

# **An analysis of the impact of executive incentives on the sustainability of the banking industry**

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*To my parents,  
Elsin and Nico Swanepoel*

*Integrity is the essence of everything successful –*

*Buckminster Fuller*

## ABSTRACT

The sustainability of the banking industry has been proven beyond a doubt to be of principal importance due to it being densely interlinked with the economy and in the process possesses systemic risk. As this industry poses such a herculean amount of systemic risk, its actions, or lack thereof, affects every taxpayer. These taxpayers, more often than not, are unaware of the complex and unique features of the banking industry, while these industries could indeed cause recessions and depressions. The latest of which was the credit crisis of 2007 – 2009, a result of reckless lending, borrowing and spending. In addition, when the crisis struck and the government had to “bail” these institutions out, they did so with taxpayers’ money.

In this study, the researcher analysed specifically what impact executive incentives had on the sustainability of the banking industry. With a remuneration and incentive system in place that in actual fact rewards excessively high risk-taking, the researcher is of the opinion that another recession or even depression might not be in the distant future. Six propositions were verified in this study. In the first proposition, the impact of the banking sector on the overall economy was investigated, and it was accepted. In the second proposition, it was stated that executive remuneration paid in cash had decreased after the credit crisis, while the remuneration in equity had increased, which was not accepted. In proposition three it was stated that executive remuneration in the form of cash had an impact on risk-taking in the banking sector, which was accepted. While in proposition four it was stated that an increase in executive remuneration in the form of cash led to an increase in risk-taking, which was discovered not to be valid and thus was not accepted. In proposition five it was stated that the remuneration of executives by equity instead of cash would also have an impact on risk-taking, this statement was found to be valid and was thus accepted. Finally, in the last proposition it was stated that an increase in executive incentives in the form of equity value would lead to a decrease in risk-taking, which was found to be invalid and was thus not accepted.

The primary objective of the researcher in this study was to identify and evaluate whether or not executive incentives led to increased risk-taking. The secondary objective was to clarify concepts, the relationship between executive incentives and risk-taking, and to identify criteria to measure and manage risk-taking by means of z-scores. The researcher came to the conclusion that linking executive remuneration to debt could present a possible solution.

## OPSOMMING

Die bankwese industrie het sonder twyfel bewys dat sy volhoubaarheid van kardinale belang is. As gevolg hiervan is dit vanselfsprekend dat hierdie industrie groot sistemiese risiko inhou, as gevolg daarvan kan aksies van die banke, or gebrek daaraan, die belastingbetaler grootliks affekteer.

Hierdie belastingbetalers, meer gereeld as nie, is onbewus van die komplekse en unieke kenmerke van die bank industrie en tog kan hierdie industrieë resessies en depressies veroorsaak. Die nuutste, die kredietkrisis van (2007/09), die resultaat van roekelose lening, kredietverskaffing en spandering. Boonop, toe die krisis opduik, het die regering, met die belastingbetaler se geld, die instansies geborg.

Hierdie studie beoog om die impak wat uitvoerende bestuur se aansporingspakette op die volhoubaarheid van die bank industrieë het, te analiseer. Met vergoedings- en aansporingspakket sisteme in plek wat die neem van hoe risikos vergoed, is 'n volgende resessie of selfs depressie dalk nie in die verre toekoms nie. Die studie beoog om ses voorstelle te verifieer. Die eerste is die impak wat die banksektor het op die algehele ekonomie, hierdie voorstel is aanvaar. Die tweede voorstel, dat uitvoerende bestuur se vergoeding in kontant verminder het terwyl hulle vergoeding in ekwiteit verhoog het, is nie aanvaar nie. Die derde voorstel, uitvoerende bestuur se vergoeding in die vorm van kontant het 'n invloed op die neem van risiko in die banksektor is aanvaar. Die vierde voorstel dat 'n verhoging in uitvoerende bestuur se vergoeding in die vorm van kontant lei tot 'n verhoging in die neem van risiko was gevind nie geldig te wees nie. Die vyfde voorstel dat indien uitvoerende bestuur vergoed word deur ekwiteit en nie kontant nie, dit ook 'n invloed sal hê op die neem van risiko, is geldig. Laastens, die voorstel dat 'n verhoging in uitvoerende bestuur se aansporingspakette in die vorm van ekwiteit waarde sal lei tot 'n vermindering in die neem van risiko is ongeldig gevind.

Die hoof doelwit van die studie was om te identifiseer en te evalueer of uitvoerende bestuur se vergoedingspakette lei tot 'n verhoging in die neem van risikos. Die tweede doelwit was om konsepte en die verhouding tussen uitvoerende bestuur se aansporingspakette en die neem van risikos uit te klaar en om kriteria te identifiseer wat die neem van risikos deur middel van "z-scores" te identifiseer. Een opsie sou wees om uitvoerende bestuur se vergoedingspakette te koppel aan skuld.

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**E. Swanepoel (Author/Researcher)**

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## PREFACE

The theoretical and practical work described in this dissertation was carried out whilst in the employ of the North-West University under the supervision of Professor Anet Smit.

This study represents the work of the author/researcher and have not been submitted in any form to another university. Where use was made of the work of others, it has been duly acknowledged in the text.

The impact of executive remuneration on risk-taking in the banking industry (Chapter 3 as a whole) was accepted for publication in a journal under Business Perspectives, *Investment Management and Financial Innovations*, and has been included in its journal format.

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*E. Swanepoel*

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# CHAPTER 1

## Nature and Scope of the Study

### 1.1 INTRODUCTION

A salient feature of the credit crisis of 2007 – 2009 was that it was incubated by the financialisation of western economies, most notably the United States (US) economy. This created an abundance of credit and encouraged excessive risk-taking through complex financial instruments and corporate structures, as well as ineffective regulatory mechanisms (Ferguson, 2008; Morris, 2008; Sikka, 2009; and Soros, 2008). Banks, hedge funds and insurance companies played a key role in the financialisation of the economy and it is estimated that they lost approximately US \$2.8 trillion (Bank of England, 2008; and Sikka, 2009).

To determine the exact social cost of the credit crisis would be an impossible task, however, it is evident that vast amounts of taxpayers' money were used to support distressed financial institutions. One example is the Troubled Asset Relief Programme (TARP), which the US government launched to purchase or insure up to US \$700 billion in assets from financial institutions (Duchin, Ozbas, & Sensoy, 2010; Erkins, Hung & Matos, 2012; and Taylor, 2009). Other examples include the United Kingdom (U.K.) government, which set aside £500 billion to support financial institutions and the European Central Bank, which provided roughly €467 billion to support banks on the brink of bankruptcy (Duchin *et al.*, 2010; Erkins *et al.*, 2012, Sikka, 2009; and Taylor, 2009).

Though the initial repercussions of the credit crisis are in the past, major parts of the world continue to experience economic turmoil and uncertainty in the aftermath of the crisis. The dramatic collapse of the stock market capitalisation of much of the banking industry in the US during the credit crisis yielded one prominent argument, stating that executives of these troubled financial institutions received poor incentives, prompting them to put their own needs above those of the shareholders (Becht, 2009). This stemmed from the perceived increase in shareholder pressures for more profitable performance, as well as increased competition to hire the best in talented individuals, which lead to compensation maximisation taking centre stage in some segments of the banking industry (Rhodes, 2015).

The argument seemed to be that executives' compensation was not properly related to long-term performance or sustainability. This argument was supported by experts who considered

that management's interests should be better aligned with those of shareholders, which required that management's compensation should increase only when shareholders experienced gain, and fall when shareholders experienced losses (Fehlenbrach & Stulz, 2009). Consequently, an intuitive case could be made that the solvency and liquidity concerns of these financial institutions during the credit crisis had its roots in the classic governance conflict of interest between management and dispersed shareholders (Becht, 2009; Brunnermeier, 2009; and Taylor, 2009).

Furthermore, the poor incentives theory and how it may have contributed to the credit crisis, was highlighted in this argument. It was mentioned that executives had strong incentives to focus only on the short term rather than the long term. Option compensation also provided executives with more incentives to take risks, which would have been optimal for shareholders. Furthermore, the high leverage of financial institutions implied that executives could increase the value of their shares through increased volatility of assets, since shares were effectively options on the value of the assets (Fehlenbrach & Stulz, 2009).

Though the incentives of executives could have been of such a nature that they focused too much on the short term, took on excessive risk, and were highly leveraged, it was by no means obvious. Nevertheless, large holdings of equity by executives could in fact have lead them to focus appropriately on the long term, in order to avoid excessive risk-taking and in turn create a more sustainable and stable banking environment (Fehlenbrach & Stulz, 2009).

The key issue with the nexus of competition and stability in banking relates to the manner in which competition interferes with banking during grim economic periods when bank failures may have dire repercussions for an entire economy. Stability in banking during these periods is a major concern, and government or regulatory intervention becomes crucial to prevent bank failures. Therefore, in the face of a credit/financial crisis, competition must not create situations that result in long-term damage, and enhanced regulatory and supervisory frameworks are required to facilitate competition (Hasan & Marinc, 2013).

Should the possibility therefore have existed that executives' compensation caused short-term instead of long-term focus during the credit crisis of 2007 – 2009, and that increased competition resulted in unsustainable and unstable banking conditions, management accountability should have been strengthened. In addition, banks needed to establish board governance committees with explicit responsibilities to monitor corporate ethics and culture

(Rhodes, 2015). Furthermore, the basic proposition of the stakeholder theory states that a firm's survival depends on the successful management of its relationships with its stakeholders. Had this relationship been managed appropriately, stakeholders should not only have been informed of the financial aspects, but also of the social and environmental aspects of corporate performance (Eccles & Saltzman, 2011; and Freeman *et al.*, 2010).

The credit crisis therefore emphasised the importance of reporting context and the inter-relationships such as market context, governance, business models, risk, remuneration, culture, values and performance. The need for the appropriate linking and alignment of issues within reporting, such as the inter-relationship of strategy and risk factors, was also highlighted. These issues should not be addressed in silos as they are interdependent. However, one area that has seen a dramatic increase in reporting is sustainability, although there is a possibility that this could be viewed as a sideshow activity rather than a main reporting area, and that it is "siloed" along with corporate responsibility reporting, with little strategic linking (Phillips, 2010).

Accordingly, the International Integrated Reporting Committee (IIRC) was launched during 2010 in order to create a globally accepted framework for accounting sustainability. This framework combines financial, environmental, social and governance information in a concise, consistent and comparable format, known today as an Integrated Report (IR) (Eccles & Armbrester, 2011).

An IR is a single document that not only presents and explains a company's financial performance but also its non-financial performance (Eccles & Saltzman, 2011). Integrated reporting is far more than simply combining a financial and a sustainability report into a single document though. It is an attempt to highlight the relationship between financial and non-financial performances, and the manner in which these interrelated dimensions create or erode value for shareholders (Krzus, 2011). It also serves as a management tool that provides improved understanding of the cause-and-effect relationships between financial and sustainability performance; an aspect to be valued extensively since the failures of Lehman Brothers and Washington Mutual, in addition to the government takeovers of Fannie Mae, Freddie Mac, and AIG, which lead to the largest bank failure in US history (Brunnermeier, 2009; and Campello, Graham & Harvey, 2009). Furthermore, the IR serves as a platform to furnish more detailed data than what is available on paper only (Krzus, 2011).

Due to its marked importance, the world's first guidance document for companies who practise integrated reporting was issued on 25 January 2011. This set a precedent, as only a handful of the world's top 30 stock exchanges provided guidance on non-financial reporting. In spite of this, it was required of companies listed on the Johannesburg Stock Exchange (JSE) to submit IRs or list elsewhere as of March 2010. During 2011 South Africa mandated integrated reporting and they were at the time the only country that had done so, whereas Denmark, Norway and Sweden required sustainability reporting to verifying degrees (Eccles & Saltzman, 2011). Consequently, the International Integrated Reporting Framework (IIRF) was released during 2013 and more than 25 countries across the world have since implemented the framework, of which 16 forms part of the G20 (Jinga & Dumitru, 2015).

## **1.2 PROBLEM STATEMENT**

The business model for banks moved towards an equity culture with a focus on faster share price growth and earnings expansion during the 1990s. The previous model, based on balance sheets and old-fashioned spreadsheets on loans, was not conducive to banks becoming "growth stocks". The strategy thus had to change in order to move towards activities based on trading income and fees via securitisation, which enabled banks to grow earnings while at the same time economising on capital by following the Basel system. Viewed in this manner, the originate-to-distribute model and the securitisation process do not involve risk spreading, but rather play a key role in the process of driving revenue, return on capital, and a higher share price, and involve risk-taking and up-front revenue recognition (Blundell-Wignall, Atkinson & Lee, 2008).

Furthermore, in order for executives and sales at all levels to capture the benefits of the business model, compensation, too, had to evolve. Bonuses based on up-front revenue generation rose relative to salaries, and substantial option and employee share participation schemes became the norm. This was argued to be in the shareholders' interest, with the common philosophy being that "if you pay peanuts you get monkeys" (Blundell-Wignall *et al.*, 2008).

It is believed that these executive incentives paved the road to excessive risk-taking, as managements' interests were not aligned with those of shareholders. Executives were free to take on as much risk as they deemed necessary to provide high returns, claiming that it was in the shareholders' best interest. However, when the credit crisis struck it was the taxpayers who had to support distressed financial institutions.

### **1.3 SIGNIFICANCE OF THE STUDY**

The research contribute to the literature in various ways. Firstly, the effectiveness of the z-score as a predictor of large bank risk-taking is highlighted, which could be relevant to external shareholders. The public is most affected by banking behaviour, as a result of it being interlinked with the economy, and they do not fully understand the functioning of the banking industry. They will, however, by no means accept risky behaviour by banks. Secondly, the understanding of the manner in which bank executives are remunerated is improved by the research, and contradicts current theories as to the manner in which risk-taking is affected by executive remuneration in the form of equity holdings. Finally, the researcher briefly notes that executive remuneration should be linked to debt and be tied to the banks' credit default swaps. This presents an alternative manner in which remuneration could be calculated, which may lead to lower risk-taking.

### **1.4 RESEARCH QUESTIONS**

Qualitative and quantitative research were used in this study and the following research questions were posed to narrow down the purpose of the study:

- Did executive incentives influence risk taking pre- and post the credit crisis?
- How did excessive risk-taking affect shareholders?
- How did risk-taking affect sustainability in the banking sector pre- and post the credit crisis?

### **1.5 PRIMARY OBJECTIVES**

The primary objectives of the researcher were to identify and evaluate if executive incentives lead to increased risk-taking, consequently placing the focus on their own short-term needs instead of the long-term needs of the organisation and shareholders. This was performed by means of z-scores, as a measure and indication of the level of risk-taking. A high z-score indicates a relatively low level of risk, whereas a low z-score indicates a high level of risk. As such the correlation between the calculated z-scores and the executive incentives was analysed. Historical and current practices were investigated, with suggestions made to reconstruct or reinstate such practices. The data that were collected were analysed from the specified banks' financial statements.

### **1.6 SECONDARY OBJECTIVES**

The researcher's secondary objectives included:

- clarifying concepts of risk and sustainability;
- identifying criteria to measure and manage risk-taking by means of z-scores;
- clarifying the relationship between executive incentives and risk-taking by means of correlation; and
- recommending a valid and reliable conceptual framework to reconstruct current remuneration practices.

## **1.7 RESEARCH DESIGN AND METHODOLOGY**

Welman, Kruger and Mitchell (2005) proposes that the process of scientific research involves several stages. Through the use of scientific methods and procedures in each of these stages, knowledge is required, which explains the mystery of certain unexplained phenomena. Scientific knowledge has three core features, which include systematic observation, control and replication. The research methodologies allow for exploration of unexplained phenomena. Through the use of methods and techniques that are scientifically defensible, conclusions can be drawn that are valid and reliable. Quantitative research uses structured methods to evaluate objective data.

In this study, seven steps were followed in the research approach, including:

1. *Identifying the research idea:* It would seem that excessive risk-taking, might have been attributed, in part, to executive incentives. The underlying factor that surrounded the purpose of this study was therefore the analysis of the correlation between executive incentives and risk-taking pre- and post the credit crisis of 2007 – 2009.
2. *Literature review:* A critical review of the literature, which related to the research topic was crucial. Such a literature review would help to identify variables that could influence the results of the study. The literature review provides background and context for the research problem. It is brief, to the point, pertinent, and relevant. For the purpose of this study, the resources investigated included journal articles, electronic sources and textbooks. Experts in the field of risk management and accounting were also consulted. These resources indicate whether or not there is indeed a correlation between executive incentives and excessive risk-taking.



Included in the literature section of the study is the analysis of current executive remuneration practices. An in-depth analysis of criteria used to allocate bonuses or increases in salaries forms the majority of the literature review. Furthermore, an analysis of the current practices to measure and manage excessive risk-taking is also included. The different theories regarding the effects that executive remuneration or bonuses may have on sustainability and therefore, excessive risk-taking, is also discussed. In addition, integrated reporting as a measure of sustainability also forms part of the review.

3. *Theoretical formation of the research problem:* The researcher aimed to create a framework that could support the sustainability of the banking sector by means of executive incentives. Also included is an analysis on the correlation between executive incentives and risk-taking. Once the link was established and the results were documented, the researcher could provide suggestions as to possible improvements.
4. *Research design – methods and procedures:* The research design that was followed included collecting and ensuring validity and reliability of data, and ensuring that unbiased data were documented. The results obtained from the design sheds light on the research problem. The framework designed or suggestions made will enable management to assure shareholders that executive incentives and sustainability are correlated.
5. *Data collection:* Data were collected from reputable sources in order to construct and measure the validity of the suggestions or framework provided. In order to analyse the correlation between executive incentives, risk-taking and sustainability in some instances, data were sourced from the market. The majority of the data were collected via the balance sheets and income statements contained in banks' annual reports. In addition, the data analysed included share quantity, nett income, return on equity, return on assets, and capital asset ratio.
6. *Data analysis and interpretation of results:* After the necessary data were collected, the results were analysed and interpreted. Data were collected to determine the z-scores of selected banks. Correlation tests were performed between the z-scores and executive remuneration or bonuses. Suggestions as well as possible changes in executive

incentive procedures were tested via the use of the Statistical Package for Social Sciences (IBM SPSS Statistics 22) and Microsoft Excel add-in PHStat version 4. This section forms part of the empirical analysis of the study.

*7. Conclusion:* After analysing the data, the results were reported in an article-style report for peer review and publication.

## **1.8 STUDY LAYOUT**

The importance of sustainability in the banking sector is outlined in this study and the relation between executive incentives and risk-taking is explained. An analysis of risk-taking and sustainability, with an emphasis on integrated reporting, is also included, and suggestions to improve current practices are made.

Chapter 3, which forms the body of the study, is presented in article format. Executive incentives, believed to have had a possible influence on excessive risk-taking by banks pre- and post the credit crisis of 2007 – 2009 are discussed in this chapter. The aim was to establish if there was any correlation between executive incentives and increased risk-taking. Also included in the chapter is an analysis on the manner in which equity holdings by the executive would have caused less risk-taking, and therefore a more sustainable banking environment. Furthermore, the Integrated Reporting Framework (IRF) was used as a benchmark to ensure sustainability reporting.

Chapter 4 contains a summary of the main findings of the research, where conclusions are drawn and recommendations are made. The main contribution of this research as an integrated whole, is suggestions towards a revived incentives framework designed to promote sustainability. The limitations of the study is discussed and direction for future research is provided.

## CHAPTER 2

### Sustainability and Remuneration in Banking

#### 2.1 INTRODUCTION

Risk events of greatest concern to managers are those that have the potential to cause a corporate crisis. This is due to the fact that such events are disruptive and cause damage if ignored and mismanaged, which in turn can threaten sustainability and competitiveness (Linsley & Slack, 2013). As the researcher proves in this study, sustainability in any sector is evidently significant, however, it is of principal importance in the banking sector, not only due to the sector's size, but also its interconnectedness with the economy and the systemic risk it poses. In consequence, when a corporate crisis occurs, effective crisis management is essential.

During September 2007, it became essential for senior managers to engage in crisis management, as depositors waited in queues outside the branch offices of a United Kingdom (UK) bank, Northern Rock (Shin, 2009). This was as a result of the unexpected disclosure that the Bank of England had provided emergency funding to support said bank (Linsley & Slack, 2013), which had such severe consequences. Some view it as the tipping point to the start of the credit crisis of 2007 – 2009.

Arner (2016) reasons that between 2007 and 2009, the world economy experienced a systemic credit crisis, the first since the Great Depression of 1929. The international financial system was on the precipice of collapse, and global credit markets essentially halted for some four weeks (Ivashina & Scharfstein, 2010). However, since the causes of the credit crisis are now generally understood, and major initiatives are underway around the world to reform financial regulation, there will be far-reaching consequences for the future of global finance. In essence, Duchin *et al.* (2010), maintain that the credit crisis resulted from an unprecedented period of excessive borrowing, lending and investments, incentivised by a series of significant economic and regulatory factors.

There is no doubt that the dire economic conditions caused by the credit crisis resulted in households around the world cutting their discretionary spending (Nastase, Cretu & Stanef, 2009). This seemed to have had a particularly pronounced effect on demand for manufactured goods, and resulted in a sharp decline in industrial production and significant contractions in Gross Domestic Product (GDP) in most of the major economies (World Bank, 2015).

In the years leading up to the credit crisis, bonus payments more than doubled in the finance and insurance industries regardless, significantly outpacing growth in overall spending in the economy. There is a broad consensus that banks' remuneration policies were a contributing factor to the credit crisis (Fehlebrach & Stulz, 2009). This included rewarding short-term profits with generous variable remuneration awards by encouraging excessive risk-taking, with no consideration of the long-term risk created for banks, let alone the global economy (Angeli & Gitay, 2015).

Furthermore, in recent decades, a gradual process of financial innovation, globalisation and banking deregulation (the Glass-Steagall Act being replaced by the Gramm-Leach-Bliley Act) has led to the creation of increasingly large and complex institutions (Gambacorta & Rixel, 2013). As a result of this continued growth, these institutions (for the purposes of this study, the focus was only on banks) have been termed "too big to fail" as they are considered so large that their failure must be avoided at any cost. This "cost" can usually be found in the form of government bailouts with taxpayers' money. However, as is evident, because these banks had knowledge of these "safety nets", it enticed them to take excessive risks. Moreover, Laurea (2014) claims that as a result, these banks operated under an implicit government undertaking that their continuous existence as an ongoing concern was guaranteed by the taxpayers, whatever the circumstances of the bank's failure.

The chapter is put forth as follows: The concept "too big to fail" is detailed in Section 2.2, followed by the unique features of the banking industry in Section 2.3. The importance of stability in the banking sector is emphasised in Section 2.4, risk-taking by banks and the measurement thereof is set out in Section 2.5. Banking remuneration and the regulation thereof, with reference to the principal-agent theory are detailed in Sections 2.6 – 2.8. A conclusion is made in Section 2.9.

## **2.2 TOO BIG TO FAIL**

As maintained by Calomiris and Gorton in 1991 (cited in Hubbard, 1991), the history of the United States (US) banking regulations can be attributed largely to government and private responses to banking panics. It may be argued that some regulations that were adopted were made in "immediate response to developments and crisis" as they occurred (Lewis, 2015). Regardless, each regulatory response to a crisis presumed a model of the origins of banking panics. The development of clearing houses, founding of the Federal Reserve System (Carlson

& Wheelock, 2016), creation of the Federal Deposit Insurance Corporation (Davies, 2013), separation of commercial and investment banking by the Glass-Steagall Act (Nersisyan, 2015), and laws governing branch banking, all reflect beliefs regarding the factors that contribute to the instability of the banking system.

The organisational and regulatory structure of the financial services industry during the 1980s, is one of the major remaining legacies of the banking collapse of the Great Depression of 1929. The cause of the bank failures, which resulted in the Great Depression of 1929, had its origin in excessive competition in combination with managerial errors and abuse of power (Wheelock, 1995). As a result, the Banking Acts of 1933 and 1935 introduced a large array of restrictions on banking, designed to shelter banks both from excessive competition and from the errors and poor judgement of their own management (Kaufman, Mote & Rosenblum, 1984).

Harnay and Scialom (2016) contend that current banking regulations have been at the core of political and economic debates since the outbreak of the credit crisis. As the current political and economic debates are consistent with the Basel I Accord, most of them dismiss all macro-prudential concerns and almost exclusively adopt a micro-prudential logic, even though this has proven insufficient to ensure financial stability during recent years. Regardless, this should come as no surprise as Calomiris and Gorton during 1991 (cited in Hubbard, 1991) attributed prior banking regulation to similar debates and responses.

In the US, the public interest view of regulation predominated from the 1930s. During the 1930s and 1940s, academics and administrative law writers developed the idea of public interest as a rationale for administrative regulation of the economy and influenced the conception of the state's role in realising the public interest (White, 1983). The public interest view of regulation is strongly connected with welfare economics, as it is stated that this regulation provides corrective measures against various market failures (Heremans, 2012). As a result of this, it is presumed that state regulation promotes the interest of the public and increases social welfare. In addition, it is assumed that regulatory bodies are concerned only with efficiency, and it can be deduced that they are immune from the pressure of private interest groups. Regulators' decisions are also not altered by either computational or informational limitations, as they are assumed to be perfectly informed or rational (Harnay & Scialom, 2016).

As pointed out by Haldane (2010), after the Great Depression of 1929, two important laws were enacted in an effort to restrict the size and scope of banks and banking activities,

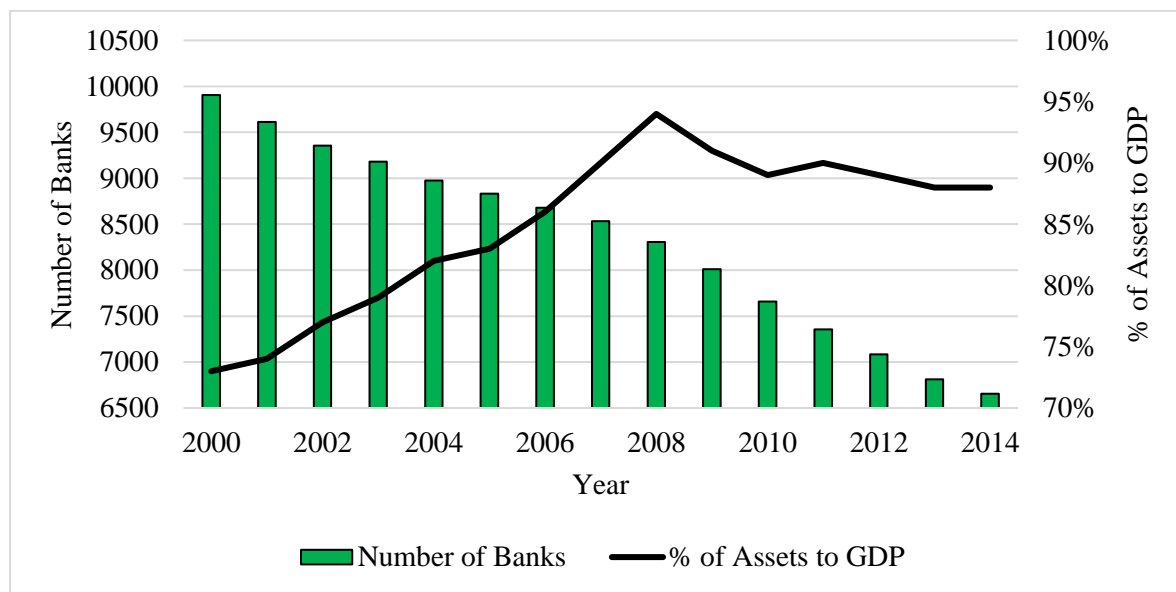
respectively. These include the McFadden Act of 1927 and the Glass-Steagall Act of 1933. Prior to these acts there was a distinction between nationally-chartered banks and state banks, which the McFadden Act gave approximately the same branching rights to, however, the national banks were forbidden to open new branches across state lines. Furthermore, the US National Banking Act of 1864 stipulated acceptable practice of commercial banks (Jaremski, 2013). These practices included deposit-taking and brokerage, however, it was banned to handle securities businesses such as underwriting, securities lending and principal trading. In addition, Laurea (2014) claims that the US National Banking Act also stipulated acceptable practice of investment banks, which were not allowed to take deposits.

Not only were commercial and investment banks separated, but commercial banks were forbidden to speculate and investment banks became private companies, only allowed to use their own capital (Kroszner & Rajan, 1997). With these acts in place, the US economy grew as the restrictions did not pose any problem. As such, the average size of the US banks in relation to nominal GDP was roughly flat (Haldane, 2010).

During the early 1980s, Ronald Reagan was, however, convinced that these restrictions imposed by the acts inhibited the efficiency of these banks, which created a disadvantage when compared to other lending institutions. As such, in 1982 there was a deregulation of the savings and loan companies as a result of the enactment of the Garn-St Germain Depository Institutions Act of 1982 (Pousa & Mathieu, 2014). The process of mergers and acquisitions were consequently relaxed, which introduced an incentive to become larger as adequate risk assessment was overlooked. An example of the outcome of this act is the Bank of America, the result of over 160 different mergers, whose assets grew from \$23 billion in 1980 to \$2.2 trillion in 2014 (Carlson & Rose, 2016).

It was purported in the past, that banks such as these eventually become too big to regulate, with dire consequences for the global economy. Since these large banks cannot effectively and efficiently be regulated and are not allowed to fail, there is only one possible outcome, financial crises. One possible example of this was when the Continental Illinois National Banks and Trust Company (CINB) became insolvent (Carlson & Rose, 2016). As Laurea (2014) stated, this was the seventh largest bank in the US during the 1980s and as such, its failure would have had strong implications for the retail market and interbank trading, as more than 2 300 banks had funds invested in CINB, with a total investment value of almost \$6 billion.

Furthermore, the deregulation of the financial sector continued with the enactment of the Gramm-Leach-Bliley Act in 1999 (White, 2010), which effectively repealed the Glass-Steagall Act of 1930. Macey (2000) consequently maintained that investment and commercial banking activities could then merge. To prevent a “domino” effect, the bank depositors as well as uninsured creditors were bailed out, and so the phrase “too big to fail” was born. From Figure 2.1 it is evident that the repeal of the Glass-Steagall Act of 1930 and the enactment of the 1982 Garn-St Germain Depository Institutions Act had a profound effect on a number of banks and the size of their asset base, compared to US GDP.



**FIGURE 2.1: US total banks compared to assets as a percentage of GDP**

*Source: Milken Institute, 2015*

### 2.3 UNIQUE FEATURES OF THE BANKING INDUSTRY

Zalewska (2015) stated that when discussing remuneration structures as a mechanism to resolve the issues that arise from the separation of ownership and control, it is implicitly assumed that a firm is equity-financed and does not have any social or broad economic links and obligations. The banking sector does not comply with this standard approach in a number of ways (Allen, Carletti & Marquez, 2014). Firstly, banks differ from non-financial firms as they raise funds using deposits. This distinguishes the funding of banks from the corporate finance of other firms. Allen and Carletti (2013) argued that while both banks and firms use equity and bonds, only banks use deposits. In addition, deposits also play an important role in the aggregate funding structure of the economy.

Secondly banks' interconnectivity with the economy and the resulting systemic risk should not be overlooked. As is evident from the credit crisis of 2007 – 2009, the “domino” effect was the result of one bank's financial distress. Consequently, the view that the architecture of the financial system causes and shapes the nature of a credit crisis has become apparent (Acemoglu, Ozdaglar & Tahbaz-Salehi, 2013). The interconnected nature of the financial system has not only been offered as an explanation to the spread of risk throughout the system, but also motivated much of the policy actions as the crisis unfolded (Bluhm, Faia & Krahen, 2013).

Although the architecture of the financial system is an evident cause of crises, the specific role played by the financial network structure that creates this systemic risk, is at best misunderstood. This misunderstanding can be attributed not only to a lack of conclusive empirical evidence on the nature of financial contagion, but also to the absence of a theoretical framework that can clarify the relevant economic forces (Barattieri, Moretti & Quadrini, 2016). In addition, the current uncertainty pertaining to the nature and causes of systemic risk is reflected in potentially conflicting views regarding the relationship between the structure of the financial network and the extent of financial contagion. Numerous studies (e.g. Allen & Gale, 2000; Blume, Easley, Kleinberg, D., Kleinberg, J. & Tardos, 2011; Freixas, Parigi & Rochet, 2000; Guerra, Tabak & Marinda, 2014; Vivier-Lirimont, 2006; and Zalewska, 2015) refer to these conflicting views.

Zalewska (2015) and Guerra *et al.* (2014) are of the opinion that a more equal distribution of interbank claims enhances the resilience of the system to overcome the insolvency of any individual banks. In addition, Barattieri *et al.* (2016) argues that in a more densely interconnected financial network, the losses of a distressed bank are divided among more creditors, which reduce the impact of negative shocks to individual institutions in the rest of the system. Conversely, Vivier-Lirimont (2006) and Blume *et al.* (2011) suggest that dense interconnectivity may function as a destabilising force, paving the way to systemic failures.

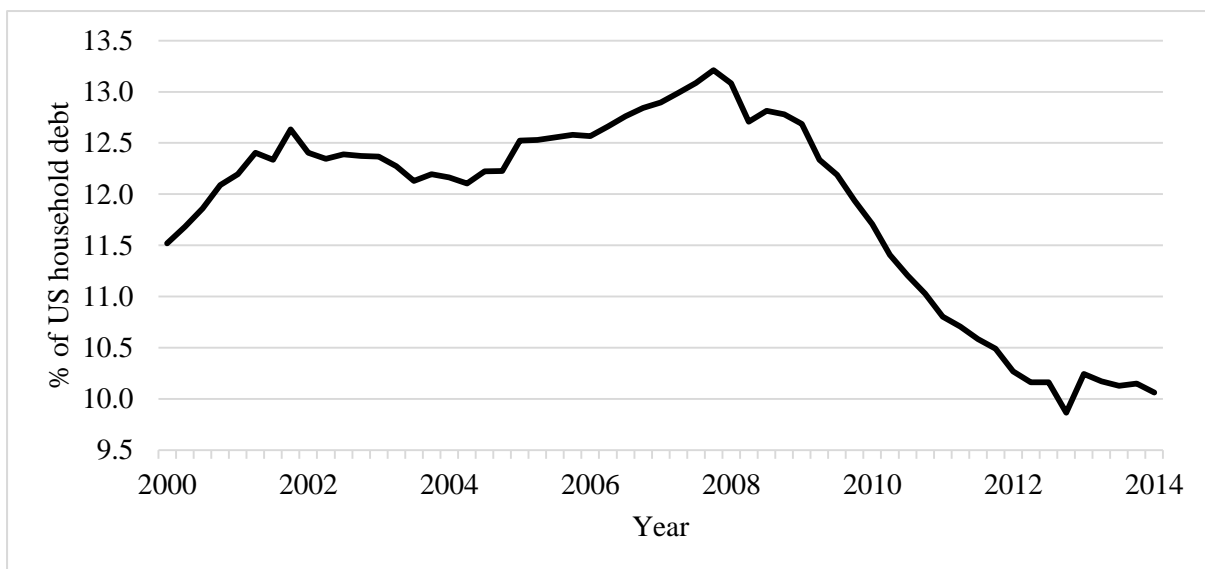
Nonetheless, as the relationship between bank interconnectivity and systemic risk are being debated, the fact that banks are heavily interconnected remains unchanged. As such, there remains a concern with regard to the manner in which the bank executive remuneration structure is to be revised. One possibility may be to explore executive remuneration linked to debt, as it forms such a large part in how operations are financed. However, for the purposes of this study, this matter was not investigated. The researcher of this study focussed on the



manner in which executives are currently remunerated and whether increased equity holdings have an effect on risk-taking.

## 2.4 SUSTAINABILITY IN BANKING

As is evident, banks are heavily interconnected not only with regard to intra-banking but also with the economy as a whole (Bluhm *et al.*, 2013). Acharya and Richardson (2009) point out the fact that the fundamental causes of the credit crisis included a credit boom and a housing bubble (Wolff, 2010). They state that between 2002 and 2007 the ratio of debt to national income increased from 3.75:1 to 4.75:1. This is supported by the illustration in Figure 2.2 below of the US household debt as a percentage of disposable income for the period 2000 to 2014.



**FIGURE 2.2: US household debt as a percentage of disposable income**

*Source: Fed, 2016*

Acharya and Richardson (2009) also note that it had taken the prior decade to accomplish an increase in debt of this magnitude and it had taken fifteen years to reach similar levels in increase prior to that. Moreover, during the same period, house prices grew at a rate of 11% per year. Consequently, when the “bubble” burst, a credit crisis resulted. Mian and Sufi (2011) claim that the average household, with a highly-leveraged home, and equity representing 35% of their wealth, would evidently have to consume less.

Nevertheless, the exact reason for the widespread failures of banks during the credit crisis of 2007 – 2009 still remains uncertain. The supply of capital to creditworthy institutions and

individuals were reduced during this period, which amplified the effects on the real economy (Duchin *et al.*, 2010).

There certainly was no shortage of causes for the credit crisis. These included, but were not limited to, mortgages granted to creditworthy individuals and, of course, securitisation. The ultimate collapse of the financial system cannot, however, only be attributed to this. If bad mortgages sold to investors deceived by AAA ratings were the only reasons for the crisis, those investors would have absorbed their losses and the financial system would have moved forward regardless (Acharya & Richardson, 2009).

The question then remains – what in actual fact caused this credit crisis to be so much worse than for example the technology bubble of 2000? The short and simple answer is that it could be attributed to the behaviour of large, complex financial institutions (Jackson, 2010). Erkins *et al.* (2012) argues that as a result of the behaviour of these financial institutions, economies around the world fell into severe recession during 2007. This included several US region bank failures, the collapse and fire sale of Bear Sterns in March 2008, the sudden bankruptcy of Lehman Brothers on 15 September 2008, and the seizure of Washington Mutual by federal regulators. However, these were just some of the occurrences in the US (Brunnermeier, 2009; Campello *et al.*, 2010; and Taylor, 2009).

Another country to bear the consequences of the credit crisis was Iceland (Danielsson, 2008 cited in Felton & Reinhart, 2008). Being the smallest economy within the OECD, with a GDP in 2008 of US \$16.8 billion, it had experienced strong growth in the financial sector since 2000 (Jackson, 2010). However, during October of 2008, Iceland's Financial Services Authority (FSA) took control of Iceland's three largest banks (Landbanki, Glitnir Banki, and Kaupthing Bank), which resulted in an economic stabilisation programme supported by a US \$2.1 billion standby arrangement with the International Monetary Fund (IMF). In addition, Iceland's Landbanki and Kaupthing banks experienced a sharp rise in the cost of private deposit insurance. This withdrawal of credit eliminated a major source of the banks' funding and threatened their ability to finance the nation's trade deficits. The debts of these banks were so large, the Central Bank, known as the "lender of last resort", was unable to guarantee the banks' loans, which ultimately lead to their collapse (Buitert & Sibert, 2008 cited in Felton & Reinhart, 2008). In turn, the Krona, Iceland's currency, experienced a serious depreciation in its value, which raised the cost of imports and threatened to fuel domestic inflation (Jackson, 2010).

Although these occurrences are far from the norm during stable economic conditions, it became the standard when the credit crisis struck. This clearly illustrates not only the interconnectivity of the banking industry with the economy, but also the systemic risk that accompanies this interconnectivity. As banks are so interconnected and pose such great systemic risk, the sustainability of these institutions, especially in this sector, is of extreme importance.

## **2.5 RISK-TAKING IN BANKING**

The behaviour of large financial institutions as well as their dense interconnectivity ultimately resulted in the credit crisis of 2007 – 2009. This is substantiated by Arner's (2009) argument that the credit crisis resulted from an unprecedented period of excessive borrowing, lending and investment, incentivised by a series of significant economic and regulatory factors. The excessive lending, borrowing and investing were interconnected through a range of transaction structures derived from well-understood techniques of securitisation.

Consequently, the need to stress the importance of bank sustainability and to properly assess bank soundness, especially since the credit crisis, is obvious, and early detection of bank distress has become very important. Early detection enables supervisory authorities to undertake prompt corrective actions designed to minimise negative externalities and bailout costs due to bank distress (Davis & Karim, 2008). Bank supervisors of developed countries have due to this advanced their own early-warning statistical models for the last two decades, which are based on sets of economic and financial variables. The prediction has been primarily focussed on the identification of leading indicators that contribute to generate reliable early-warning systems (Gramlich, Miller, Oet & Ong, 2010). Signals such as these may be grouped into two broad categories. The first, which does not form part of this study, is market-based measures, and the second, to be discussed in detail, is accounting-based measures (Agarwal & Taffler, 2008).

Accounting-based measures are a group of indicators that measure bank distress and are dependent on financial and accounting values. Following this approach, accounting data are proxies for fundamental bank attributes aimed to measure a bank's financial vulnerability (Agarwal & Taffler, 2008). The so-called CAMELS (Capital, Asset Quality, Management Earnings, Liquidity and Sensitivity to market risk) methodology is a well-known accounting-based measure (Kiser, Prager & Scott, 2015). However, during recent studies, some efforts have been made to complement the CAMELS variables with book-based indicators, such as a

proxy of a bank's distance-to-default, like the z-score (Kanagaretnam, Zhang, G. & Zhang, S.B., 2016).

Chiaramonte, Croci & Poli, 2015) reason that the empirical attractiveness of the z-score is based on the fact that it does not require strong assumptions about the distribution of Return on Assets (ROA), which is an advantage especially from a practitioner's point of view. Contrary to market-based risk measures, which are quantifiable only for listed financial institutions, the z-score can be computed for an extensive number of unlisted as well as listed banks (Altman, 2000; Lepetit & Strobel, 2013; and Strobel, 2010). Chiaramonte *et al.* (2015) claim that the z-score is not without its limits though, as its reliability depends on the quality of the underlying accounting and auditing framework, which can be problematic in less-developed countries.

However, the study conducted by Chiaramonte *et al.* (2015) proves that the z-score is slightly more effective than CAMELS when the organisational and productive complexity of banks increase. This is in addition to the public's incentive to scrutinise the risk-taking of banks, as is the case for large banks. Chiaramonte *et al.* (2015) also found that throughout the credit crisis of 2007 – 2009, which forms the bases for the timeline for this study, the accuracy of the z-score improved marginally in relation to the total period.

### **2.5.1 Measuring Risk-taking by Banks**

For the purposes of this study, risk-taking was measured by means of z-scores developed by Boyd, Graham & Hewitt (1993); De Nicolo (2000); Hannan & Hanweck (1998); and Roy (1952). The z-score is a measure of bank stability and indicates the distance from insolvency. This measure of risk-taking was applied during this study, as it takes into account and combines numerous profitability accounting measures, including profitability, leverage and volatility. Specifically, insolvency can be defined as a state where losses surmount equity ( $E > \pi$ ) where  $E$  is equity and  $\pi$  is profit. As banks keep competing for profits and market share, the z-score was the most applicable measure to apply, as it measures the rate of profitability directly, which is then linked to solvency and interpreted as risk-taking.

The probability of insolvency can be expressed as  $prob(-ROA < CAR)$  where ROA is return on assets calculated as  $\pi/A$  and CAR is the capital-to-asset ratio calculated as  $E/A$ . Should profits follow a normal distribution, it can be illustrated as  $z = (ROA+CAR)/SD(ROA)$ , which is the inverse of the probability of insolvency (Beck & Laeven, 2006; Beck *et al.*, 2009;

Brandao-Marques *et al.*, 2013; Magalhaes *et al.*, 2010; Mirzaei, 2013; and Tarraf & Majeske, 2013). More specifically, the z-score indicates the number of standard deviations that a bank's ROA has to fall below its expected value, before equity is depleted and the bank is insolvent (Boyd *et al.*, 1993; De Nicolo, 2000; Hannan & Hanweck, 1998; and Roy, 1952).

A lower z-score can therefore be associated with narrow returns, larger return volatility, or higher leverage (Mirzaei, 2013), whereas an increase in the capital-to-asset ratio would raise the z-score, as would an increase in the operating return on assets. A z-score can only be calculated if the accounting information for at least four years is available. There are no set benchmarks for a z-score, and it merely indicates whether a bank may be nearing bankruptcy, should its z-score continue to decrease (Hutchison & Cox, 2007; Magalhaes *et al.*, 2010; and Tarraf & Majeske, 2013).

## **2.6 REMUNERATION AND INCENTIVE SYSTEM**

The development and refinement of corporate governance standards have often followed the occurrence of corporate governance failures that have highlighted areas of particular concern. The technology bubble of 2000 highlighted severe conflicts of interest between brokers and analysts (Griffin, Harris, Shu & Topaloglu, 2011). The Enron failures pointed to issues of auditor and audit committee independence in addition to deficiencies in accounting standards (Li, 2010). The turmoil in financial institutions during the credit crisis of 2007 – 2009 is described as the worst since the Great Depression of 1929, with corporate governance issues at the core (Erkens *et al.*, 2012; and Ivashina & Scharfstein, 2010).

Many have researched the causes of the credit crisis and have come to a mutual agreement that significant failures in risk management, worsened by incentive systems that encouraged and actually rewarded high risk-taking levels, was the underlying cause of the credit crisis (Brunnermeier, 2009; and Kirkpatrick, 2009). The main focus of this study is on remuneration systems and risk-taking, and only those aspects are further detailed.

It has been argued that remuneration and incentive systems played a key role in influencing not only the sensitivity of financial institutions to the macroeconomic shock caused by the downturn of the real-estate market, but also in causing the development of unsustainable balance sheet positions in the first place (Aebi, Sabaro & Schmid, 2012; and Rose, 2010). Executive remuneration has notably not followed company performance, as the median of executive remuneration in Standard & Poor's 500 (S&P 500) companies was roughly

US \$8.4 million during 2007 and did not decrease at any time during the weakening of the economy (Kirkpartick, 2009).

Furthermore, in most financial institutions it is standard practice that the equity component in remuneration increases with seniority. A study that analysed six US financial institutions, found that top executive salaries averaged only 4% to 6% of total remuneration, with stock-related remuneration reaching very high levels (Nesto Advisors, 2009). However, Ledipo (2008) found that 24% of executive remuneration accounted for fixed salary, with annual cash bonuses accounting for 36% and long-term incentive awards for 40% during 2006 (Urbanek, 2011).

Figures such as these may nonetheless be misleading since what plays the biggest role in determining incentives, is the precise structure of the compensation, which include performance hurdles and the pricing of options. Losses incurred via shareholding may also be partly compensated by parting payments. It is also noted by Ledipo (2008) that only a small number of banks disclosed the proportion of annual variable pay subject to a period of deferral during the credit crisis of 2007 – 2009.

A number of codes also stress that executive directors should have meaningful shareholding in their company in order to align incentives with those of the shareholders. However, it should be emphasised that executives should have meaningful shareholding and not shareholding to such an extent that it compromises the independence of the non-executive directors. Only a handful of banks disclosed such policies during the credit crisis (Kirkpartick, 2009). Considering this, Nestor Advisors (2009) reported that financial institutions that collapsed had executives with high stock holdings, which would indicate a more risk-averse approach, whereas the financial institutions that survived had strong incentives to take risk. This argument forms the basis for this study, as the effect that equity holdings as opposed to cash payments, as forms of executive remuneration, have on risk-taking was analysed by the researcher by means of z-scores.

Furthermore, even though executive remuneration and parting bonuses have been highly publicised, and considerable attention has been drawn in academic literature to the danger of incentive systems that may encourage excessive risk-taking, there has been little analysis and thorough discussion on the topic.

## 2.7 PRINCIPAL-AGENT THEORY

Analysis and evaluation of public accountability requires a specification of who is, or is supposed to be, accountable to whom, which is central to the principal-agent theory (Acharya & Naqvi, 2012; and Elsig, 2010). Consequently, the principal-agent theory has become a widely used paradigm for analysing public accountability, due to the flexible paradigm it provides to model countless variations in institutional arrangements, and compare their potential to include desirable behaviour by agents (Gailmard, 2012 cited in the Oxford Handbook of Public Accountability, 2012).

In principal-agent models, an actor (agent) undertakes an action on behalf of another actor (principal). Furthermore, the concept of agency is similar to vicarious liability in common-law systems (Bovens, Goodwin & Schillemans, 2014). It also renders one person liable for the misdemeanours of another within the scope of authority, be it real or apparent. There is a tendency of courts to use the term “agency” to mean ‘the fiduciary relationship which exists between two persons, one of whom expressly or impliedly manifests assent that the other should act on his behalf so as to affect his relations with third parties and the other of whom manifests assent so to act or so acts pursuant to that manifestation’ (Smith, Calardo, Rotolo & Sartor, 2014). A requisite for reflex responsibility to stay in place, is the dependence between the author of the harmful act and the agent to whom the responsibility is attributed by reflex, i.e. the principal. A relation such as this has two constitutive elements: 1) a function carried out by the agent on the principal’s utility; and 2) the agent is a subordinate of the principal with reference to the performance of such functions, i.e. there is a subordinate incumbency (Smith, 2012).

The principal (shareholders) can make decisions that affect the incentives of the agent (executive directors) to take any of its various possible actions. The process of structuring incentives for the agent is the central focus of the principal-agent theory. According to the principal-agent theory, decisions made by the principal that structure the agent’s incentives to take various actions constitute a contract, and this theory is often considered as a specific area of contract theory (Borgatti & Hagin, 2011). Perhaps the most central point to the principal-agent theory is that it is not in fact a single overarching theory with a specific set of assumptions or conclusions.

According to this theory there is a conflict of interest between a firm's shareholders and the executive directors. Executive directors acting as the agents are hired to make decisions that will maximise shareholder wealth (Lan & Heracleous, 2010). However, as agents, they may be tempted to maximise their own wealth by taking excessive risk, more in fact than the shareholders would, as they stand to receive immediate gains and will not be liable for the losses the shareholders may occur. The shareholders may consequently wish to monitor the actions of the agents to ensure they agree with their own risk appetite (Angeli & Gitay, 2015).

A possible solution would be to use variable remuneration in an attempt to enhance alignment between the executive director's risk appetite and those of the shareholders (Bell & Van Reenen, 2014; and Bussin, 2012). Variable remuneration includes remuneration awarded in addition to the fixed element (contracted, fixed in advance amount), which varies according to some measure of performance (for example bonuses). The primary purpose of variable remuneration is to incentivise performance, however, there are other purposes to it as well (Ferrarini, Moloney & Ungureanu, 2010). Having a substantial proportion of variable remuneration provides greater flexibility in the management of banks' cost (Bell & Van Reenen, 2014). Deferred variable remuneration, where payment of the award is delayed for a set time period, may also play a role in staff retention.

As stated by Angeli & Gitay (2015), variable remuneration may address the "agency" problem by enabling a better alignment between the interests of risk-takers with the shareholders of the firm, and between the shareholders and the wider society. However, in some instances shareholders' incentives may not lead to the strengthening of the financial sector as some may have very high risk appetites. In such cases, the alignment of employee incentives with those of shareholders may lead to risk-taking beyond sensible levels. A secondary agency problem consequently arises from the divergence of incentives between shareholders and the wider society, reflected by financial stability (Angeli & Gitay, 2015). Payment in debt instruments may provide an alternative way to link variable remuneration to the long-term health of the firm. With a debt-based award, the future gains are fixed when the award is made, with adjustments only possible in the form of reduction, in contrast to an equity award, which has the potential of unlimited upside gain should the price of the equity increase (Besley & Ghatak, 2011; and Ferrarini *et al.*, 2010).



## **2.8 REGULATING REMUNERATION**

It is well known that public frustration was at the order of the day after the credit crisis. This frustration was centred on the overall level of bonuses and bankers' remuneration. This section details the UK and international regulatory agendas with reference to remuneration.

### **2.8.1 UK Remuneration Rules**

The Financial Services Board Principals and Standards (FSB P&S) were implemented in the UK through remuneration rules introduced by the Financial Services Authority (FSA) during 2009, which took effect on January 2010. Posner and Veron (2010) contend that these standards have subsequently been extended through the European Union (EU) Capital Requirements Directive (CRD). Angeli and Gitay (2015) reason that the UK remuneration rules, according to which these international requirements need to be implemented, are set and supervised by the Bank of England's Prudential Regulatory Authority (PRA) and the Financial Conduct Authority (FCA). During June 2013, the report of the Parliamentary Commission on Banking Standards (PCBS) included recommendations rules. The PRA and FCA consulted jointly on new rules, which were published in June 2015. In particular, these rules put in place tougher requirements for deferral and clawback (Besley & Ghatak, 2011).

Posner and Veron (2010) as well as Besley and Ghatak (2011) continue by stating that these remuneration rules apply to banks on a firm-wide level and to the variable remuneration of all employees who can have an impact on a firm's risk profile, known as material risk-takers (MRTs). Toth (2015) reasons that firms must identify their populations of MRTs using the criteria in the regulatory technical standard published by the European Banking Authority (EBA) in order to ensure consistency of identification across EU jurisdictions (Toth, 2016). The application of this standard to the remuneration rules has led to a threefold increase in the number of individuals in major UK banks.

The Regulatory Technical Standard (RTS) has set criteria for the identification of categories of staff who have a material impact on an institution's risk profile (Wymeersch, 2011). Firms are required to identify the MRTs in their institution on an annual basis. To ensure harmonisation across the EU, there are two types of criteria (qualitative and quantitative) that must be used by firms for identification (Lannoo, 2011). Angeli and Gitay (2015) claim qualitative criteria identify staff by job roles and specific responsibilities and quantitative criteria are based on

total remuneration in absolute terms (staff earning more than €500 000) and in relative terms (0.3% of staff with the highest remuneration).

During June 2015 the PRA and the FCA introduced new rules that increased the period of deferral for many MRTs. Deferral of variable income awards is a key element of the way in which the rules seek to ensure that longer-term risk horizons are reflected. By deferring payment of part of an award, an opportunity is created to reassess the nature, scale and outcome of the risks taken in order to assess the performance for which variable compensations has been awarded (Angeli & Gitay, 2015).

As stated by the European Banking Authority (2015) these new rules by the PRA and FCA distinguish between the levels of responsibility MRTs may have on the firm’s risk profile. The PRA’s Senior Managers Regime (SMR) requires senior individuals to be responsible for the executive management or oversight of those areas of a firm that the PRA deems relevant to its safety and soundness objective, in order to ensure individual accountability. As a result the new deferral rules split the MRT population into three categories as depicted in Table 2.1.

**TABLE 2.1: New referral requirements**

<b>MRT population</b>	<b>Minimum deferral period</b>
<p><i>Senior Management</i></p> <p>All individuals as defined by the SMR, which include Chief Executive, Financial Chief and heads of key business areas.</p>	Seven years
<p><i>Risk Managers</i></p> <p>All individuals in risk-managing roles, derived from the Regulatory Technical Standards (RTS,) which include members of the management body, heads of other material business units and managers of MRTs.</p>	Five years
<p><i>All other MRTs</i></p> <p>All MRTs not captured by the aforementioned categories.</p>	Three to five years

*Source: European Banking Authority, 2015*

The rationale behind the longer deferral requirements is that short-term deferral periods are insufficient to take account of the timescales over which material business issues can come to light. In addition, there should be a presumption that all staff to whom the new rules apply

should be subject to greater and longer deferral than is customary. Furthermore, regulators should have the power to require that a substantial part of remuneration be deferred for up to 10 years where necessary for effective long-term risk management (European Banking Authority, 2015).

Longer deferral periods better align the risk horizons of key individuals with the longer-term safety and soundness of the firms for which they work. This is of particular importance to senior executives who are responsible for the implementation of the overall business strategy of a firm and hence, are ultimately responsible for risk management. For these employees, the risk horizon should reflect the timescales over which the risks associated with those strategic decisions are likely to manifest (European Banking Authority, 2015).

Zalewska (2015) adds to this by stating that the Capital Requirements Directive Package IV (CRD IV) also includes a “bonus cap” according to which variable remuneration is limited to 100% of the value of fixed remuneration (Dijkhuizen, 2014). This is applicable to all MRTs. The premise behind the bonus cap is that the expectation of large variable remuneration awards inherently creates adverse risk incentives, which cannot be solely mitigated by risk adjustments (Masera, 2014). A ceiling on variable pay should therefore limit excessive risk-taking, as the upside gains are limited. Nevertheless, a significant consequence of limiting variable remuneration, is a shift to higher levels of fixed remuneration to offset the reduction in variable remuneration. This, however, reduces the amount of remuneration that is at risk (Merler & Wolff, 2013).

## **2.8.2 International Debate**

The subject of remuneration remains an issue of debate for regulators around the world. Through the FSB, regulators aim to ensure the effective implementation of the reforms introduced in 2009, and to focus on the manner in which to secure more effective alignment between risk-taking incentives and remuneration. The UK has been one of the leading jurisdictions in implementing the FSB P&S. Implementation has, however, been uneven around the world, with 10 out of 24 jurisdictions still experiencing gaps in their national implantation of the FSB P&S as of November 2015 (Angeli & Gitay, 2015).

Following its March 2015 plenary meeting in Frankfurt, the FSB indicated it would review the impact of regulatory reforms, including what form of remuneration structures was required. Remuneration regimes have a role to play in incentivising good conduct in banks. This includes

individuals losing rewards when risk management failing comes to light (Angeli & Gitay, 2015).

## **2.9 CONCLUSION**

As is evident, poorly incentivised remuneration, which encourages excessive risk-taking, had strong ties to the credit crisis of 2007 – 2009. However, close alignment between risk and reward, including the use of variable remuneration, can contribute to the safety and soundness of firms and the stability of the financial system.

In this chapter the researcher aimed to detail aspects such as the growing concern with regard to “too big to fail” banks. The importance of sustainability in banking was made evident and was discussed with the unique nature of the banking industry in mind. Furthermore, as excessive risk-taking was found to be the ultimate cause of the credit crisis, the measurement thereof was also detailed. The regulation of remuneration and the incentive system with reference to the principal-agent theory was analysed as well, with the UK being stated as example. Lastly, it is clear that even though there have been some improvements, there is an ongoing international debate with regard to remuneration.

As a result, it is evident that sustainability is not only important for the global economy to flourish, but in particular for the banking industry, since this system is characterised by interconnectivity and systemic risk so severe it could lead to the collapse of numerous economies.

In the chapter that follows (Chapter 3), which was written in article format, the principal-agent theory, with reference to bankers’ remuneration and the manner in which it can be regulated, is briefly detailed. The link between executive incentives, risk-taking and sustainability is detailed in Section 3 of Chapter 3, which is followed by the formation of six propositions, each of which was either proven or disproven during the empirical review. The research methodology that follows includes the z-scores as defined in Chapter 2.

# Chapter 3

## The Impact of Executive Remuneration on Risk-taking in the Banking Industry

Ezelda Swanepoel\* & Prof Anet Magdalena Smit \*\*

### ABSTRACT

In the aftermath of the credit crisis of 2007 – 2009, there was considerable public frustration with regard to executive remuneration, particularly in the banking industry. Consequently, the need for regulated remuneration practices became essential. For this purpose, the Prudential Regulation Authority (PRA) aims to align risk and reward by encouraging good risk management and discouraging excessive risk-taking. This paper aims to demonstrate the correlation between the health of the banking industry and economic activity, as well as the change in executive remuneration pre and post the credit crisis. In addition, the paper aims to measure the correlation between executive remuneration in the form of cash and equity, and risk-taking. The unique features of banking emphasized the interconnectedness to the broader economy. The statistical package for social sciences (SPSS) was used to perform these analyses. It was found that as executive remuneration in the form of cash increased, risk-taking decreased. In addition, as executive remuneration in the form of equity decreased, risk-taking increased. In summary, the research points to the fact that executives have in fact been remunerated in terms of equity. However, the results indicate that this may not have enticed the executives to take on more risks.

**JEL:** C21, G01, G21, G32

### 1. Introduction

It is indicated in literature that excessive risk-taking in the banking industry, along with slack regulatory supervision, have had dire economic consequences (Keeley, 1990; and Merrouche & Nier, 2010). This resulted in the credit crisis of 2007 – 2009, which was so detrimental that it has in fact been termed as the worst financial crisis since the Great Depression of 1929.

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The credit crisis is viewed by some as either a direct or indirect result of the repeal of the Glass Steagall Act, which saw the enactment of the Gramm-Leach-Bliley Act (GLBA), an advocate for relaxed regulation (Crawford, 2011).

The GLBA of 1999 has been purported to be the key factor behind consolidation in the banking industry. This act permitted commercial banks in the United States (US) to diversify into non-traditional activities, and facilitated mergers with institutions that engage in capital market activities and insurance underwriting. As a result, over the past two decades, successive merger waves changed the face of US banking by giving rise to banks that are larger and engage in a broader range of financial activities (Hagendorff & Vallasca, 2011).

This Act was responsible for bank deregulation, which allowed for sharp increases in the share of equity-based executive compensation in the banking industry (Cunat & Guadalupe, 2009). The use of stock options in executive compensation became so widespread over the last decade that the contractual risk taking incentives for executives at large US banks were higher than at non-financial institutions (DeYoung, Pemp & Yan, 2010). Furthermore, it is widely believed that the use of incentive pay in banking-motivated risk-taking was a contributory factor to the recent credit crisis of 2007 – 2009. Bolton, Mehran and Shapiro (2015) argued that executive remuneration should be linked to debt and should be tied to the bank's credit default swaps. However, this argument does not form part of this particular research.

The possible motivation for increased risk-taking as a result of share equity-based compensation can be attributed to two factors. Firstly, deregulation expanded managerial discretion over the scale and scope of banking activities, and performance contracts became more equity-based in order to encourage bank executives to take advantage of such growing investment opportunities (Raviv & Sisman-Ciamarra, 2013). Secondly, incentive-based compensation in banking is designed to shift risk from bank shareholders to regulators and bondholders. Since banks are highly leveraged institutions, shareholders benefit from higher risk investment choices, which increase the potential value of bank assets, while keeping the downside risk limited (Armstrong, Larcker, Ormazabal & Taylor, 2013).

Conversely, there are numerous examples of studies (Angeli & Gitay, 2015; Jensen & Meckling, 1976; Rego & Wilson, 2012; and Smith & Stulz, 1985), which advocate equity remuneration for executives. The reasoning for this is that if executives had actual shares in the

bank, they would be persuaded to take on less risk, as they would be of the opinion that the risk would be reverted to the executives and not to the regulators.

The study contributes to the literature in various ways. Firstly, it highlights the effectiveness of the z-score as a predictor of large bank risk-taking which could be relevant to external shareholders. As the public is most affected by banking behavior, as a result of it being so interlinked with the economy, and they do not fully understand the functioning of the banking industry, they will by no means accept risky behavior by banks. Secondly, it improves the understanding of the manner in which bank executives are remunerated, and contradicts current theory as to the manner in which risk-taking is affected by executive remuneration in the form of equity holdings. Finally, this paper briefly notes that executive remuneration should be linked to debt and it should be tied to the bank's credit default swaps, hence, a different manner in which remuneration can be calculated, which might lead to lower risk-taking.

The research is structured as follows: A literature review, detailing various controversies with regard to bankers' remuneration is provided in Section 2. The correlation between executive incentives, risk-taking and sustainability is detailed in Section 3. The methodology used is indicated in Section 4, while the results are presented and discussed in Section 5. A conclusion follows in Section 6.

## **2. Literature Review**

Zalewska (2015) stated that until recently, there was little in corporate governance literature that focused exclusively on banking and bankers' remuneration, although the unique features of market failure surrounding banking were commonly mentioned, and in particular, the cost that banks may inflict on third parties as a result of transaction costs, which are particularly high. Consequently, the specific features of banking point to a remuneration debate, based solely on the separation of ownership, and control is rarely mentioned, which may therefore lead to incorrect conclusions and harmful solutions.

### *2.1 The Principal-Agent Theory*

This theory pertains to the separation of ownership and control, and initiated the debate on the mitigation of problems that arise due to principals and agents hired by them who may have

different objectives, resulting in the principals not fully observing the actions undertaken by agents (Salehyan, Sirokey & Wood, 2014). Consequently, the manner in which differences in objectives and their effects are minimized, so as to limit asymmetries of information between agents and principals, has become a key strand in governance literature (Smith, Rotolo & Sartor, 2013).

Conflict of interest between an institution's shareholders and the executive directors is assumed in this theory. Executive directors acting as agents are hired to make decisions that will maximize shareholder wealth. However, as agents they may be tempted to maximize their own wealth (Angeli & Gitay, 2015). Therefore, taking on more risks than the shareholders would permit, they stand to receive immediate gains, but will not be liable for any costs or losses that may subsequently occur for the institution and the shareholders. Shareholders may therefore wish to monitor executive directors' actions to ensure that it corresponds with their own risk appetite (Salehyan *et al.*, 2014). As a result, the alignment of interests by making agents equity-focused is one of the most commonly postulated solutions (Smith *et al.*, 2013). Executive remuneration has frequently been addressed by regulators and other policy-making bodies, with the majority of the literature focusing on the corporate governance structure of non-financial institutions. However, the credit crisis of 2007 – 2009 emphasized the importance of the financial sector as well as the resulting consequences should it not adhere to current governance practices (Zalewska, 2015).

A solution to this dilemma would be to use variable remuneration in an attempt to better align executive directors' appetites to those of shareholders. Variable remuneration may for instance be awarded as equity, transferring a portion of the bank's ownership to its executive directors. This could increase long-term performance considerations in executive directors' decision-making (Angeli & Gitay, 2015).

However, the emphasis on the unique features of banks and bankers' remuneration should not be understated. There are numerous different arguments as to why the principle-agent theory should not be utilized in the banking sector, hence, variable remuneration has been proposed and implemented as a possible solution or mitigation technique.



## 2.2 Bankers' Remuneration

Zalewska (2015) argued that when discussing remuneration structures as a mechanism to resolve issues that arise from the separation of ownership and control, it is implicitly assumed that an institution is equity-financed and does not have any social or broad economy links and obligations. The banking sector does not comply with this standard approach. Two primary drivers for this are firstly, banks' capital structure, and secondly, banks' interconnectivity and their systemic risk.

With regard to banks' capital structures, a study conducted by Allen, Carletti and Marquez (2014) showed shareholders to be a relatively minor group in comparison with depositors and other stakeholders. The second driver suggests that it is not sufficient to consider corporate governance on a bank-by-bank basis. In any banking sector there is often a significant number of institutions that network closely with each other. Consequently, one bank's failure can affect the stability of the whole financial sector (Liu, Quiet & Roth, 2015).

Furthermore, banks' services are deeply rooted in the economic activities of their countries. Even in the most advanced economies with the most developed stock markets, banks are fundamental providers of financing for economic and business activities (Leaven, Ratnovski & Tong, 2014). Their roles in supporting and ensuring the economic development of countries are essential, and therefore, when the banking sector experiences difficulties, the whole of society bears the consequences. This was exactly the case in 2007, when world financial markets were in the midst of a recession termed the worst since the Great Depression of 1929 (Zalewska, 2015).

These unique features of the banking industry are emphasized particularly in banks' risk-taking and remuneration issues, when banks are systematically important ("too big to fail"), and when they are deeply interconnected (Liu *et al.*, 2015). Given the complexity of the unique features of banks, regulation may be required to negotiate the strategic objectives of banks between shareholders and governments representing stakeholders (Afonso, Santos & Traina, 2014).

### 2.3 Regulating Remuneration

In the aftermath of the credit crisis of 2007 – 2009, there was considerable public frustration with regard to executive remuneration, particularly in the banking industry (Erkins, Hung & Matos, 2012; and Falenbrach & Stulz, 2011). Consequently, the need for regulated remuneration practices became essential. For this purpose, the Prudential Regulation Authority (PRA) aims to align risk and reward by encouraging good risk management and discouraging excessive risk-taking. Accordingly, it is intended to contribute to a higher level of resilience within banks and therefore to support financial stability. In addition, effective competition within the banking sector and the labor market will determine the total levels of remuneration (Angeli & Gitay, 2015).

During 2009, the Financial Stability Board (FSB) issued a report, “*Principles and standards for sound compensation practices*”, which stipulated that variable remuneration schemes should be designed to work in concert with overall risk management (Ferrarini & Ungureanu, 2012). The metrics determine that variable remuneration awards should provide signals of the institution’s risk appetite, which in turn should translate into a given level of risk-taking by employees (Kregel, Kattel & Tonveronachi, 2016). These metrics should be structured in such a manner that employee incentives are aligned with the long-term interests of the business, while taking into account the time frame over which financial risks crystallize (Angeli & Gitay, 2015).

Furthermore, variable remuneration contributes to the flexibility of banks’ staff cost bases. During times of stress, cost can be reduced to help maintain the financial health of the institution. Variable remuneration can thus act as a form of loss-absorbing capacity for the financial system. The FSB also indicated that a substantial proportion of remuneration should be variable and paid on an individual, business unit, and institutional performance basis (Ferrarini & Ungureanu, 2012; and Kregel *et al.*, 2016).

### 3. Executive Incentives, Risk-taking and Sustainability

During 2009, the Financial Stability Forum (FSF) published a report, which stated that “*multiple surveys find that over 80% of market participants believe that compensation practices played a role in promoting the accumulation of risks that led to the 2008 crisis.*”

*Experts agree.*” (Financial Stability Forum, 2009). Given the events of 2007 and of the following year, there can be no doubt that excessive risk-taking had accumulated, but the question was whether this was exclusively due to the bankers accumulating risk, or whether their remuneration incentives were structured to result in exactly that.

In recent years, prior to the credit crisis of 2007 – 2009, bonus payments had more than doubled in the financial and insurance industries. In addition, there was a broad consensus that banks’ remuneration policies were a contributing factor to the crisis (Gregg *et al.*, 2012). This included rewarding high short-term profits with generous variable remuneration awards through encouraging excessive risk-taking. Long-term risks resulting from such practices were not taken into consideration (Angeli & Gitay, 2015).

Furthermore, one former Chair of the Financial Services Authority (FSA), highlighted the role that inappropriate incentive structures played in encouraging imprudent behavior (Falenbrach & Stulz, 2011). Moreover, the Treasury Select Committee’s report on the credit crisis of 2007 – 2009 argued that the design of bonus schemes in the banking sector were flawed in too many cases, and not aligned with the interests of shareholders and the long-term sustainability of banks. As a result, the global regulatory response sought to align incentives with the level of risk taking (Rego & Wilson, 2012).

The credit crisis of 2007 – 2009 highlighted the importance of the financial sector’s stability to the broader economy. It also prompted regulators to consider whether non-cash awards could be used as an effective manner in which to align risk-taking incentives. Prior to the credit crisis of 2007 – 2009, banks were able to award their bonuses as cash awards at year-end. However, since 2010, at least 50% of variable remuneration awards are required to be awarded in non-cash instruments such as shares or debt, which create incentives aligned with long-term value creation and the time horizons of risk (Angeli & Gitay, 2015). Consequently, the following propositions can be formulated:

Proposition (1): The health of the banking sector has significant effects on overall economic activity.

Proposition (2): Executive remuneration paid in cash decreased, while executive incentives in the form of equity increased post the credit crisis.

Proposition (3): Executive remuneration in the form of cash has an impact on risk-taking in the banking sector.

Proposition (4): An increase in executive remuneration in the form of cash leads to an increase in risk-taking.

Proposition (5): Executive incentives in the form of equity have an impact on risk-taking in the banking sector.

Proposition (6): An increase in executive incentives in the form of equity value will lead to a decrease in risk-taking.

## **4. Research Methodology**

### *4.1 Stability*

As a result of dire economic conditions, and possibly because executive remuneration incentives were structured in the way it was at the time, bank risk-taking took center stage for regulatory debate. This risk-taking can be measured by means of z-scores developed by Boyd, Graham & Hewitt (1993); De Nicolo (2000); Hannan & Hanweck (1998); and Roy (1952). The z-score is a measure of bank stability, which indicates the distance from insolvency. It combines the accounting measures of profitability, leverage and volatility. Specifically, insolvency can be defined as a state where losses surmount equity ( $E > \pi$ ), where  $E$  is equity, and  $\pi$  is profit. The probability of insolvency can be expressed as  $prob(-ROA < CAR)$ , where ROA is return on assets, calculated as  $\pi/A$ , and CAR is the capital-to-asset ratio, calculated as  $E/A$ . Standard deviation is expressed as SD. If profits are assumed to follow a normal distribution, it can be proven that  $z = (ROA+CAR)/SD(ROA)$ , which is the inverse of the probability of insolvency (Tarraf & Majeske, 2013). More specifically, the z-score indicates the number of standard deviations that a bank's ROA has to fall below its expected value before equity is depleted and the bank becomes insolvent (Boyd *et al.*, 1993; De Nicolo, 2000; Hannan & Hanweck, 1998; and Roy, 1952).

Thus, a smaller z-score can be associated with narrow returns, larger return volatility or higher leverage (Mirzaei, 2013). Moreover, an increase in the capital-to-asset ratio would raise the z-score, as would an increase in the operating return on assets. A z-score can only be calculated if the accounting information for at least four years are available. Again, there are no set

benchmarks for a z-score. The z-score merely indicates that a bank may be nearing bankruptcy, should its z-score continue to decrease (Tarraf & Majeske, 2013).

#### 4.1.1 Model Diagnostics

As this model has been used extensively in literature, it is important to emphasize the relevance and importance thereof. One important and relevant study conducted by Chiaramonte, Croci and Poli (2015), confirmed that the z-score was still very relevant and could even be compared to CAMELS (Capital, Asset Quality, Management Earnings, Liquidity, and Sensitivity to market risk) variables. This particular study focused on the empirical attractiveness of the z-score, as it does not require strong assumptions about the distribution of ROA. In addition, Chiaramonte *et al*, (2015), examined whether the z-score was an accurate tool to predict bank distress on a sample of banks from 12 European countries.

Based on the above research, it was found that the z-score shows good predictive power to identify bank distress. Further to that, the key results indicated that the z-score performed similarly to the CAMELS variables. It did, however, have the advantage of being more parsimonious than CAMELS models, as it demanded less accounting and questionable data. Such a result is valuable for stakeholders, as they rely solely on available public information and seek simple and reliable measures of bank soundness.

Moreover, these researchers found that the predictive ability of the z-scores held, even when using a different computational approach, which took into account the average returns on assets over a three-year period. They also assessed the predictive power of the z-score according to various bank characteristics and found that the z-score was slightly more effective when the organizational and productive complexity of banks increased along with the public incentives to scrutinize bank riskiness, as it is the case for large banks. Finally, Chiaramonte *et al*, (2015), indicated that during the financial crisis, the accuracy of the z-score marginally improved with respect to the whole period.

#### *4.2 Population, Sample and Data Collection*

This study comprises two samples, as a fully systematic test of banks' risk-taking would require data from all international banks affected by the credit crisis, and such a study is not feasible.

Hence, the sample used to measure risk-taking in banks focused on the largest and most publicly announced banks, as they are marked as more important than smaller banks from an economic investment perspective. The sample includes six large international banks from the United Kingdom and the United States. The financial data obtained are publicly available, and the last eight years of data were analyzed (2007 – 2014).

#### *4.3 Data Analysis*

The z-scores for each individual bank, as well as the mean z-scores were calculated, using Microsoft Excel, as only basic descriptive statistical analyses were used. In order to test the propositions, different techniques were used. For the different propositions, the Statistical Package for Social Sciences (SPSS) was used to perform more advanced statistical analysis by means of correlation and analysis of variance (ANOVA) of cash remuneration, equity remuneration and z-scores. One of the reasons for the frequency of regression of ANOVA applications is its suitability for many different types of study designs. ANOVA procedures are applicable to experimental, quasi-experimental and non-experimental data.

### **5. Results and Discussion**

#### *5.1 Descriptive Statistics*

Two data sets are provided. The first data set provides the descriptive statistics between 2007 and 2010 (Table 1), as this is the period just prior to and during the crisis being officially declared by the National Bureau of Economic Research on 1 December 2008. The significance of this period is that due to higher competition and dire economic conditions, risk-taking would possibly have been high. The second data set provides the descriptive statistics between 2011 and 2014, as this is the period when it was required by banks to implement variable remuneration schemes in terms of increased equity. A comparison of the two periods will indicate if risk-taking is in fact affected by equity holdings of executives.

Table 2 provides the descriptive statistics for the analyzed variables for the period between 2011 and 2014, a period just prior to and during the financial crisis, which signified low economic growth. For the purposes of this research only the mean of the base salaries (depicted

in millions) and equity values (depicted in millions) was of value. This was to determine if base salaries and equity value had in fact changed post the credit crisis, and to determine if they had any effect on risk-taking during the same period.

The mean base salary was US \$2.78 million, with the mean share value at US \$18.58 million. The mean z-score for the period was 1.76, with a maximum of 4.2, a minimum of -1.54, and a standard deviation of 1.47. This indicates that there was volatility in the market, as some experienced a somewhat higher z-score, while others had extremely high risk-taking practices. As mentioned, the z-scores were calculated with the formula  $(ROA+CAR)/SD (ROA)$ , where ROA is the return on assets, CAR is the capital asset ratio (Assets/Equity), and SD is the standard deviation.

**Table 1: Descriptive Statistics from 2007 – 2010**

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
<b>Base Salary (US \$)</b>	16	1.54	3.88	2.78	0.77
<b>Share Value (US \$)</b>	16	0.02	51.85	18.58	20.53
<b>z-scores</b>	16	-1.54	4.20	1.76	1.47

Table 2 provides the descriptive statistics for the analyzed variables between 2011 and 2014. The mean base salary is indicated as US \$3.13 million, with the mean share value as US \$10.85 million. This indicates that although there had been regulatory practices and public scrutiny with regard to high banking executives' salaries and lucrative bonuses, they had actually increased. In addition, the mean US \$ value of equity holdings of executive staff decreased.

Furthermore, the mean z-score for the period 2011 – 2014 was analyzed at 6.81, with a minimum of -0.07, a maximum of 13.99, and a standard deviation of 4.98. This indicates that although the US \$ value of salaries for executives had increased, it did not have a negative effect on the z-scores. In addition, from this data, it may be concluded that the decrease in equity holdings by executives also did not have a negative effect on the z-scores, hence risk-taking.

**Table 2: Descriptive Statistics from 2011 to 2014**

	<b>N</b>	<b>Minimum</b>	<b>Maximum</b>	<b>Mean</b>	<b>Std. Deviation</b>
<b>Base Salary (US \$)</b>	16	0.0012	11.17	3.13	2.72
<b>Share Value (US \$)</b>	16	0.0043	49.58	10.85	15.41
<b>z-scores</b>	16	-0.07	13.99	6.81	4.98

## 5. Proposition Testing Results

Proposition (1): The health of the banking sector has significant effects on overall economic activity. In numerous studies conducted by Bernanke (1983); Kalemli-Ozcan *et al.* (2013); and Makinin (2014), it is indicated that the health of the banking sector does in fact have substantial effects not only on overall economic activity, but also on the size and persistence of economic cycles. In addition, as becomes evident from not only the dire repercussions of the credit crisis of 2007 – 2009, but also from the ominous circumstances most individuals in the US faced during the Great Depression of 1929, it is clear that sustainability in the banking industry was essential. Hence, Proposition (1) may be valid.

Proposition (2): Executive remuneration paid in cash decreased, while executive incentives in the form of equity increased post the credit crisis. Table 1 and Table 2 provide descriptive statistics for the periods 2007 – 2010 and 2011 – 2014 respectively. From both these tables it becomes evident that base salaries did in fact increase from 2007 – 2010 to 2011 – 2014. In addition, incentives in the form of equity decreased during the periods of 2007 – 2010 and 2011 – 2014. The z-scores also increased during the periods of 2007 – 2010 and 2011 – 2014. However, from the descriptive statistics alone it could not be determined if the base salary and share values had any effect on the z-scores. Hence, Proposition (2) may be valid.

Table 3 indicates the results of the testing of the remaining propositions. From the results it can be deduced that the independent variables (base salary and share value) depict 44.9% of the changes to the dependent variable, as the adjusted R-square is 0.449. In addition, the ANOVA table indicates that the model was significant, which indicates that the changes in the dependent variable are significant to the independent variables with a sig. value of 0.00. Further to this, the Beta values from the Coefficient table are the regression equation ( $B_0 = 0.514$ ;  $B_1 = 1.71$ ;  $B_3 = -8.62$ ). The Standard Error for the Constant indicates that at an  $\alpha = 0.05$  and degrees of



freedom (df) of 2, the Beta of 0.514, falls between the range of -4.064 and 5.092. This was calculated with a critical value of 4.303. Taking  $\alpha = 0.05$  with df of 2 and a critical value of 4.303, this can be computed for all the variables.

The t-value is derived by dividing the Beta with the Standard Error. This value is used to determine if the data is statistically significant. However, the data analysis provided Sig. values, and with a Sig value  $< 0.05$ , the data is statistically significant.

**Table 3: Regression and ANOVA of Base Salary and Share Values on z-scores**

Model Summary

Model	R	R-Square	Adjusted R-Square	Std. Error of the Estimate
1	.696 <sup>a</sup>	.485	.449	3.29

a. Predictors: (Constant), Base Salary, Share Value

ANOVA<sup>a</sup> (Analysis of Variance)

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	295.4	2	147.7	13.65	.000 <sup>b</sup>
Residual	313.7	29	10.81		
Total	609.1	31			

a. Dependent Variable: z-scores

b. Predictors: (Constant), Base Salary, Share Value

Coefficients

Model	Non-standardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.514	1.064		.484	.632
Base Salary	1.71	3.540	.762	5.22	.00
Share Value	-8.62	3.268	-.356	-2.435	.021

Proposition (3): Executive remuneration in the form of cash has an impact on risk-taking in the banking sector. The results in Table 3 indicate the Analysis of Variance (ANOVA). From the results in this table, it becomes evident that, based on the particular data used, the base salary is a significant predictor of risk-taking in the form of z-scores, with an F-value of 13.65, which

is much larger than the critical F-value of 8.85 and a sig. value of 0.00. Thus, Proposition (3) may be valid.

Proposition (4): An increase in executive remuneration in the form of cash, leads to an increase in risk-taking. From the results indicated in Table 3, the non-standardized coefficients for base salary are positive (1.71), which indicate that a higher base salary results in a higher z-score, and thus decreased risk-taking. This contradicts the theory, as the theory purports that an increase in base salary or in lucrative incentives would lead to an increase in risk-taking. As a result, Proposition (4) is not valid.

Proposition (5): Executive incentives in the form of equity have an impact on risk-taking in the banking sector. Once again, from the results in Table 3, it becomes evident that the US \$ value of equity in the possession of an executive does have an impact on risk-taking, as measured in terms of z-scores, with a p-value of 0.021. Hence, Proposition (5) may be accepted.

Proposition (6): An increase in executive incentives in the form of equity value will lead to a decrease in risk-taking. From the results in the coefficient table, it becomes clear that there is a negative relationship between the US \$ value in equity in possession of executives and the z-scores (-8.62), which is contrary to the literature. Hence, Proposition (6) is not valid.

## **6. Conclusion**

This research aimed to prove or disprove six propositions. Proposition (1): The health of the banking sector has significant effects on overall economic activity. Proposition (2): Executive remuneration paid in cash decreased, while executive incentives in the form of equity increased post the credit crisis. Proposition (3): Executive remuneration in the form of cash has an impact on risk-taking in the banking sector. Proposition (4): An increase in executive remuneration in the form of cash leads to an increase in risk-taking. Proposition (5): Executive incentives in the form of equity have an impact on risk-taking in the banking sector. Proposition (6): An increase in executive incentives in the form of equity value will lead to a decrease in risk-taking.

In order to indicate the validity of Proposition (1), a literature review was conducted. It was proven by numerous studies that the sustainability of the banking industry was beneficial to the overall economy. In addition, due to the unique features of the banking sector, they seldom if

ever, function in isolation. This emphasizes the connectivity of the banking sector to most aspects of the broader economy. In addition, the dire repercussions of not only the credit crisis of 2007 – 2009, but also the Great Depression, evidenced the importance of the banking sector's sustainability.

In order to prove the validity of Proposition (2), descriptive statistics were analyzed, which indicated that executive remuneration increased, while equity in possession of executives decreased post the credit crisis.

Proposition (3) may be valid, based on the significance value obtained from data. The p-value was documented as 0.021.

Proposition (4) was not valid based on the positive coefficient base salary. This indicated that, as remuneration in the form of cash increased, z-scores also increased and hence, risk-taking decreased.

Proposition (5) may be valid, based on the significance value, which was 0.021. This indicates that executive incentives in the form of equity did have an effect on the risk-taking levels of the banks in question. Proposition (6) was not valid, based on the negative coefficient share value. This indicates that, as equity value in the executives' possession increases, the z-score will decrease and hence, risk-taking will increase.

In summary, the research points to the fact that executives have in fact been remunerated in terms of equity. However, the results indicate that this may not have enticed the executives to take on more risks. Even so, since there is controversy regarding this matter, it is recommended to link executive remuneration to debt. However, research has indicated that shareholders may not be able to commit to design compensation contracts in such a manner. The theme of executive remuneration hence remains one most definitely open for discussion and further research.

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## CHAPTER 4

### Conclusion and Recommendations

#### 4.1 SUMMARY AND CONCLUSION

The behaviour of large financial institutions as well as their dense interconnectivity with the economy ultimately resulted in the credit crisis of 2007 – 2009. This behaviour consisted of excessive borrowing, lending and investments incentivised by a series of significant economic and regulatory factors, and were interconnected through a range of transaction structures derived from well-understood techniques of securitisation.

In addition, it is believed that executive incentives paved the road for excessive risk-taking, as managements' interests were not aligned with those of shareholders. Executives were free to take on as much risk as they deemed necessary to provide high returns, claiming to be in the shareholders' interest, however, when the credit crisis struck it was the taxpayers who had to support distressed financial institutions. As is evident, poorly-incentivised remuneration structures, which encourage excessive risk-taking had strong ties to the credit crisis. Close alignment between risk and reward, which includes the use of variable remuneration, can however contribute to the safety and soundness of firms and the stability of the financial system.

As was proved during this research, the dense interconnectedness of the financial system and the major systemic risk it poses emphasises the importance of sustainability in this industry. Furthermore, the financial system has the ability to crash the global economy if not effectively regulated. The importance of early detection in bank distress thus became clear. Consequently, some developed countries have advanced their own early-warning statistical models. Such models may be grouped into two categories, only one of which formed part of this study, namely accounting-based measures.

The primary objectives of the researcher was to identify and evaluate the impact that executive incentives in the form of equity had on risk-taking, as opposed to executive incentives in the form of cash. This was performed by means of accounting-based measures. The quantitative analysis was based on z-scores as a measure of risk-taking. Based on previous studies, it was found that z-scores had good predictive ability to identify bank distress, hence the reason for

its significance in this study. A high z-score indicated a relative low level of risk, whereas a low z-score indicated a high level of risk.

Aspects such as the growing concern of “too big to fail” banks were raised, which pointed to the importance of sustainability in banking and were discussed with the unique nature of the banking industry in mind. Furthermore, as excessive risk-taking was the ultimate cause of the credit crisis, the measurement thereof was also detailed. The regulation of remuneration and the incentive system with reference to the principal-agent theory was also analysed, with the UK being used as a base country. Lastly, it is evident that though there have been some improvements, there is an ongoing international debate with regard to remuneration.

It became evident that sustainability was not only important for the global economy to flourish, but in particular in the banking industry, since this system is characterised by interconnectivity and systemic risk so severe it could lead to the collapse of numerous economies.

In summary, the research points to the fact that executives have in fact been remunerated in terms of equity. However, the results indicate that this may not have enticed the executives to take on more risks. Since there is controversy regarding this matter, the researcher suggests that executive remuneration linked to debt may be a solution. However, research has indicated that shareholders may not be able to commit to design compensation contracts in such a manner. The concept of executive remuneration hence remains one most definitely open for discussion and further research.

## **4.2 RECOMMENDATIONS**

One option may be the possibility of exploring executive remuneration linked to debt, as it guides in such an extensive way, the manner in which financial institutions finance their operations. In addition, qualified board oversight, and robust risk management, which include reference to widely-accepted standards should not be neglected. Furthermore, the adequacy of corporate governance in the financial industry should be re-examined in these key areas in order to judge whether additional guidance or clarification is required.

## **4.3 CONTRIBUTION**

With this study, the researcher contributes to the literature in various ways. Firstly, emphasis was placed on the unique characteristics of the banking industry and the immense systemic risk



that such an interconnected industry poses was stressed. Secondly, the numerous remuneration and incentive systems currently in place, was highlighted. Current theories regarding the manner in which risk-taking is affected by executive remuneration in the form of equity holdings, were contradicted. The effectiveness of the z-score as a predictor of large bank risk-taking was also emphasised during the research. As the public is most affected by banking behaviour, as a result of it being so interlinked with the economy, and they do not fully understand the functioning of the banking industry, they will by no means accept risky behaviour by banks. Finally, it was briefly noted that executive remuneration should be linked to debt and it should be tied to the bank's credit default swaps, hence, a different manner in which remuneration could be calculated, which may lead to lower risk-taking, was suggested.

#### **4.4 FINAL STATEMENT**

The importance and certainly the relevance of not only risk management, but also corporate governance, cannot be overstated. As the financial industry plays such a substantial role in the global economy, its sustainability becomes significant. In addition, as this sector poses such great systemic risk and the ability to cause not only economic recessions but –depressions, aspects such as excessive risk-taking, believed to be the cause of the recent recession, should be closely scrutinised. If any form of executive remuneration leads to incentivised risk-taking, it should be addressed. Even though there have been numerous amendments to some acts there is certainly more that can be done to ensure that sustainability of this sector in particular remains top priority to most risk managers.

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