	-28%	-95%	0%	126.00	23	13	.14
	Maximum	544%	3749%	161%	529%	130%	2.057.698.00	112	50	1.86
	Mean	8%	155%	4%	17%	24%	177.107.29	66.88	33.86	1.1591
	Standard Deviation	.51	4.16	.21	.66	.19	393523.54	25.08	8.32	.47
2010	N	135	137	137	136	134	139	154	132	157
	Minimum	-63%	10%	-79%	-445%	0%	118.10	23	13	.15
	Maximum	6789%	1832%	791%	176%	152%	1.998.158.00	112	50	1.86
	Mean	60%	123%	14%	-3%	24%	186.650.89	66.88	33.86	1.1628
	Standard Deviation	5.84	2.04	.79	.47	.20	413280.64	25.08	8.32	.47
2011	N	134	136	134	136	134	139	154	132	157
	Minimum	-92%	5%	-90%	-783%	0%	90.70	23	13	.12
	Maximum	4841%	3585%	95134%	524%	102%	2.164.103.00	112	50	1.85
	Mean	45%	130%	812%	-24%	23%	195.188.40	66.88	33.86	1.1546
	Standard Deviation	4.27	3.14	82.92	1.22	.18	435708.04	25.08	8.32	.48

Year	Descriptive Statistics	Deposit Growth	L to D Ratio	Loan Growth	Operating Leverage	Securities Earnings	TotalAssets	Uncertainty Avoidance	Long vs Short Orientation	WGI
2012	N	133	136	133	135	132	137	154	132	157
	Minimum	-62%	5%	-32%	-578%	1%	98.70	23	13	.07
	Maximum	7554%	313%	79%	134%	89%	2,040,728.00	112	50	1.87
	Mean	77%	95%	2%	-2%	23%	196,109.70	66.88	33.86	1.1531
	Standard Deviation	6.75	.41	.17	.59	.16	424621.96	25.08	8.32	.50
2013	N	128	132	129	131	131	134	154	132	157
	Minimum	-29%	5%	-27%	-184%	0%	139.40	23	13	.14
	Maximum	191%	251%	97%	250%	98%	1,943,491.00	112	50	1.85
	Mean	6%	93%	3%	4%	23%	180,701.66	66.88	33.86	1.1559
	Standard Deviation	.23	.37	.18	.44	.17	380776.36	25.08	8.32	.50
2014	N	129	129	129	131	128	133	154	132	157
	Minimum	-58%	5%	-68%	-2933%	1%	151.80	23	13	.13
	Maximum	118%	282%	174%	97%	100%	2,177,511.00	112	50	1.84
	Mean	5%	92%	7%	-19%	24%	194,899.42	66.88	33.86	1.1497
	Standard Deviation	.18	.39	.25	2.58	.17	420129.19	25.08	8.32	.52
2015	N	129	127	128	129	125	131	154	132	157
	Minimum	-38%	6%	-38%	-115%	1%	-	23	13	.14

Year	Descriptive Statistics	Deposit Growth	L to D Ratio	Loan Growth	Operating Leverage	Securities Earnings	TotalAssets	Uncertainty Avoidance	Long vs Short Orientation	WGI
	Maximum	110%	335%	123%	237%	99%	2.218.835.00	112	50	1.79
	Mean	5%	93%	5%	1%	24%	192.255.15	66.88	33.86	1.1397
	Standard Deviation	.19	.45	.19	.29	.16	407344.59	25.08	8.32	.51

Source: Own development based on Thomson Reuters Eikon Data.

Annex D: Independent Variables 1

Year	Descriptive Statistics	Audit & Risk Committee	Audit Committee	Chair RC Chair of another Comm	Chair RC Chair of Board	Chair RC independent	Code of Conduct	CRO at board level	Majority of Members RC independent	Meeting Frequency per Year	Qualification RC IT
1999	N	71	71	70	70	71	71	71	71	67	71
	Minimum	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Maximum	1	1,0	1,0	1,0	1,0	1,0	1,0	1,0	104,0	0,0
	Mean	,01	,239	,071	,057	,070	,211	,028	,070	1,881	0,000
	Standard Deviation	,119	,4298	,2594	,2338	,2577	,4111	,1666	,2577	12,7250	0,0000
2000	N	79	79	76	78	79	79	79	79	74	79
	Minimum	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Maximum	1	1,0	1,0	1,0	1,0	1,0	1,0	1,0	108,0	0,0
	Mean	,01	,342	,066	,064	,076	,266	,063	,076	1,743	0,000
	Standard Deviation	,113	,4773	,2496	,2465	,2666	,4446	,2450	,2666	12,5633	0,0000
2001	N	91	91	89	90	91	91	91	91	85	90
	Minimum	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Maximum	1	1,0	1,0	1,0	1,0	1,0	1,0	1,0	115,0	1,0
	Mean	,01	,407	,045	,056	,077	,319	,099	,077	1,671	,011
	Standard Deviation	,105	,4939	,2084	,2303	,2679	,4685	,3002	,2679	12,4885	,1054

Year	Descriptive Statistics	Audit & Risk Committee	Audit Committee	Chair RC Chair of another Comm	Chair RC Chair of Board	Chair RC independent	Code of Conduct	CRO at board level	Majority of Members RC independent	Meeting Frequency per Year	Qualification RC IT
2002	N	98	98	96	97	98	98	98	98	91	97
	Minimum	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Maximum	1	1,0	1,0	1,0	1,0	1,0	1,0	1,0	108,0	1,0
	Mean	,02	,520	,063	,052	,092	,551	,102	,092	2,253	,021
	Standard Deviation	,142	,5022	,2433	,2223	,2903	,4999	,3043	,2903	12,7424	,1428
2003	N	104	104	101	103	104	104	104	104	94	103
	Minimum	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Maximum	1	1,0	1,0	1,0	1,0	1,0	1,0	1,0	106,0	1,0
	Mean	,02	,577	,079	,068	,106	,635	,115	,106	1,628	,019
	Standard Deviation	,138	,4964	,2714	,2529	,3090	,4839	,3210	,3090	11,0102	,1387
2004	N	109	109	104	107	109	109	109	109	99	108
	Minimum	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Maximum	1	1,0	1,0	1,0	1,0	1,0	1,0	1,0	99,0	1,0
	Mean	,02	,596	,067	,075	,119	,679	,138	,119	3,030	,028
	Standard Deviation	,135	,4929	,2518	,2643	,3256	,4691	,3461	,3256	13,9456	,1651
2005	N	113	113	107	111	113	113	113	113	99	112

Year	Descriptive Statistics	Audit & Risk Committee	Audit Committee	Chair RC Chair of another Comm	Chair RC Chair of Board	Chair RC independent	Code of Conduct	CRO at board level	Majority of Members RC independent	Meeting Frequency per Year	Qualification RC IT
	Minimum	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Maximum	1	1,0	1,0	1,0	1,0	1,0	1,0	1,0	100,0	1,0
	Mean	,02	,708	,084	,090	,133	,735	,186	,142	3,717	,036
	Standard Deviation	,132	,4567	,2789	,2876	,3408	,4436	,3907	,3502	14,1768	,1864
2006	N	125	125	116	122	125	125	125	125	108	124
	Minimum	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Maximum	1	1,0	1,0	1,0	1,0	1,0	1,0	1,0	100,0	1,0
	Mean	,02	,744	,095	,090	,144	,768	,200	,152	3,593	,032
	Standard Deviation	,154	,4382	,2942	,2876	,3525	,4238	,4016	,3605	13,5115	,1774
2007	N	129	129	121	126	129	129	129	129	109	128
	Minimum	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Maximum	1	1,0	1,0	1,0	1,0	1,0	1,0	1,0	98,0	1,0
	Mean	,03	,744	,099	,079	,132	,783	,233	,140	3,339	,023
	Standard Deviation	,174	,4380	,3001	,2714	,3396	,4138	,4241	,3479	12,8814	,1519
2008	N	132	132	123	129	132	132	132	132	113	131
	Minimum	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0

Year	Descriptive Statistics	Audit & Risk Committee	Audit Committee	Chair RC Chair of another Comm	Chair RC Chair of Board	Chair RC independent	Code of Conduct	CRO at board level	Majority of Members RC independent	Meeting Frequency per Year	Qualification RC IT
	Maximum	1	1,0	1,0	1,0	1,0	1,0	1,0	1,0	102,0	1,0
	Mean	,05	,803	,130	,093	,167	,788	,295	,182	3,381	,023
	Standard Deviation	,225	,3992	,3378	,2916	,3741	,4104	,4580	,3872	11,7916	,1502
2009	N	135	135	124	131	135	135	135	135	112	133
	Minimum	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Maximum	1	1,0	1,0	1,0	1,0	1,0	1,0	1,0	99,0	1,0
	Mean	,05	,874	,153	,099	,222	,815	,311	,230	3,902	,015
	Standard Deviation	,223	,3330	,3617	,3001	,4173	,3899	,4647	,4222	11,7542	,1222
2010	N	140	140	129	135	140	140	140	140	118	138
	Minimum	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Maximum	1	1,0	1,0	1,0	1,0	1,0	1,0	1,0	99,0	1,0
	Mean	,04	,893	,147	,096	,264	,829	,350	,257	4,373	,014
	Standard Deviation	,186	,3104	,3558	,2961	,4425	,3782	,4787	,4386	12,2578	,1199
2011	N	139	139	124	132	139	139	139	139	113	137
	Minimum	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Maximum	1	1,0	1,0	1,0	1,0	1,0	1,0	1,0	99,0	1,0

Year	Descriptive Statistics	Audit & Risk Committee	Audit Committee	Chair RC Chair of another Comm	Chair RC Chair of Board	Chair RC independent	Code of Conduct	CRO at board level	Majority of Members RC independent	Meeting Frequency per Year	Qualification RC IT
	Mean	,06	,921	,194	,121	,295	,835	,388	,288	4,991	,029
	Standard Deviation	,234	,2709	,3967	,3276	,4577	,3729	,4892	,4544	12,2995	,1690
2012	N	136	136	120	129	136	136	136	136	110	134
	Minimum	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Maximum	1	1,0	1,0	1,0	1,0	1,0	1,0	1,0	98,0	1,0
	Mean	,10	,919	,208	,116	,346	,838	,412	,346	5,009	,022
	Standard Deviation	,305	,2737	,4078	,3218	,4773	,3696	,4940	,4773	11,7360	,1485
2013	N	135	135	120	126	134	134	134	134	111	131
	Minimum	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Maximum	1	1,0	1,0	1,0	1,0	1,0	1,0	1,0	97,0	1,0
	Mean	,11	,941	,217	,127	,396	,843	,440	,403	5,577	,023
	Standard Deviation	,315	,2370	,4137	,3343	,4908	,3649	,4983	,4923	11,8057	,1502
2014	N	129	129	115	123	129	129	129	129	105	126
	Minimum	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Maximum	1	1,0	1,0	1,0	1,0	1,0	1,0	1,0	52,0	1,0
	Mean	,12	,930	,296	,171	,589	,876	,504	,566	5,543	,024

Year	Descriptive Statistics	Audit & Risk Committee	Audit Committee	Chair RC Chair of another Comm	Chair RC Chair of Board	Chair RC independent	Code of Conduct	CRO at board level	Majority of Members RC independent	Meeting Frequency per Year	Qualification RC IT
	Standard Deviation	,322	,2557	,4583	,3778	,4939	,3309	,5019	,4976	8,1264	,1531
2015	N	128	128	115	122	128	128	128	128	110	124
	Minimum	0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
	Maximum	1	1,0	1,0	1,0	1,0	1,0	1,0	1,0	45,0	1,0
	Mean	,10	,945	,270	,156	,633	,883	,539	,625	6,009	,024
	Standard Deviation	,303	,2283	,4457	,3641	,4839	,3229	,5004	,4860	7,1760	,1543

Note: Not normalised.

Source: Own development.

Annex E: Independent Variables 2

Year	Descriptive Statistics	Qualification RC Risk Management & Banking Experience	RAF in place	RC covers Credit Risk	RC covers Market Risk	RC covers Operational Risk	RC covers Reputational risk	RC Discusses RAS	RC makes Backtesting of RAS	RC reviews banks risk policies annually	Risk Appetite Statement RAS
1999	N	72	72	72	72	72	72	72	72	72	72
	Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Maximum	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0
	Mean	.097	.417	.097	.042	.056	0.000	0.000	0.000	.097	0.000
	Standard Deviation	.2983	.4965	.2983	.2012	.2307	0.0000	0.0000	0.0000	.2983	0.0000
2000	N	80	80	80	80	80	80	80	80	80	80
	Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Maximum	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0	1.0	0.0
	Mean	.125	.475	.125	.063	.075	0.000	0.000	0.000	.125	0.000
	Standard Deviation	.3328	.5025	.3328	.2436	.2651	0.0000	0.0000	0.0000	.3328	0.0000
2001	N	91	91	91	91	91	91	91	91	91	91
	Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Maximum	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
	Mean	.143	.560	.143	.099	.099	.011	0.000	0.000	.143	0.000

Year	Descriptive Statistics	Qualification RC Risk Management & Banking Experience	RAF in place	RC covers Credit Risk	RC covers Market Risk	RC covers Operational Risk	RC covers Reputational risk	RC Discusses RAS	RC makes Backtesting of RAS	RC reviews banks risk policies annually	Risk Appetite Statement RAS
	Standard Deviation	.3519	.4991	.3519	.3002	.3002	.1048	0.0000	0.0000	.3519	0.0000
2002	N	98	98	98	98	98	98	98	98	98	98
	Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Maximum	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
	Mean	.153	.663	.153	.112	.112	.031	0.000	0.000	.153	0.000
	Standard Deviation	.3619	.4750	.3619	.3173	.3173	.1732	0.0000	0.0000	.3619	0.0000
2003	N	104	104	104	104	104	104	104	104	104	104
	Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Maximum	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0
	Mean	.192	.721	.192	.144	.135	.038	0.000	0.000	.183	0.000
	Standard Deviation	.3960	.4506	.3960	.3530	.3430	.1932	0.0000	0.0000	.3883	0.0000
2004	N	109	109	109	109	109	109	109	109	109	109
	Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Maximum	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	1.0	0.0

Year	Descriptive Statistics	Qualification RC Risk Management & Banking Experience	RAF in place	RC covers Credit Risk	RC covers Market Risk	RC covers Operational Risk	RC covers Reputational risk	RC Discusses RAS	RC makes Backtesting of RAS	RC reviews risk policies annually	Risk Appetite Statement RAS
	Mean	.220	.761	.211	.183	.156	.037	0.000	0.000	.211	0.000
	Standard Deviation	.4163	.4282	.4099	.3889	.3645	.1889	0.0000	0.0000	.4099	0.0000
2005	N	113	113	113	113	113	113	113	113	113	113
	Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Maximum	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Mean	.274	.858	.265	.248	.212	.053	.009	.009	.265	.009
	Standard Deviation	.4482	.3502	.4436	.4337	.4108	.2252	.0941	.0941	.4436	.0941
2006	N	125	125	125	125	125	125	125	125	125	125
	Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Maximum	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Mean	.352	.888	.344	.328	.304	.056	.008	.008	.344	.024
	Standard Deviation	.4795	.3166	.4770	.4714	.4618	.2308	.0894	.0894	.4770	.1537
2007	N	129	129	129	129	129	129	129	129	129	129
	Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Year	Descriptive Statistics	Qualification RC Risk Management & Banking Experience	RAF in place	RC covers Credit Risk	RC covers Market Risk	RC covers Operational Risk	RC covers Reputational risk	RC Discusses RAS	RC makes Backtesting of RAS	RC reviews banks risk policies annually	Risk Appetite Statement RAS
	Maximum	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Mean	.341	.899	.326	.318	.295	.047	.016	.016	.326	.031
	Standard Deviation	.4759	.3022	.4704	.4674	.4576	.2114	.1240	.1240	.4704	.1740
2008	N	132	132	132	132	132	132	132	132	132	132
	Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Maximum	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Mean	.394	.917	.386	.379	.364	.068	.038	.038	.386	.045
	Standard Deviation	.4905	.2774	.4888	.4869	.4829	.2530	.1916	.1916	.4888	.2091
2009	N	135	135	135	135	135	135	135	135	135	135
	Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Maximum	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Mean	.489	.926	.481	.474	.452	.089	.067	.067	.459	.067
	Standard Deviation	.5017	.2629	.5015	.5012	.4995	.2856	.2504	.2504	.5002	.2504
2010	N	140	140	140	140	140	140	140	140	140	140

Year	Descriptive Statistics	Qualification RC Risk Management & Banking Experience	RAF in place	RC covers Credit Risk	RC covers Market Risk	RC covers Operational Risk	RC covers Reputational risk	RC Discusses RAS	RC makes Backtesting of RAS	RC reviews banks risk policies annually	Risk Appetite Statement RAS
	Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Maximum	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Mean	.514	.936	.514	.500	.486	.093	.079	.086	.479	.086
	Standard Deviation	.5016	.2461	.5016	.5018	.5016	.2913	.2700	.2809	.5013	.2809
2011	N	139	139	139	139	139	139	139	139	139	139
	Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Maximum	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Mean	.568	.950	.561	.540	.532	.115	.086	.094	.525	.101
	Standard Deviation	.4971	.2195	.4980	.5002	.5008	.3203	.2819	.2922	.5012	.3020
2012	N	136	136	136	136	136	136	136	136	136	136
	Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Maximum	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Mean	.596	.949	.588	.551	.566	.118	.103	.110	.551	.110
	Standard Deviation	.4926	.2218	.4940	.4992	.4974	.3234	.3050	.3144	.4992	.3144

Year	Descriptive Statistics	Qualification RC Risk Management & Banking Experience	RAF in place	RC covers Credit Risk	RC covers Market Risk	RC covers Operational Risk	RC covers Reputational risk	RC Discusses RAS	RC makes Backtesting of RAS	RC reviews risk policies annually	Risk Appetite Statement RAS
2013	N	134	134	134	134	134	134	134	134	134	134
	Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Maximum	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Mean	.642	.955	.634	.597	.619	.142	.134	.142	.597	.134
	Standard Deviation	.4813	.2076	.4834	.4923	.4874	.3501	.3423	.3501	.4923	.3423
2014	N	129	129	129	129	129	129	129	129	129	129
	Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Maximum	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Mean	.767	.946	.752	.674	.713	.163	.202	.209	.721	.209
	Standard Deviation	.4241	.2274	.4336	.4704	.4540	.3706	.4027	.4084	.4503	.4084
2015	N	128	128	128	128	128	128	128	128	128	128
	Minimum	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Maximum	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
	Mean	.797	.945	.789	.719	.750	.172	.219	.227	.758	.227

Year	Descriptive Statistics	Qualification RC Risk Management & Banking Experience	RAF in place	RC covers Credit Risk	RC covers Market Risk	RC covers Operational Risk	RC covers Reputational risk	RC Discusses RAS	RC makes Backtesting of RAS	RC reviews banks risk policies annually	Risk Appetite Statement RAS
	Standard Deviation	.4039	.2283	.4096	.4514	.4347	.3788	.4150	.4203	.4301	.4203

Note: Not normalised.

Source: Own development.

Annex F: Banking Sample

Bank Name	Country Code	No.
Aareal Bank AG	DE	1
ABN AMRO Group N.V.	NL	2
Agricultural Bank of Greece	GR	3
Aktia Bank Plc	FI	4
Alandsbanken AbpBank of Aland Plc	FI	5
Aldermore Group Plc	GB	6
Alior Bank Spółka Akcyjna	PL	7
Allied Irish Banks plc	IE	8
Alpha Bank AE	GR	9
Amagerbanken, Aktieselskab	DK	10
Arbuthnot Banking Group Plc	GB	11
Attica Bank SABank of Attica SA	GR	12
Autobank AG	AT	13
Baader Bank AG	DE	14
Banca Antonveneta SpA Antonveneta SpA	IT	15
Banca Carige SpA	IT	16
Banca Finnat Euramerica SpA	IT	17
Banca Ifis SpA	IT	18
Banca Intermobiliare di Investimenti e Gestioni	IT	19
Banca Lombarda e Piemontese SpA	IT	20
Banca Monte dei Paschi di Siena SpAGruppo Monte dei Paschi di Siena	IT	21
Banca Nazionale del Lavoro SpA BNL	IT	22
Banca Popolare di Spoleto SpA	IT	23
Banco Bilbao Vizcaya Argentaria SA	ES	24
Banco BPI SA	PT	25
Banco Comercial Português, SAMillennium bcp	PT	26
Banco de Sabadell SA	ES	27
Banco de Valencia SA	ES	28

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Bank Name	Country Code	No.
Banco di Desio e della Brianza SpABanco Desio	IT	29
Banco Espanol de Crédito SA, BANESTO	ES	30
Banco Espirito Santo SA	PT	31
Banco Pastor SA	ES	32
Banco Popular Espanol SA	ES	33
Banco Santander SA	ES	34
Bank BPH SA	PL	35
Bank CA St. Gallen AG	CH	36
Bank Coop AG	CH	37
Bank für Tirol und Vorarlberg AGBTV	AT	38
Bank Handlowy w Warszawie S.A.	PL	39
Bank Linth LLB AG	CH	40
Bank Millennium	PL	41
Bank Ochrony Srodowiska SA BOS SABank Ochrony Srodowiska Capital Group	PL	42
Bank of Cyprus Public Company LimitedBank of Cyprus Group	CY	43
Bank of GreenlandGronlandsbanken A/S	DK	44
Bank of IrelandGovernor and Company of the Bank of Ireland	IE	45
Bank of Valletta Plc	MT	46
Bank Polska Kasa Opieki SABank Pekao SA	PL	47
Bank Zachodni WBK S.A.	PL	48
Bankia, SA	ES	49
Bankinter SA	ES	50
BankNordik P/F	DK	51
Banque Profil de Gestion SA	CH	52
Barclays Plc	GB	53
BGEO Group Plc	GB	54
BinckBank NV	NL	55
BKS Bank AG	AT	56

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Bank Name	Country Code	No.
BLME Holdings PLC	GB	57
BNP Paribas	FR	58
BNP Paribas Bank Polska SA	PL	59
BRDGroupe Societe Generale SA	RO	60
BulgarianAmerican Credit Bank	BG	61
Caixabank, S.A.	ES	62
Capitalia SpA	IT	63
Cembra Money Bank AG	CH	64
Close Brothers Group Plc	GB	65
Commerzbank AG	DE	66
Crédit Industriel et Commercial SA CIC	FR	67
Credit Suisse Group AG	CH	68
Credito Emiliano SpACREDEM	IT	69
Danske Andelskassers Bank A/S	DK	70
Danske Bank A/S	DK	71
DePfa Deutsche Pfandbriefbank AG	DE	72
Deutsche Bank AG	DE	73
Deutsche Pfandbriefbank AG	DE	74
Deutsche Postbank AG	DE	75
Dexia SA	BE	76
Djurslands Bank A/S	DK	77
Dresdner Bank AG	DE	78
EFG International	CH	79
Emporiki Bank of Greece SA	GR	80
Erste Group Bank AG	AT	81
Espirito Santo Financial Group S.A.	LU	82
Eurobank Ergasias SA	GR	83
Evli Bank Plc	FI	84
FHB Mortgage Bank PlcFHB Jelzalogbank Nyrt.	HU	85
FinecoBank Banca FinEco SpABanca FinEco SpA	IT	86

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Bank Name	Country Code	No.
First Investment Bank AD	BG	87
Getin Holding SA	PL	88
Gontard & Metallbank AG	DE	89
Hellenic Bank Public Company Limited	CY	90
HSBC Bank Malta Plc	MT	91
HSBC Holdings Plc	GB	92
Hypothekarbank Lenzburg AG	CH	93
IKB Deutsche Industriebank AG	DE	94
ING Bank Slaski S.A. Capital Group	PL	95
ING Groep NV	NL	96
Intesa Sanpaolo	IT	97
Investec Plc	GB	98
Investkredit Bank AG	AT	99
Jadranska Banka dd	HR	100
Julius Baer Group Ltd	CH	101
Jyske Bank A/S (Group)	DK	102
KBC Groep NV/ KBC Groupe SAKBC Group	BE	103
Komerčni Banka	CZ	104
Kreditna Banka Zagreb	HR	105
Kredyt Bank SA	PL	106
Lloyds Banking Group Plc	GB	107
Lombard Bank (Malta) Plc	MT	108
Marfin Egnatia Bank SA	GR	109
mBank SA	PL	110
Mediobanca SpAMEDIOBANCA Banca di Credito Finanziario Società per Azioni	IT	111
MerkurBank KGaA	DE	112
Metro Bank PLC	GB	113
Moneta Money Bank, A.S	CZ	114
National Bank of Greece SA	GR	115
Natixis SA	FR	116

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Bank Name	Country Code	No.
Noerresundby Bank A/S	DK	117
Nordea Bank AB	SE	118
Nordjyske Bank A/S	DK	119
Oberbank AG	AT	120
OTP Bank Plc	HU	121
OTP Banka Slovensko, as	SK	122
Permanent Tsb Group Holdings P.L.C	IE	123
Piraeus Bank SA	GR	124
Prima banka Slovensko a.s.	SK	125
Privredna Banka Zagreb d.dPrivredna Banka Zagreb Group	HR	126
Raiffeisen Bank International AG	AT	127
Ringkjoebing Bank	DK	128
Ringkjoebing Landbobank	DK	129
Rothschild & Co	FR	130
Royal Bank of Scotland Group Plc	GB	131
SANPAOLO IMI	IT	132
Shawbrook Group Plc	GB	133
Siauliu Bankas	LT	134
Skandinaviska Enskilda Banken AB	SE	135
Skjern Bank	DK	136
Slatinska Banka dd	HR	137
Société Générale SA	FR	138
Spar Nord Bank	DK	139
Sparbank A/S	DK	140
Standard Chartered Plc	GB	141
Svenska Handelsbanken	SE	142
Sydbank A/S	DK	143
Tatra Banka a.s.	SK	144
Transilvania BankBanca Transilvania SA	RO	145
UBS Group AG	CH	146

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Bank Name	Country Code	No.
UmweltBank AG	DE	147
UniCredit Bank Slovakia a.s.	SK	148
UniCredit SpA	IT	149
VABA dd Banka	HR	150
Valiant Holding	CH	151
Van Lanschot NV	NL	152
Virgin Money Holdings (Uk) Plc	GB	153
Vseobecna Uverova Banka a.s.	SK	154
Wiener Privatbank SE	AT	155
Zagrebacka Banka dd	HR	156
Zivnostenska banka, a.s.	CZ	157

Source: Own development.

Annex G: Semi-Structured Interview Framework

1. Topic Risk Governance:

- a) What are the current challenges in risk management at board level?
- b) What do you understand by Risk Governance?
- c) What is the role of the CRO in this context?
- d) Does the conflict of interest between shareholder and stakeholder interests play a role in board-level risk management?

2. Topic: Risk Committee:

- a) Does it make sense to establish a board-level risk committee?
- b) Where is the difference of the risk committee to the audit committee?
- c) Does independence to the management play a role in the context of the risk committee?
- d) Which role should the chairman of the board take in the context of the risk committee?
- e) What is the relevant qualification for members of the risk committee?
- f) Are there other criteria that play a role when it comes to the membership in the committee?

3. Topic: Competences and Tasks of the Risk Committee

- a. Does the risk committee have an active or an advisory role in risk management?
- b. Should the committee take decisions on risk management topics?
- c. Which types of risk should necessarily be dealt with by the committee?
- d. Are there any regular tasks that are carried out in the committee?

4. Topic: Information for and Tools of the Risk Committee:

- a. What are the information sources for the risk committee regarding risk management?
- b. Does the risk committee have direct access to the CRO as well as internal and external audit?
- c. Does the risk committee use a board-level management information system that help to assess the bank's risk situation?
- d. Is the information available able to the risk committee sufficient enough to assess the risks of the bank effectively and efficiently?
- e. Does the risk committee use specific systems or tools for risk management?

5. Topic Group Risk Appetite and Culture:

- a. How relevant is the establishment of a Risk Appetite Framework in the context of Risk Governance?
- b. Does the risk culture in the organization play role in managing risk?
- c. What opportunities are there at board level to support a risk culture?

6. Topic: Meeting Frequency and Time Requirements:

- a. How often does the risk committee usually meet?
- b. Are there interfaces to other committees?
- c. How much time is necessary to conduct the job of a chairman of the risk committee?
- d. Is it possible for the chairman to have further tasks in the board, e.g. chairman of the board or chair of another board?

Annex H: Curriculum Vitae

Hans-Georg Beyer

Born on November 20th, 1982 in Berlin, Germany

Professional Experience

06.17 – today *Commerzbank AG, Frankfurt a.M., Germany*

Divisional Head – Managing Director Group Audit – Compliance / Legal & HR

04.18 – today *ACAMS German Chapter e.V., Frankfurt a.M., Germany*

Co-Chair

09.16 – today *CFA Society Germany e.V., Frankfurt a.M., Germany*

Member of the German Advocacy Committee

06.12 – today *StudierendenGesellschaft Witten/Herdecke e.V., Witten, Germany*

Supervisory Board Member and Chairman of the Finance Committee

11.15 – 05.17 *Commerzbank AG, Frankfurt a.M., Germany*

Department Head – Vice President Group Audit Mittelstandsbank & Non-Core Assets – Credit Processes and Products International

07.11 – 10.15 *Commerzbank AG, Frankfurt a.M., Germany*

Auditor Group Audit Mittelstandsbank & Non-Core Assets – Credit Processes and Products International

08.09 – 07.11 *Commerzbank AG Studienkreis, Frankfurt a.M., Germany*

Working Student

01.10 – 10.10 *StudierendenGesellschaft Witten/Herdecke e.V., Witten, Germany*

Chief Financial Officer

11.07 - 12.09 *Huemmeke GmbH, Boenen, Germany*

Consultant

01.08 - 07.09 *emTain GmbH, Boenen, Germany*

Chief Executive Officer, Co-Founder

Education

09.13 – today *University of St. Gallen (HSG) - School of Management, St. Gallen, Switzerland*

Ph. D. Programme in Management (PMA) - Specialization International Business.

06.18 *University of California Berkley, United States of America*

Advanced Compliance Academy

02.17 *ACAMS, United States of America*

Certified Anti Money Laundering Specialist

06.11 – 09.13 *CFA Institute, United States of America*

Chartered Financial Analyst

09.10 – 09.11 *Skema Business School – Grande École, Sophia Antipolis, France*

Master of Science in International Finance

10.09 – 01.11 *University of Witten/Herdecke, Witten, Germany*

Master of Arts in General Management

10.07 - 02.10 *University of Witten/Herdecke, Witten, Germany*

Bachelor of Arts in Business Economics