



The Governance Effects of Credit Rating Changes

- A Study of the European Banking Market

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		Subject:	Business Administration and Economics
		Level and semester:	Master Degree, Spring 2013

Preface

First of all, we would like to inform the reader that this master thesis is a result of a our ambition to combine two different specializations, namely Business Administration and Economics. It is our hope that this attempt have contributed by providing transboundary enrichments for the two different specializations.

Further, we want to extend a big gratitude to our supervisors Magnus Willeson and Håkan Locking for the support and guidance during the process of implementing this master thesis.

In final, we want to express our gratitude towards Standard and Poor's for a pleasant reception and open access to the credit ratings database *S&P RatingsDirect*.

Växjö, 23 of May, 2013

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Abstract

Master Thesis in Business Administration and Economics, School of Business and Economics at the Linnaeus University, 2013.

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Title: The Governance Effects of Credit Rating Changes - A Study of the European Banking Market

Background and problem: Recent banking and financial crises has undoubtedly stressed the importance of a sound and well-functioning banking system. The banking industry is in critical need of strong governance stemming from their opaque and complex business along with the high social costs incurred in the event of bank failure. Previous research has shown that credit rating changes serve as a governance mechanism on the U.S. banking market, affecting real economic decision-making. However, no existing research has been conducted in an European context, rendering the objective of this thesis.

Objective: The objective of this study is to examine the governance effects of credit rating changes on banks within the European banking market.

Methodology: The objective of this thesis is achieved by using a novel and comprehensive data set comprising credit rating changes and financial accounting variables of 202 banks on the European banking market between the time period 1997-2011. A quantitative method is implemented to examine banks' financial accounting variables in the event of credit rating changes. In order to measure the isolated effect from a credit rating change, the difference-in-differences econometric approach in combination with a Propensity Score Matching procedure will be conducted.

Conclusions: The results from this research provide numerous evidence that credit rating changes have consistent governance effects on the European banking market. In the event of a credit rating downgrade, banks on the European banking market decrease in size and set aside more capital as reserves for non performing loans. In the event of a credit rating upgrade, banks increase in size and re-allocate assets, providing evidence that these banks have a more optimistic view of their financial conditions. The findings in this thesis are in line with previous research on the U.S. banking market, however, banks on the European banking market seems to have, on average, a more conservative attitude towards risk-taking in the event of a credit rating change.

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1. Introduction

The introduction chapter presents an overview of the topic and begin by explaining the importance of monitoring and governance of banks as well as credit rating agencies role as a governance mechanism. The overview is followed by a problem discussion, which leads down to the objective of this thesis.

1.1 Overview

During the last decades, the world has experienced a vast number of financial and banking crises. Rochet (2008) points out that research has identified a number of 112 systemic banking crises in 93 different countries and 51 borderline crises in 46 different countries between the late 1970s and the mid 2000s. These numbers perfectly illustrates the impressive number of countries who have faced severe banking problems and crises in modern times (Rochet, 2008). The most recent global financial crisis that arose in 2007 has undoubtedly stressed the importance of a sound and well-functioning banking system. The crisis was initially caused by excessive bank lending to less creditworthy borrowers, where these loans became an underlying asset in various complex bond package. The lack of information regarding who held the bad bond packages triggered a chain of uncertainty in the global financial market, which finally led to a large-scale banking panic with following failure of the prestigious Lehman Brothers, Bear Sterns and Northern Rock.

The fear and threat of banking crises can nowadays, perhaps more than ever, be considered as a topical issue, especially within Europe. The European banking industry is littered by a constant stream of reports and news about one fragile bank after another. In recent time, countries like Ireland, Greece, Iceland, Spain and Cyprus have been marked by weak and mismanaged banking systems, resulting in massive international emergency loans. The latest in the series of European countries with worrying banking problems is Slovenia, where the Organisation for Economic Co-operation and Development (OECD) reported that the country, if no measures taken, may face a severe banking crisis stemming from excessive risk-taking, weak governance and a lack of efficient monitoring (www.OECD.org).

Palvia and Patro (2011) explains that recent financial crisis has given rise to questions regarding how to identify and sanction excessive risk behaviour in financial institutions. Regulation and supervision by authorities, also known as the regulatory discipline, are a key element in the governance of banks and prone to conduct monitoring and disciplining in the banking industry (Billett, Garfinkel & O'Neil, 1998). By doing so effectively, banks can be

operated in a responsible course, balancing their risk exposures (Billett, Garfinkel & O'Neil, 1998). However, Rochet (2008) argue that the increasing complexity in financial institutions and banking activities results in lacking abilities for authorities to closely monitor each and every banking operation. In European context, regulation and supervision, along with functions like safety net supports, are fundamentally structured on a national level, with just a few transnational features (Niemeyer, 2006). This structure is essentially based on a system where banks are assumed to be operating within national borders. However, the banking industry in Europe has faced major changes during the last decades, where cross-border mergers and internationalizations of banks operations have created supervisory problems for national authorities. Such cross-border activity first of all requires comprehensive coordination amongst authorities in different countries, which include extensive information sharing, something that may prove to be difficult. Further, conflicts of interest and questions of accountability arise between different authorities, since every country aims at ensuring their own interests. (Niemeyer, 2006) Palvia and Patro (2011) further argue that even though the regulatory discipline have access to a vast amount of private information about banks' condition, national governmental authorities posses limited resources, which in turn may lead to inadequate supervision and examinations.

Scholars and regulators recognise that, besides prudential bank supervision by authorities, markets can be regarded as a complementary supervisor of financial institutions, also known as market discipline (Flannery and Sorescu, 1996; Berger, Davies and Flannery, 2000; Bliss and Flannery, 2002; Palvia and Patro, 2011). This is clearly evident in the widely accepted regulatory framework 'the New Basel Accord'¹, developed by the Basel Committee on Banking Supervision. The concept of market discipline consists of the ability for market participants to monitor and influence firms on the financial market (Bliss and Flannery, 2002). Market participants have fundamentally great incentives to monitor banks' risk behaviour, considering the fact that they will bear a large amount of the costs in the event of excessive risk-taking (Palvia and Patro, 2011). However, different circumstances, e.g. costly monitoring, asymmetric information, the complexity in the banking industry and the existence of governmental safety net support, diminishes or erodes market participants incentives and ability to efficiently monitor and discipline banks (Bliss and Flannery, 2002; Iannotta, 2006). Further, Bliss and Flannery (2002) argue that various market participants have different incentives, resulting in lacking congruence of objectives regarding monitoring and disciplining. Equity-holders may prefer high risk-taking since they have limited liability and benefit from all

¹ The New Basel Accord consists of an extensive amount of measures, aiming at strengthening regulation, supervision and risk management in the banking industry (www.bis.org).

upside gain. In contrary, debt holders are typically risk averse and more concerned about the risk of default than the potential upside gain. (Bliss and Flannery, 2002)

Due to dispersed market participants lack of information and their general inability to assess and monitor firms, together with regulators increased focus on quasi-regulation², *gatekeepers* have long been used to assist markets and regulators in governing firms (Coffee, 2004). The term gatekeeper was originally introduced by Gilson and Kraakman (1984) and was later defined by John C. Coffee, JR as "a reputational intermediary who pledges its considerable reputational capital to give credibility to its statements or forecasts. Auditors, securities analysts, and credit ratings agencies are the most obvious examples." (Coffee, 2005:199) In other words, a gatekeeper can be seen as an independent watchdog and monitor who has been structured to prevent irregularities and misstatements. By not pledging its considerable reputational capital, the gatekeeper closes the gate in order to prevent the issuer from entering the capital market. The auditors pledge that firms' financial statements display a view of the reality; the securities analysts interpret firms' statements in order to make predictions about the future of the firms'; and finally the credit rating agencies (henceforth CRA) provide a rating of the firms' creditworthiness. (Coffee, 2006) CRAs stands out among these gatekeepers because of their increasing importance and influence in recent times (Boot, Milbourn & Schmeits, 2006; Apergis, Payne & Tsoumas, 2012; Gropp and Richards, 2001; Güttler and Wahrenburg, 2005) The following quotation from Thomas L. Friedman highlights the important role of CRAs in today's economic environment:

There are two superpowers in the world today in my opinion. There's the United States and there's Moody's Bond Rating Service. The United States can destroy you by dropping bombs, and Moody's can destroy you by downgrading your bonds. And believe me; it's not clear sometimes who's more powerful.

(Thomas L. Friedman, 1996)³

Coffee (2006) acknowledge this quotation and in his opinion, Friedman only marginally overstates the true importance and impact from CRAs. CRAs essential function stems from their achievement of information economies of scale, where they help in resolving the information asymmetry that plagues the relationship between lenders and issuers of debt obligations (Apergis, Payne & Tsoumas, 2012). Ratings are based on firm specific and macroeconomic conditions, which result in an assessment of the issuers ability to meet their

² "Quasi-regulation is defined as the range of rules, instruments and standards whereby government influences business to comply, but which do not form part of explicit government regulation." (www.pc.gov.au)

³ Thomas L. Friedman is a respected American author and reporter for The New York Times, awarded of three Pulitzer Prizes.

outstanding debt obligations. This assessment of the issuers creditworthiness is partly based on private information, that issuers share with the CRA, and also in part by public available information (Gonzales et al., 2004). In their role as a gatekeeper, CRAs compresses a large amount of information into one sign e.g. AAA or Bb1. In other words, CRAs is a provider of an easily understood framework that help market participants compare the credit quality of firms, sovereigns and obligations (Cantor, 2001).

In addition to CRAs primary function as a provider of information about the creditworthiness of obligations, firms and sovereigns, scholars has long since been concerned about the ability for external parties, such as CRAs, in complementing, and helping, regulators and markets in monitoring and disciplining banks' behaviour (Berger, Davies & Flannery, 2000; Flannery and Sorescu, 1996). Historically, credit ratings has been used by unsophisticated investors, in contrast to nowadays, when ratings are used by sophisticated investors, fund managers, as well as in ratings-based regulations in the banking industry such as in the Basel Accord (Cantor and Packer, 1995; Gonzalez et al. 2004). CRAs are, given their incentives, a suitable complementary monitor to regulators and supervisors in the banking industry, since both parties, in their monitoring role, primarily is concerned about banks excessive risk behaviour and the probability of default (Berger, Davies & Flannery., 1998). Further, banks possess a comprehensive amount of privately-held information, both about their customers, but also about their own financial condition and risk profile. It is therefore of great interest and importance for market participants to obtain as much of this privately-held information as possible. CRAs has the ability to obtain, and provide markets with, privately-held information about banks' conditions, helping market discipline in conducting a more efficient monitoring. (De Ceuster and Masschelein, 2003)

In summary, it is the regulatory discipline's vast employment of ratings in bank regulation and the market discipline's need for right information that creates two important functions of CRAs in governing banks. In addition, scholars argue that CRAs also has evolved from a mere supplier of information towards an forceful governance mechanism⁴ in itself, affecting firms managerial decisions such as debt and equity financing decisions along with firms risk-taking behaviour (See e.g. Tang, 2009; Bannier and Hirsch, 2010; Boot, Milbourn & Schmeits, 2006; Kuang and Qin, 2009; Kang and Liu, 2009; Kisgen, 2006; Graham and Harvey, 2001) However, there is a lack of academic research regarding credit ratings' impact and importance as a governance tool in the banking industry, which may fuel an unjustified excessive dependence on CRAs as a effective mechanism in governing banks.

⁴ A corporate governance structure comprises numerous different mechanism which aims at disciplining firms and managers (Jansson et al., 2010). In this research, a corporate governance mechanism is regarded as party having the ability to influence and discipline managerial decision-making and risk-taking behaviour in banks.

1.2 Problem discussion

This thesis has its starting point in the numerous amount of studies finding evidence that CRAs has the role as a forceful governance mechanism. Boot, Milbourn & Schmeits (2006) find evidence that CRAs has real impact through their monitoring relationship with firms. In addition, Kisgen (2006) and Graham and Harvey (2001) show that managers are concerned about credit ratings and find evidence that credit ratings have a direct effect on capital structure decisions in firms. Further, both Kuang and Qin (2009) and Kang and Liu (2009) argues that CRAs, together with other governance mechanisms, have a significant effect on firms managerial decisions which leads to a monitoring of risk-taking and reduction of agency conflicts in firms. In final, Tang (2009) also find evidence that firms financing, investment and leverage decisions are affected by credit rating changes.

However, these studies above have put focus on examining credit ratings effect on corporates. This is also consistent with the general academic landscape regarding research on corporate governance, where most studies focus on firms operating in non-financial industries (Kern, 2006). In addition, Macey and O'Hara (2003) argue that even though academics in economics have focused significantly on research in governance, there exist an overall deficiency of research regarding governance in the banking industry and stresses the need for more derived attention towards the subject. This fact is a bit staggering since the banking industry is in critical need of strong governance because of their opaque and complex business along with the great social costs involved in excessive risk-taking (Kern, 2006).

Tang (2009) argue, based on his findings on CRAs impact on corporates, that more attention is needed regarding CRAs role as governance mechanism. Consequently, the lack of research on governance within the banking industry, along with the stressed need of evidence regarding CRAs role as an efficient governance mechanism invites to more attention and research on the subject. Schweitzer, Szewczyk & Varma (1992) argue that credit rating changes may affect banks differently compared to firms since they operate in a highly regulatory environment. This is due to the fact that highly regulated markets have access to more information, which in turn diminishes the impact of the new potential information provided by CRAs. In addition, Levine (2004) argue that the vast existence of regulation in banking industry, along with banks opaqueness, stresses the need for a separate analysis of governance in the banks compared to corporates.

To our knowledge, Apergis, Payne & Tsoumas (2012) is the only research that explicitly studies the governance impact of credit rating changes on banks. This research examines the

effects from credit rating changes on U.S. banks' financial accounting variables on a one and two year horizon, in order to investigate the effectiveness of CRAs as a governance mechanism. The results from this study indicates that in the short run, credit ratings, seems to affect banks' behaviour. However, in the long run, the role of credit ratings, as a complementary monitor to regulators and supervisors, seems to be overstated. These findings suggests that in the short run, banks take actions in accordance with the credit rating change, but in the long run, they may ignore signals from rating changes, increasing their risk-taking behaviour. If banks take measures in accordance with a credit rating change, it may be justified that they have gained increased influence. This may propose that parties such as government regulators and supervisors should rely and focus more on credit rating changes in order to distinguish between sound, well-functioning banks, and imprudent, mismanaged banks. Regulators and supervisors can thereby devote more attention and resources to mismanaged banks in order to achieve the aim of a sound and well-functioning financial system. However, if parties such as regulators and supervisors rely on CRAs as an effective governance mechanisms and banks do not take measures in accordance with e.g. a credit rating downgrade, as found in the U.S. on a longer horizon, there is a great threat against the financial stability if no parties monitor downgraded banks' risk-taking behaviour.

Since Apergis, Payne & Tsoumas (2012) is the first of it's kind in academic literature and the geographic focus is on U.S. Banks, there is a stressed need for a complementary research using European data. A study of European banks is justified by the fact that the U.S. banking market and the European banking market differs in several ways such as the difference in size and reliance on credits supply from banks, ownership structure and governmental ownership (La Porta and Shleifer, 2002; La Porta et al., 1998; EBF, 2010; EBF, 2011). The characteristic ownership structure of European banks differ from the structure of U.S. Banks. La Porta and Shleifer (2002) provide data regarding worldwide governmental banking ownership and finds that banking ownership in European countries have a higher degree of governmental ownership compared to the U.S.. This is of interest based on two different perspectives. One the one hand, academic research has shown that government-owned banks have a lower default risk, but a higher risk-taking incentive compared to privately-held banks (Iannotta, Nocera & Sironi, 2012). On the other hand, Faccio, Masulis & McConnell (2006) argues that government-owned banks benefit from stronger protection than privately-held banks, due to the fact that banks with government connections have a greater probability of being bailed out. As regards to the size, the European banking market is the largest in the world with approximately three times the assets compared to the US banking market. Further, banks in Europe has a far more important role in supplying credit to the market. While banks account for just above one-fifth of the credit supply in the U.S., banks supply more than three-quarters

of the aggregated credit supply within Europe. (EBF, 2010; EBF, 2011) In addition, not only the banking market differ between the two geographic regions, but also the situation of the gatekeepers in the U.S. compared to countries within Europe. Coffee (2006) states that a governance system that works in one environment may fail in another, a view that is also supported by Gedajlovic and Shapiro (1998), Fligstein and Choo (2005) and La Porta et al. (1998). This indicates that the role of auditors, securities analysts, CRAs and lawyers vary between different regions and different settings.

Gropp and Richards (2001) argue that CRAs role has been criticised in Europe on the basis that credit ratings lack penetrative power in Europe compared to anglo-saxon countries like the U.S. Therefore, CRAs increased importance in monitoring banks may create an unfavourable setting for countries that lack a long tradition of using credit ratings (Gropp and Richards, 2001). Taking this into consideration, a study of credit rating changes impact on banks, that is being conducted in this research, may be especially substantial in an European setting compared to the U.S.. Further, a study using European data can serve as an important comparison to earlier research using U.S. data, examined by Apergis, Payne & Tsoumas (2012). By comparing studies from these two different settings, it is possible to examine how sensitive the European banking market is to changes in credit ratings compared to the U.S. banking market. The differences between the two banking markets, along with the different roles of gatekeepers in various settings, implies that other results and new insights may be obtained by a complementary study of European banks. *The objective of the thesis is to examine the governance effects of credit rating changes on banks within the European banking market.*

This research is of great importance since credit ratings has gained an increased importance in supervision and governance of banks. To our knowledge, there exist no previous research examining the effects of credit rating changes explicitly on banks within the European banking market, making this research unique. The study will contribute by broadening the insufficient academic field on the issue and shed some light on CRAs governance impact on banks within the European banking market. Due to the fact that only one existing study, focusing on the U.S. market, explains how banks is affected in the event of a credit rating change, our study becomes an important and great empirical contributor to the discipline. The findings in this thesis will help in understanding how banks is affected and how they react in an European context, compared to earlier research carried out in the U.S.. This research will therefore have the possibility to identify differences and similarities of credit ratings effects on the two different banking markets. The results can either strengthen and confirm or complement the earlier research, providing contributions that can be used in further academic research on the topic. Further, this research employ a sample period of 15 years which

extends over periods of lower economic activity as well as periods with higher economic activity. By estimating the governance effects from credit ratings over the whole sample period, it is possible to measure the average effects on the European banking market over time. Further, by also estimating the effects over different time periods e.g. periods of higher economic activity and lower economic activity, it is possible to examine if there are certain differences in credit rating changes effects stemming from an asymmetric distribution of the effects over time.

Further, in practice, different parties can benefit from this research due to its ability to render evidence of how the average bank on the European banking market act and how it is affected in the event of a credit rating change. With this knowledge, one can be able to make predictions of the effects from a credit rating downgrade or upgrade today, in order to be prepared for the forthcoming development of affected banks. First of all, market participants can obtain a greater knowledge regarding how banks is affected and how banks react in the event of a credit rating change. This study will provide a better basis for market participants' judgement of banks in the event of credit rating changes. Secondly, policy makers and supervisors within Europe can utilise the results from this research. If the results from this study show that a credit rating change have a governance effect on the average bank on the European banking market, policy makers and supervisors may consider to incorporate CRAs even more in the governance scheme of banks. In contrary, if the results show no significant effects from a credit rating change, these parties maybe ought not rely on credit ratings far too much when it comes to the governance of banks.

1.3 Disposition

Chapter 2 - Methodology

This chapter explains the research approach of the thesis. It will consist of arguments about the methodological choices that has been taken in order to fulfil the objectives of the thesis. In this research, a deductive reasoning will be performed together with a quantitative research design.

Chapter 3 - Credit Rating Industry

This chapter provides the reader with a foundation of the credit rating industry and the basics about credit ratings and credit rating changes. Moreover, S&Ps rating process is explained and the chapter ends with a discussion of the general criticism facing credit rating agencies.

Chapter 4 - Theoretical Framework and Literature Review

The theoretical framework and literature review aims at presenting relevant theories and recent academic research within the topic of this thesis. The chapter will begin by explaining the unique information environment in the banking industry and the asymmetric information and agency problems that plague the banking industry. Thereafter, previous research regarding the governance of banks, together with credit rating agencies role as a governance mechanism will follow.

Chapter 5 - Empirical Methodology

This chapter presents the methodology that has been undertaken in order to examine the objective of this thesis. It will contain arguments for the choice of sample, variables, data collection and econometric model. The chapter will end with a presentation of the descriptive statistics.

Chapter 6 - Results and Empirical Analysis

In the sixth chapter, the results from the empirical research will be presented, interpreted and analyzed. The aim of the analysis is to find evidence that can help explain the objective of the thesis.

Chapter 7 - Conclusions

In this last chapter, the results from our analysis will be summarized and conclusions will be drawn based on the findings of the analysis. The possible implications of the thesis will be presented, as well as suggestions for further research.

2. Methodology

This chapter presents explanations and arguments for the methodological choices that has been taken in order to proceed the objective of this thesis. The methodology explains the research approach and research design taken in this study, along with a presentation of information sources as well as source criticisms.

2.1 Classification of the Research

Ethridge (2004) argue that the classification of research, with regard to thoughts, actions and processes, are elemental in order to understand the subject matter. There exists different classifications of research, but the most holistic classification is the one between basic research and applied research. Basic research aims at identifying and determine basic facts and relations within a subject, while applied research aims at solving a specific problem. Further, a more specific classification can be made within the two proposed classifications above. Basic research incorporates disciplinary knowledge, which aims at improving a specific discipline or subject. In contrast, applied research incorporates subject-matter knowledge and problem-solving knowledge. Subject-matter knowledge aims at both improving a discipline, but also to contribute outside the discipline by providing new knowledge that is usable for a specific organisation or institution. Further, problem-solving knowledge aims at empirically solving a specific problem to e.g. any organisation or institution. (Ethridge, 2004) This study can be classified as both basic research and applied research, since it aims at both improving the knowledge of the governance effects derived from credit rating changes on banks, but also to contribute to new knowledge and insight that may be usable for external parties such as legislators and supervisors.

2.2 Research Approach

In order to successfully accomplish the purpose of this thesis, establishing reliability of knowledge is of great importance (Ethridge, 2004). In this study, a deductive reasoning is performed with the use of theoretical logics from the existing literature about CRAs and their impact on firms and banks (Bryman and Bell, 2005; Saunders, Lewis & Thornhill, 2009; Ethridge, 2004). The objective of this study will then be subject to testing, with the use of data, in order to find evidence regarding the objective (Saunders, Lewis & Thornhill, 2009).

In contrast to deductive reasoning, an alternative research approach would be inductive reasoning. In that case, the study would be based on observations, rather than theoretical

logics, which would result in conclusions and a formulation of theory (Bryman and Bell, 2005; Saunders, Lewis & Thornhill, 2009). Because of the existing literature on the topic, and the limited scope of this thesis, it becomes suitable to use the existing theory, instead of an inductive reasoning, where the development of new theories would arise only from observations.

2.3 Research Design

To implement this study, a quantitative research design is conducted in order to obtain results of the governance effects of credit rating changes on banks within the European banking market. A quantitative research design aims at performing measurements of data using statistical and analytical techniques (Patel and Davidson, 2011). Within a quantitative research design, there is a possibility to conduct either a survey research, using data from structured interview and questionnaires, or an experimental research, using existing data on financial variables and credit ratings. An experimental research is suitable in this study because of the availability of data on credit rating changes and financial variables, and because of its ability to examine if a specific treatment affects an outcome. (Creswell, 2009)

In contrast to a quantitative research design, it would be possible to conduct a qualitative approach, which aims at analysing 'soft data' collected from e.g. in-depth interviews. A purpose for using a qualitative approach would be to achieve a broader and deeper understanding of the topic. (Patel and Davidson, 2011) With regard to this study, an alternative qualitative approach would be to conduct in-depth interviews with representatives from banks in Europe, in order to achieve the broader and deeper understanding of the effects from credit rating changes. However, such study would be extremely time consuming and it wouldn't provide the robust and statistical answers that we request. Because of our wish to achieve generalizable and statistically significant answers on our objective, by using a large data sample, the benefits outweighed the disadvantages with the quantitative research design.

In order to conduct a quantitative research design, a large amount of data is needed. Since the data for this research is collected from two different databases, S&P's ratings database and Bankscope, the dataset in this research is considered to contain secondary data, collected by external parties (Bryman and Bell, 2005). In conducting a research of limited extent, secondary data has an advantage in respect of the reduced costs in the form of time and money, compared to primary data, which can be considered expensive and time consuming (Etridg, 2004). Primary data is original data collected specifically for the purpose of the research e.g. from surveys and interview. This data has an advantage in the researchers ability

to collect the specific data needed for the specific purpose of a study. (Saunders, Lewis & Thornhill, 2009) An approach with primary data from structured interviews and questionnaires is not used because of its inefficiency and the high costs involved in the approach. In our case, collecting primary data from every single bank in our sample would obviously be very resource consuming. Bryman and Bell (2005) argue that by using existing data, more time and resources can be dedicated to the analysis of data, instead of the data collection itself. Interviews and questionnaires would also be likely to reduce the sample size due to the unlikelihood of a 100 % response frequency (Bryman and Bell, 2005). By using existing data, we are guaranteed a final sample consisting of a large amount of rated banks on the European banking market. We have also identified the difficulty of finding the proper correspondents in European banks, that also has the required knowledge and insight that is needed to answer questionnaires regarding credit ratings impact on the bank. Further, we aim at finding answers of the true effects in the event of a credit rating change, something that could differ from the correspondents answers. With these arguments in mind, the advantages from collecting secondary data outweighed the advantages from collecting primary data.

2.5 Sources of Information

In order to develop a theoretical framework and literature review, a collection of literature has been conducted with focus on CRAs, banks and the interactions between the two parties. The collected literature will consist of research papers, books from acknowledged authors, along with facts and figures from different relevant organizations and banks. The search for relevant literature has been conducted in databases such as Onesearch and Business Source Premier using keyword such as Credit Rating Agencies, Credit Ratings, Banking industry, Gatekeepers, Monitoring and Asymmetric Information and Governance.

2.6 Source Criticism

In order to achieve reliability in our research, we have adopted a critical approach in searching and using different sources. Research papers used in this study has been verified by assuring that the journals, in which the papers are published, are peer-reviewed. This has been conducted by verifying all journals in the database Ulrichweb. Journals that are peer-reviewed has been scientifically evaluated by professionals, assuring that the research papers in the journal are suitable for publication. Although, a number of sources such as working paper and books, used in this study, has not been scientifically evaluated or published in a scientific journal. These sources of information has been used in light of their important contribution to the field of research and to our study. However, when using these sources of information,

we have verified that the material are widely used and cited by other scholars in the field, assuring its reliability.

Further, regarding data used in this research, Ethridge (2004) states that the research can not be more reliable than the collected data it builds on. Further, Bryman and Bell (2005) argue that secondary data can be considered as high quality data if it is collected from reliable sources. However, one must be careful with the use of numeric data, since it's not always error-free (Ethridge, 2004). Since the data provided in the databases Bankscope and RatingsDirect consist of unparsed raw data, we consider the sources as reliable and of high quality. Further, Bankscope have been independently reviewed in order to ensure that its content is of high quality. (www.bvdinfo.com)

3. Credit Rating Industry

This chapter is intended to give the reader an introduction to the credit rating industry, as well as an introduction to credit ratings and S&P's rating process. The chapter will end with a section about credit rating changes and the criticisms facing CRAs.

3.1 Credit Rating Industry

The rating industry has a history that stretches more than 150 years back in time with the establishment of a mercantile rating agency. However, the real expansion of credit ratings did not begin until 1909, when John Moody issued ratings on U.S. railroad bonds. As a capital market later was developed and globalized, an increasing demand for independent assessments of firms creditworthiness emerged. (Cantor and Packer, 1995) Credit ratings meaningfulness at the time was to provide credit assessments of firms, giving opinions of which firms that were high-risk or low-risk firms (White, 2007). Initially, the CRAs received their revenue from the customers who used the rating assessments, but this later changed due to the simplicity for customers to copy and distribute the ratings. Nowadays, rating assessments are requested by the rated firm itself and therefore paid for by their own funds. (Cantor and Packer, 1995)

In the years following 1909, Moody's faced competition by the founding of Poor's Publishing Company in 1916, Standard Statistics Company in 1922 and Fitch Ratings in 1924. Poor's Publishing Company and Standard Statistics Company later merged in 1924, establishing Standard and Poor's. (Cantor and Packer, 1995) Nowadays, these three CRAs, Moody's, Standard & Poor's and Fitch Ratings account for almost 90 % of the worldwide ratings market. During the mid 2000s, these major market participants rated over 8 trillion U.S. dollar worth of outstanding securities, giving an indication of their importance in the financial markets. (White, 2007) In the year of 2011, Standard and Poor's, daily published almost 2 400 ratings with the help from 1 400 analyst in 23 countries, making S&P the largest CRA in the world (McGraw-Hill, 2011).

Around 98 % of issuers, in a U.S. context, are willing to pay for a credit rating (Kliger and Sarig, 2000). This high fraction stems from the credit ratings possibility to reduce asymmetric information and help issuers in entering the capital market, which can both contribute by broadening issuers financing possibilities as well as lowering their financing costs (Boot, Milbourn & Schmeits, 2006). Coffee (2006) explain the role of the CRA, from an issuers standpoint, as types of certification bodies, not particularly different from the Michelin restaurant ratings. An easily understood rating, substantially a rather good rating, give legitimacy for the rated body, which creates value both for the body, but also for its users

(Coffee, 2006). However, there exists a complexity behind the easily understood credit rating signs, which makes it subject to a paradox. Morgan (2002) highlights that the existing opaqueness in banks makes it difficult to perform an analysis of banks' asset quality and the lack of an accepted rating process gives the analysts a wide margin for their own judgement, which may lead to a biased rating.

3.2 Credit Rating Process

S&Ps states that "a Standard & Poor's credit rating is our opinion of the general creditworthiness of an obligor (issuer credit rating/corporate credit rating), or the credit risk associated with a particular debt security or other financial obligation (issue rating). A rating does not constitute a recommendation to purchase, sell, or hold a particular security." (S&Ps, 2008:9). Credit ratings can be requested and assigned to either a firm, a sovereign or a specific obligation issued by a corporation. The objective of the rating, and the process underlying the rating, differ depending on the requesting party above. A credit rating of a specific obligation issued by a corporation, also referred to as an *issue credit rating*, is an assessment of the capacity of the corporation, with respect to the specific obligation, to meet its financial commitments. Further, credit ratings of a firm or sovereign, also referred to as an *issuer credit rating*, is an assessment of the overall and general creditworthiness of an issuer. (S&P, 2012)

Further, in addition to the separation of issue and issuer credit ratings, S&Ps also distinguish between a short-term and a long-term credit rating. A short-term credit rating is assessed with focus on the near future, around one year. In contrast, the long-term credit rating is assessed with respect to a longer time period. The aim of a long-term rating is to decrease the volatility in credit ratings stemming from incidental events. (S&Ps, 2012) Since this research employ S&Ps long term issuer credit rating of banks on the European banking market, it is justified to put focus on their assessment and rating process in assigning an issuer credit rating.

Normally, the process of assigning a S&P issuer credit rating begins with a request from the undertaking firm wanting a credit rating (S&P, 2011). Thereafter, S&Ps assembles a group of analysts that will be responsible for the assessment. In detail, when assessing a bank, the analysts use S&Ps Bank Rating Methodology. This methodology first of all include macro economic factors such as the economy and policy of the country in which the bank is located, along with industry-specific risks such as regulation, competitive dynamics and funding possibilities. Thereafter, several bank-specific factors are assessed such as banks' business position, capital and earnings, risk position and banks' funding and liquidity. Finally, S&Ps take into account if the rated bank enjoy support from external parties such as other entities in a business group or governmental support. After the assessment is finished, the responsible

analysts provide a credit rating recommendation, which is reviewed by a special rating committee. The rating committee has the final say and determine the final credit rating that will be assigned to the bank. After deciding the credit rating, S&Ps provide a pre-notification to the rated bank before the credit rating finally is published through a press release. In other words, a credit rating assessment is a comprehensive analysis of the rated bank and its surroundings, taking into account several different factors and considerations. (S&P, 2011) As documented in Table 1 below, S&P use a rating system ranging from AAA down to D. There is an important border between the rating BBB and BB that distinguish between Investment Grades, above BBB, and Speculative Grades, below BBB. The border between the two grades is of importance because some market participants, e.g. fund managers, are not allowed to invest in entities with a speculative grade. (S&P, 2012)

Table 1. *Standard and Poor's Credit Ratings Definition of Long Term Issuer Credit Rating*

Credit Rating	Definition
AAA	Extremely strong capacity to meet its financial commitments
AA	Very strong
A	Strong
BBB	Adequate
BB	Marginal
B	Weak
CCC	Very Weak
CC, C	Extremely weak
D	Failed to pay one or more of its financial commitments

Source: S&P, 2012

3.3 Credit Rating Changes

After assigning and issuing a credit rating, S&P constantly monitor and tracks the development and performance of all their rated banks (S&Ps, 2013). The initial credit rating assigned to a bank is not constant, instead, the credit rating is constantly monitored and may change over time. The goal of this monitoring is to detect factors which can affect banks' credit rating. S&P conduct credit rating changes in the event of changing circumstances such as when new information, which can affect the rating, come to their attention. This can include new industry trends, changing performance of the issuer, increased risk-taking or

other factors impacting the credit quality of the issuer. In the event of a credit rating upgrade, it is S&P's opinion that the rated bank are less likely to default. In contrary, in the event of a credit rating downgrade, it is S&P's opinion that the rated bank face a higher likelihood of default. S&P highlights that their opinion of a bank's credit quality is only one of many factors that investors should take into account when investing. An issuer credit rating can not be seen as an investment recommendation regarding an obligation or a security of a firm. (S&P's, 2013) Investment recommendations and assessments of firms equity, resulting in a provision of information that comprises both public and private information, is instead the task of another gatekeeper, namely the securities analysts.

3.4 Criticism against Credit Rating Agencies

Although it is obvious that CRAs and their credit ratings has gained an increased importance in recent times, questions remain on whether their important role is justified. Brealey and Myers (2003) states that CRAs influence and importance most certainly is exaggerated and that credit ratings equally follow investors opinion as leading it. In essence, Boot, Milbourn & Schmeits (2006) argue that there seems to be a widespread disagreement regarding CRAs economic role and credit ratings meaningfulness. Criticisms has emerged in view of CRAs inability to predict defaults and insolvency as demonstrated clearly during e.g. the bankruptcy of Orange County in the 80s, the Asian financial crisis in the 90s and finally, the most recent bankruptcies of Enron and Worldcom in the 2000s (Coffee, 2006). This give rise to questions regarding the accuracy and timeliness of credit ratings. In the case of Enron; S&P's, Moody's and Fitch Ratings all gave the firm a rating around BBB in the days prior the bankruptcy. Subsequently, even on the same day as Lehman Brothers declared bankruptcy, the investment bank could enjoy an investment grade rating from all of the three major CRAs. (Jeon and Lovo, 2013)

In addition, CRAs often face criticism for three different conditions in the credit rating industry. Coffee (2006) explains that around 95 percent of CRAs revenue is derived from fees paid by the rated firm, giving rise to questions regarding conflict of interests. CRAs has long since adopted policies, such as fixed rates and no incentive-based compensation, in order to prevent a special treatment for certain clients. However, even though this conflict of interest have been subject to pre-active measures and monitoring, the issue should be taken into account when using credit ratings (Coffee, 2006). Further, the high level of market concentration give rise to another critique against the credit rating industry and credit ratings. The major issue with this concentration is the risk for shirking, where CRAs devote less effort and resources in assessing the creditworthiness of firms, obligations and sovereigns compared to a situation with perfect competition (Coffee, 2006). In final, CRAs have historically faced

no specific accountability for their opinions and they have practically been immune from litigations. A fact that is staggering, considering the potential impact and consequence of a credit rating change. However, law enforcement of gatekeepers are evidently on top of the agenda in Europe, with regard to the recent decision by the European Parliament to make CRAs more liable for their ratings. In turn, this will result in greater opportunities for concerned investors to sue rule breaching CRAs. (www.europarl.europa.eu)

Similar problems are also present in other gatekeeper industries such as in the audit industry, however, there is one important factor in which the industries differ. Both in a U.S. and an European context, the increasing use of ratings-based regulation has made regulators certifying CRAs whose ratings are allowed to be used in e.g. capital adequacy rules. These certified CRAs, consisting largely on the three major CRAs, can enjoy regulatory benefits in which their ratings will generate revenues even when performing badly due to the fact that financial institutions are forced to use certified CRAs ratings in their compliance with regulations. (Partnoy, 2006) With a critical attitude, Partnoy (1999) states that "Credit rating agencies have not survived for six decades because they produce credible and accurate information. They have not maintained good reputations based on the informational content of their credit ratings. Instead, the credit rating agencies have thrived, profited, and become exceedingly powerful because they have begun selling regulatory licenses, i.e., the right to be in compliance with regulation. Credit ratings therefore are an excellent example of how not to privatize a regulatory function. Those who advocate privatizing other regulatory functions should heed this warning." (Partnoy, 1999;713) In addition, Boot, Milbourn & Schmeits (2006) argues that the increasing role of CRAs might diminish the roles of other market monitoring mechanisms, which may lead to an excessive dependence on the CRAs. This is also supported by other scholars, who are concerned about whether CRAs increasing role is justified (Brealey and Myers, 2003; Morgan, 2002; Güttler and Wahrenburg, 2005).

4. Theoretical Framework and Literature Review

The chapter will begin by explaining the unique information environment in the banking industry and the asymmetric information and agency problems that plague the banking industry. Thereafter, previous research regarding the governance of banks, together with credit rating agencies role as a governance mechanism will follow.

4.1 Information Environment in the Banking Industry

Banks are black boxes. Money goes in, and money goes out, but the risks taken in the process of intermediation are hard to observe from outside the bank. [...] the opacity of banks exposes the entire financial system to bank runs, contagion, and other strains of "systemic" risk.

(Morgan, 2002:874)

The above stated quotation excellently describes the rather unique information environment present in the banking industry, which highlights the need for strong governance in order to avoid a collapse of the entire financial system. Banks role as a financial intermediate primarily involves three key functions. First of all, banks creates liquidity by transforming liquid liabilities into illiquid assets, held by borrowers. Secondly, banks act as delegated monitors by screening new borrowers and monitoring existing borrowers. Finally, banks provide a payment system, creating possibilities for consumers to make payments. (Diamond and Dybig, 1986; van Damme, 1994; Macey and O'Hara, 2003) The role as a creator of liquidity reflects the possible instability of banks' balance sheet structure, something that differ banks from other firms. Banks' funding generally comprises at least 90 percent debt, provided by bond-holders and depositors, resulting in an exceptional low share of equity. (Macey and O'Hara, 2003) This creates an instability because banks obtain short-term liquid deposits, representing the liability side of the balance sheet and, in turn, these liquid deposits is used when issuing long-term illiquid demand deposits for borrowers, representing the asset side of the balance sheet. Therefore, banks finance illiquid long-term loans with liquid short-term deposits, resulting in a balance sheet time gap between lending and borrowing. This time gap inevitable involves risk-taking, which invites hazards if funds are channeled in an imprudent manner. (Iannotta, 2006)

Macey and O'Hara (2003) explains that a mismatch between assets and liabilities can create problems, which in turn may cause a bank failure with negative externalities. Since banks assets mainly comprises illiquid loans, provided to a large amount of diverse borrowers, banks must assess and monitor their credit commitments in order to avoid payment defaults (Morgan, 1997). Financial intermediates produce an extensive amount of costly information when allocating credit commitments and setting terms, contributing by mitigating the cost of

information-acquisition and monitoring of borrowers (van Daelen and van der Elst, 2010; Boyd and Prescott, 1986). This information is obtained by assessing credit applicants, as well as continuous supervision and monitoring of already entered credit commitments. This is consistent with theories explaining that banks possess a comprehensive amount of information, which primarily comprises privately-held information about credit customers, but also about the banks own conditions. (Berger and Davies, 1998) The unique information environment in the banking industry fuels the issues of agency problems and asymmetric information present in the agency theory.

4.2 Asymmetric Information and Agency Problems in the Banking Industry

Kern (2006) argue that scholars analysing risk-taking behaviour in banking along with divergences of incentives among bank shareholders, managers and creditors use the traditional principal-agent framework present in the agency theory. This is done because of its ability to explain the fundamental problems that may undermine stability in the banking industry and justify the need of governance mechanisms. Because agents, in contrast to principals, are operating within the bank, one can assume that the agents possess more information compared to the principal. This condition give rise to the existence of asymmetric information, where one contracting party possess more information than another. (Pindyck and Rubinfeld, 2009) Together with the agency theory's assumption that every party aims at maximizing their own utility, principal-agent problems arises in the banking industry (Kern, 2006). De Ceuster and Masschelein (2003) argue that banks comprises a vastly complex nexus of contracts, which makes asymmetric information and agency problems far more common in banks compared to other corporates.

The most obvious principal-agent problem in banking is that between bank management and bank capital contributors, since there's a possibility that the management may pursue their own interests, rather than the interests of capital contributors. (Palvia and Patro, 2011) Further, a second agency problem is present between bank shareholders and management and other capital contributors. Today's corporate ownership provide limited liability to shareholders, which result in an asymmetric distribution of gains and losses. Shareholders therefore keep all potential upside, while sharing the downside with other capital contributors. (Demsetz, Saidenberg & Strahan, 1997) This result in higher risk preferences for shareholders since they want to increase risk in order to achieve higher returns on invested capital. In contrast, bank management is considered to be risk averse, due to the fear of discrediting their human capital. (Cocris and Ungureanu, 2007) The conflict between shareholders and other capital contributors is based on shareholders ability to take actions that is in conflict with bank

debt-holders e.g. excessive dividends along with higher leverage and risk-taking. These actions may result in a transfer of wealth on debt-holders expense. (Demsetz, Saidenberg & Strahan, 1997)

The principal-agent problem in the banking industry can also be manifested through two different problems, namely moral hazard and adverse selection. A moral hazard situation arises when one contracting party takes a hidden excessive risk after a contract has been signed. The risk burden lies not with the party who takes the excessive risk, but instead with the counterpart. (De Ceuster and Masschelein, 2003) Moral hazard problems in banking is present in various forms, where some situations are more obvious than others e.g banks core business is characterized by moral hazard stemming from the fact that borrowers possess more information about their own credit risks than do the banks. The borrowers gain access to capital on the premises that the capital will be used at a given risk, but borrowers may mislead the bank and use the capital at a higher risk. (Van Damme, 1994) The second manifest of the principal-agent problem, adverse selection, arises between principals and agents since agents most often possess private information that affect the principal (Kern, 2006). In the banking industry, as mentioned above, borrowers possess more information about their own credit risk than do the banks. This possession of private information give rise to information asymmetry between the borrower and lender, which can result in a situation where, if the bank increase the interest rate, only high-risk borrowers will be attracted since they are the only party accepting an increase in interest rate (Kern, 2006).

In order to successfully mitigate the problems associated with the principal-agent framework, reducing information asymmetries and monitoring is of critical importance (Kern, 2006). However, agency theory assumes that there is an absence of a perfect market for corporate control, which creates market failure and prevent a complete reduction of agency problems (Bonazzi and Islam, 2007). Iannotta (2006) highlights that the banking industry, along with any other industry with asymmetric information, needs comprehensive monitoring and screening, in order to prevent excessive risk-taking behaviour. Kern (2006) further argue that it is essential with substantial governance structures in the banking industry because of the critical role its plays in the economy.

4.3 Credit Rating Agencies Role as a Governance Mechanism

A governance structure comprises numerous different mechanisms which aims at disciplining firms and managers (Jansson et al., 2010). Gillan, Hartzell & Starks (2007) states that in wake of information asymmetry and agency problems, governance mechanisms has incurred in order to mitigate these conflicts. As theorised in the overview section, CRAs has the function as a gatekeeper on the financial market, helping market participants and regulators in governing firms. CRAs provision of information is the rationale for their very existence and a reason for their growing popularity in recent times. In providing information about creditworthiness, compressed into an easily understood credit rating sign, they contribute to information economies of scale, which can help in solving the vast presence of information asymmetries and principal-agent problems that plague financial markets. (Gonzalez et al., 2004) Apergis, Payne and Tsoumas (2012) argue that CRAs influence banks both through their role as a governance mechanism in itself and through market discipline and regulatory discipline triggered by a credit rating change. It is therefore vital to understand how all of these three channels affect banks in the event of a credit rating change.

4.3.1 CRAs Governance through Regulatory Discipline and Market Discipline

First of all, the regulatory discipline, through regulation and supervision, act as a monitor of banks by collecting information and disciplining banks when taking excessive risks (Berger, Davies & Flannery, 2000) Regulation of banks are present in each and every country possessing a well-developed banking industry (Freixas and Rochet, 2008). This makes the banking industry among the most regulated industries in the world (Iannotta, 2006). In practice, bank regulation aims at reducing the probability of financial crises and to mitigate the economic consequences in the actual event of a crisis (Niemeyer, 2006). Market failures including negative externalities, market power and asymmetric information generally justifies any existing market regulation. This is also the situation when justifying bank regulation, where asymmetric information fuels the possibility of negative externalities such as bank failure and systemic risk (Santos, 2001). Weber and Darbellay (2008) states that the incorporation of credit ratings in the regulatory discipline dates back to the 1930s in the U.S., where banks holding top-rated assets was privileged. Since then, ratings has been widely used by regulators and supervisors in the U.S.. However, it was not until the twenty-first century, through the third pillar in the Basel Accord, that credit ratings was incorporated in the regulatory discipline on a global level. "As ratings have gained greater acceptance in the marketplace, regulators of financial markets and institutions have increasingly used ratings to simplify the task of prudential oversight" (Cantor and packer, 1995:5). This quotation highlights that beside the function as an information provider of banks creditworthiness,

CRA has another major function, namely a regulatory tool in the supervision and monitoring of financial institutions (Weber and Darbellay, 2008). Weber and Darbellay (2008) argue that CRA has received the function as a quasi-regulator, implying that CRA has the role as a complementary regulator and supervisor to the authorities. In this work, Berger, Davies and Flannery (2000) argue that regulators seem to consider and incorporate credit ratings when carrying out their own assessments, providing evidence that a credit rating change of a bank may trigger disciplinary actions by regulators and supervisors. Berger, Davies & Flannery (2000) argue that whoever exercises monitoring and discipline of banks should be well-informed by having access to accurate and timely information. The regulatory discipline is well-informed by requiring private information from banks and by conducting on-site examinations, however, this is a possibility that markets lack.

Lane (1993) states that market discipline in banking gives investors on the financial market an opportunity to supply signals in the event of excessive risk-taking in banks. Bliss and Flannery (2001) argue that market discipline comprises two components; *market monitoring* and *market influence*. Market monitoring refers to investors' ability to accurately evaluate a firm's condition and thence incorporate their assessments into firm's security price (Bliss and Flannery, 2001). Likewise, Hamalainen, Hall & Howcroft (2005) argue that investors, in order to exert market discipline, need to regard themselves to be at risk and be able to recognise changes in banks' risk behaviour. Further, market influence refers to the extent that bank managers respond to investors' feedback, incorporated in the security price, and whether they make appropriate changes accordingly (Bliss and Flannery, 2001). In summary, investors must want to influence and control banks, where the outcome of their discipline depends on bank managers' willingness to react on these signals by governing the bank in a responsible manner (Hamalainen, Hall & Howcroft, 2005)

Market signals can be provided in different forms by banks' primary stakeholders, namely the suppliers of funds; depositors, debt-holders and equity-holders (Hamalainen, Hall & Howcroft, 2005). First of all, every bank issues equity, partly dependent on capital requirement regulations (Hamalainen, Hall & Howcroft, 2005). Equity-holders in banks, as in any other firm, possess different types of governance mechanisms that can be used in influencing managers. Among these mechanisms, dissatisfied equity-holders can either choose to sell their shares, affecting the share price, or decide not to participate in any new issue by the bank. These actions may influence managers by fueling a hostile take-over or by affecting managers' reputation on the labour market (De Ceuster and Masschelein, 2003). Further, banks' bondholders can discipline banks by either choosing to demand a higher yield on their bonds, or choosing to sell their held bonds (Hamalainen, Hall & Howcroft, 2005). Since bondholders lack

any benefits from upside gain, they are reluctant against excessive risk-taking in banks, giving bond-holders strong incentive to monitor banks' risk-taking (De Ceuster and Masschelein, 2003). Finally, depositors can provide disciplinary signals by demanding higher interest rates, known as a price effect, or ultimately withdraw their deposited funds, known as a quantity effect (Hamalainen, Hall & Howcroft, 2005). However, only uninsured depositors have incentives to monitor banks' risk-taking, since insured depositors are fully protected by the governmental deposit insurance (De Ceuster and Masschelein, 2003). By exercising market discipline, investors can signalise the riskiness of banks operations and discipline them, insinuating that corrective measures must be taken (Hamalainen, Hall & Howcroft, 2005). Among others, Sironi (2003), Morgan and Stiroh (2001), Jagtiani, Kaufman and Lemieux (1999), Billett, Garfinkel & O'Neil (1998), Palvia and Patro (2011) and Nier and Baumann (2006) provide evidence that markets, mainly through price mechanisms, monitor and exert discipline in banks to various extents.

De Ceuster and Masschelein (2003) highlights that in order for depositors, bond-holders and equity-holders to efficiently monitor and influence banks risk-taking behaviour, they need sufficient and proper information. This give rise to a need for *right information*, one of four general conditions for market discipline to function efficiently. The other conditions comprises an *open and free capital market, no existence of bailouts and banks responding to market signals*. (Lane, 1993) Right information about banks' condition is essential for market participants' ability to exert discipline. Hamalainen, Hall & Howcroft (2005) explains that right information incorporates information that is sufficient, relevant, comparable and of high reliability and quality. The recent growth in consolidations, financial innovations and the globalisation present in the banking industry has led to increasing demands for comprehensive information about banks. Hamalainen, Hall & Howcroft (2005) argue that without this information, no external parties can assess banks, which, if left unmonitored, fuels the moral hazard problems present in the banking industry. The new Basel Capital Accord stresses the importance of right information in order for market participants' to assess banks financial condition and risk profile. In the third pillar of the New Accord, regulators statutes disclosure requirements regarding banks capital adequacy and risk exposure. The aim of the third pillar is to achieve an enhanced ability for market participants to monitor and assess banks', by increasing the availability of public information, thereby promoting market discipline as a potential complement to the regulatory discipline, governed in the two other pillars. (Hamalainen, Hall & Howcroft, 2005)

There exists an impressive amount of research regarding the informational content in credit ratings, providing evidence that credit ratings help market participants in exerting discipline.

De Ceuster and Masschelein (2003) argue that even if this research is not solely based on bank credit ratings, it still provides important findings regarding the informative value of credit ratings. Gonzalez et al. (2004) argue that in order for a rating to have an impact on firms cost of funding, it must comprise pricing information that market participants can not receive in any other way at a comparable cost. CRAs impact on firms through the market discipline and their role as an information provider has been extensively examined in earlier studies. Scholars have found that credit rating changes, through market discipline, have an impact on firms stock and debt pricing, implying that market participants can readily assess the information contained in credit ratings and express their dissatisfaction when firms' increase their risk-taking behaviour (Jorion, Liu & Shi, 2005; Hand, Holthausen & Leftwich, 1992; Ederington and Goh, 1998; Norden and Weber, 2004; Gropp and Richards, 2001). In summary, De Ceuster and Masschelein (2003) argue that the general view amongst researchers is that CRAs provide new information to the market and help in reducing asymmetric information.

In specific, Ederington, Yawitz & Roberts (1987), Kao and Wu (1990) and Liu and Thakor (1984) provide empirical evidence that credit ratings help explain bond yield spreads in a U.S. context. However, Gonzalez et al. (2004) argue that even though research have found ratings to be explanatory for yield spreads, many studies show that ratings can not explain a large part of the yield spreads, where instead liquidity, volatility and systematic risk are examples of more important impacting factors. Further, regarding ratings impact on security prices, Kliger and Sarig (2000) conduct a new approach to examine how bond and stock pricing in the U.S. is affected by credit ratings. Compared to other studies with a similar objective, examining how security prices is affected by credit rating changes, Kliger and Sarig (2000) conduct an event study of a single event in 1982 when Moody's refined it's rating system with a finer rating classification. By using data from the change in rating classification, instead of data from a credit rating change stemming from a fundamental change in issuers risk, the authors argue that their results exclusively reflects the value of rating information. Kliger and Sarig (2000) find that both bond and stock prices responded due to Moody's release of information, concluding that ratings contain information that is pricing relevant and useful for investors. In contrast to examining Moody's rating refinement, Jorion, Liu & Shi (2005), Hand, Holthausen & Leftwich (1992) and Ederington and Goh (1998) studies regular credit rating changes impact on stock and bond prices, also in a U.S. context, finding evidence that investors use credit rating changes in pricing stocks and bonds. However, Hand, Holthausen & Leftwich (1992) and Ederington and Goh (1998) finds that primarily rating downgrades has an explicit impact on equity returns and financial analyst's forecast revisions. Due to the lack of new information that market participants perceive following an upgrade announcement, an upgrade only tend to have a minor impact on equity and bond prices. In response to these

findings, Gonzalez et al. (2004) argue that this may be because CRAs devote more resources in finding impairments in firms balance sheets, compared to finding improvements. Another explanation can be that markets tend to overreact to downgrades in credit ratings (Gonzalez et al., 2004). As mentioned above, few studies have focused explicitly on credit ratings informational content in the banking industry. However, Schweitzer, Szewczyk & Varma (1992) examine the informational content in bank credit ratings, providing evidence that credit ratings, also in the banking industry, provide valuable information regarding banks' risk exposures that help markets in assessing banks. Further, Gropp and Richards (2001) examines how European banks' security prices are affected of a credit rating change. Gropp and Richards (2001) find that CRAs have an important function as a provider of privately-held information about banks' risk. More specifically, Gropp and Richards (2001) find strong evidence that credit rating changes affect banks equity prices. However, there is weak evidence that bond prices are affected by credit rating changes, implying that equity-holders are in a better position to exert market discipline on banks. Further, the results in Gropp and Richards (2001) is consistent with earlier findings that credit rating downgrades have higher elasticity compared to credit rating upgrades. In summary, De Ceuster and Masschelein (2003) argue that "the general impression is that ratings (changes) do signal 'new' information to the market and hence help to decrease the asymmetric information gap between banks and potential monitors." (De Ceuster and Masschelein (2003:758))

4.3.2 CRAs as a Direct Governance Mechanism

Beside CRAs impact on banks through the regulatory discipline and the market discipline, another area portrays credit ratings as a direct governance mechanism, affecting firms managerial decisions. Bannier and Hirsch (2010) argue that CRAs monitoring role on the financial market has been developed and find evidence that CRAs monitor firms conditions and affect managerial decisions. Further, Boot, Milbourn & Schmeits (2006) show that CRAs have real impact through their monitoring relationship with firms. In addition, Tang (2009), Kisgen (2006) and Graham and Harvey (2001) finds that in addition to CRAs credential and information importance on the market, they also directly affect corporate debt and equity financing decisions as well as firms access to credit markets. Tang (2009) specifically study how Moody's credit rating refinement affected U.S. firms access to capital markets, borrowing costs and capital structure decisions. Tang (2009) find that the information contained in credit ratings significantly affect corporate financing and investment decisions. In essence, a rating upgrade tends to result in lower borrowing cost and consequently greater issuance of debt compared to downgraded firms (Tang, 2009). Further, Kisgen (2006) also examine how firms capital structure decisions are affected by credit ratings, providing evidence that credit ratings tend to have a direct effect on capital structure decisions made by firms managers and that

these managers seems to be concerned about the firms credit rating. In addition, Graham and Harvey (2001) study how corporate finance decisions, made by U.S. firms CFOs, are affected by credit ratings. Graham and Harvey (2001) states that credit ratings are an important impacting factor when CFOs modify their capital structure.

Further, both Kuang and Qin (2009) and Kang and Liu (2009) examine CRAs impact on U.S. firms managerial incentives and actions. Kuang and Qin (2009) specifically study how firms change managers risk-taking incentives, such as stock options, in line with the firms credit rating. Kuang and Qin (2009) find evidence that rating downgrades tend to decrease managers risk-taking incentives. In other words, if a firm receives a rating downgrade, firms tend to decrease managers risk-taking incentives in order to reduce managers willingness to enter riskier investment, consequently reducing the overall risk in the firm. The findings of Kuang and Qin (2009) provide evidence that CRAs act as monitor of firms and affect risk-taking behaviour in firms through credit rating changes. Further, Kang and Liu (2009) also study the relationship between credit ratings and corporate managers incentives. Kang and Liu (2009) find that CRAs, through their monitoring role, discipline managers and therefore have a significant effect on firms managerial decisions. In summary, Kuang and Qin (2009) and Kang and Liu (2009) show that CRAs, together with other governance mechanisms, monitor risk-taking behaviour and help in reducing agency conflicts in firms. These studies, regarding CRAs function as a direct governance mechanism, do not focus solely on banks, instead they examine firms in general. Earlier research focusing explicitly on banks are rarer and to our knowledge, there are only one existing study examining how credit ratings changes affect banks.

Apergis, Payne & Tsoumas (2012) examines the impact of credit rating changes on banks. on the U.S. banking market. This research examines the effect from credit rating changes on U.S. banks' financial accounting variables on a one and two year horizon, in order to investigate the effectiveness of CRAs as a governance mechanism. The study is employed by using financial accounting data from 289 U.S. banks, together with S&Ps long term issuer credit rating changes over the time period 1989-2008. The results shows that for upgraded banks, on a one year horizon, there is an increase in profitability, due to an expansion in credit policy. In the two year horizon, the credit expansion continue to increase the banks profitability as well as banks size. For downgraded banks, there is a more severe impact than for upgraded banks, in line with the findings by Hand, Holthausen & Leftwich (1992), Ederington and Goh (1998) and Gropp and Richards (2001) regarding credit ratings impact on equity prices and financial analysts'. On a one year horizon, CRAs do act as a disciplinary mechanism due to their implicit pressure on banks to reduce credit portfolio risk, resulting in active reductions of

banks riskier loans. However, in a two year horizon credit losses continue to increase, but unexpectedly, banks increase their leverage and size, which points to the fact that they try to improve their rating quality, although in a riskier manner. The results from this study indicates that in the short run, CRAs seems to affect banks' risk-taking behaviour. However, in the long run, the role of the CRAs, as a complementary governance mechanism to regulators and supervisors, seems to be overstated. In essence, U.S. banks seems to be affected by credit rating changes both directly, stemming from CRAs role as a corporate governance mechanism, and from credit rating changes impact on the market discipline and regulatory discipline.

Apergis, Payne & Tsoumas, 2012 is the first of it's kind in academic literature and has a geographic focus on U.S. Banks. However, there are evidence that the U.S. banking market and the European banking market differs in several ways. La Porta and Shleifer (2002) provide data regarding worldwide governmental banking ownership and finds that banking ownership in European countries have a higher degree of governmental ownership compared to the U.S.. Iannotta, Nocera & Sironi (2012) examine differences in performance and risk-taking between governmental-owned banks and privately-owned banks using data on 210 banks in 16 different European countries. Iannotta, Nocera & Sironi (2012) find evidence that government-owned banks have a lower default risk, but a higher risk-taking incentive compared to privately-held banks stemming from the presence of governmental protection. In addition, Faccio, Masulis & McConnell (2006) argues that government-owned firms benefit from stronger protection than privately-held firms, due to the fact that firms with government connections have a greater probability of being bailed out. This may imply that the banks on the European banking market, characterized by a large fraction of governmental ownership, act modestly in the event of a credit rating change.

Not only the banking market differ between the two geographic regions, but also the situation of the gatekeepers in the U.S. compared to countries within Europe. Coffee (2006) states that a governance system that works in one environment may fail in another, a view that is also supported by Gedajlovic and Shapiro (1998); Fligstein and Choo (2005); La Porta et al. (1998). This indicates that the role of auditors, securities analysts, CRAs and lawyers vary between different regions and different settings. First of all, the legal environment surrounding gatekeepers in event of deficient performance vary between countries and regions. Until now, the U.S. has been relatively alone on a comprehensive framework facing gatekeepers, together with the fact that the U.S. Securities and Exchange Commission (SEC) is considered to be the most offensive and proactive supervisory authority in the world. (Coffee, 2006) However, law enforcement of gatekeepers are evidently on top of the agenda in Europe, with regard to the recent decision by the European Parliament to make CRAs more liable for their ratings.

(www.europarl.europa.eu) Further, the unique situation for corporate lawyers in the U.S., with regards to the possibility of class action and contingent fee, affect the characteristics of the U.S. governance system, making lawyers well positioned to function as gatekeepers (Coffee, 2006). Coffee (2006) also acknowledge that the differences in corporate ownership around the world, shown by La Porta et al. (1998), has a great impact on various gatekeepers importance and function. European firms, characterized by concentrated share ownership, often has a controlling shareholder that partially prevents a separation between ownership and control, which in turn diminishes the importance of monitoring from external governance mechanisms. In contrast, the U.S. is characterized by dispersed ownership, resulting in a widespread separation of ownership and control, calling for monitoring by external parties. One's equity ownership in a dispersed structure is relatively limited, which result in neither good possibilities to influence, nor enough incentives to engage in active monitoring. In a system with dispersed ownership, agency problems between managers and shareholders arise given the separation of ownership and control. In contrast, a system with concentrated ownership give rise to opportunities for controlling shareholders to extract private benefits by expropriating minor shareholders. Coffee (2006) argue that gatekeepers are needed in both of the two systems, although their importance differ between concentrated and dispersed ownership systems. Gatekeepers possess a more crucial role in dispersed ownership structures, such as in the U.S., given the enhanced opportunities for managers to engage in earnings manipulation and other frauds, along with the present problems for gatekeepers, primarily auditors, in concentrated ownership systems to monitor the party (shareholders) that hires them. (Coffee, 2006)

5. Empirical Method

The empirical method presents the selected model that has been chosen in order to estimate the governance effects of credit rating changes. This is followed by a presentation of the financial accounting variables used in the estimations as well as data collection and sample. The chapter will end with a presentation of the descriptive statistics.

5.1 Model Selection

In order to successfully accomplish the objective of this thesis and provide evidence regarding the governance effects of credit rating changes on banks within the European banking market, banks' financial accounting variables will be examined in the event of a credit rating change on a one and two year outlook after the credit rating change. This approach is also used by Apergis, Payne & Tsoumas (2012) with the aim to find evidence regarding credit rating changes governance effect on U.S. banks. By examining both the one and two year outlook, conclusions can be drawn on whether the effects are long lasting. To estimate these effect, there is a need to measure the isolated pre and post differences, caused by the credit rating change, on banks financial accounting variables. During the last decades, a specific research methodology has been developed and increasingly used for the purpose of measuring effects from specific events. In 1969, Fama et al. introduced the method *Event Study*, which aimed at explaining a particular event's impact on stock prices (Fama et al., 1969). The Event Study is nowadays a well-established and recognized method within economic and finance research and has been used in a variety of different research fields, e.g in order to examine effects of changes in a regulatory environment on firm-specific variables (Campbell, Lo & MacKinlay, 1997; Binder, 1998) In specific, the event study methodology measures the pre and post effects of a specific event. However, this methodology do not take into consideration non-observable characteristics that might affect the true estimation of an outcome. Therefore, these non-observable characteristics, together with other random shocks, creates omitted variable bias, which prevents to measure the specific isolated effect of an event.

Many earlier studies, with the objectives to examine the isolated impact of credit rating changes on firms, have applied a research method which has its origin in the Event Study methodology. (See e.g. Kang and Liu., 2009; Kuang and Qin, 2009; Hand, Holthausen & Leftwich, 1992; Apergis, Payne & Tsoumas, 2012). Of these studies, Kang and Liu (2009) and Apergis, Payne & Tsoumas (2012) have both used the difference-in-differences econometric approach (henceforth DID). The DID approach is extensively used and today one of the most popular methods in applied research regarding the evaluation of economic and policy treatment effects (Abadie, 2003). The DID estimation is based on the comparison of the

variable of interest for two different groups, one treated group and one control group. The treatment group is composed of the observations that are effected by an economic event, in this case a credit rating change, while the control group are those who are not affected. The control group is used as an identifier of the non-observable characteristics that would have occurred anyhow, without the treatment (Mills and Patterson, 2009; Heckman and Liamer, 2007). By using the DID approach, there is a possibility to take non-observable characteristics into account and thus only measure the isolated effect of a credit rating change on banks financial accounting variables. With this in mind, together with the fact that the DID approach is well proven in similar studies, this research will use the DID approach in order to estimate the effects from a credit rating change on banks within the European banking market.

5.2 Model Specification

The aim of the DID approach is to estimate the average treatment effect of the treated banks (henceforth ATT), by comparing the changes on financial accounting variables for the treated banks and the control banks, before and after a credit rating change. The basic ATT estimation for the banks that received a credit rating change can be expressed as:

$$ATT = E(X_t^1 - X_{t-1}^1) - E(X_t^0 - X_{t-1}^0)$$

where ATT is the average treatment effect on the treated banks financial accounting variables. X is the financial accounting variable of interest at time t relative to its value at time $t-1$, for the treated (1) banks and the control (0) banks. Treated banks are defined as each bank that have experienced a credit rating change at t relative to its value at $t-1$ ⁵. In contrast, the banks in the sample that did not receive a changed credit rating at t relative to its value at $t-1$, serve as controls. Hence, the counterfactual result of the treated bank pre and post the change in credit rating is compared to the difference of the control banks during the same time period.

By using this approach, one can eliminate the systematic effect of each individual bank (the difference in the two parenthesis) as well as the effect of common time trends (the difference between treated and controls). Hence, both time and group-specific bias are removed. However, since DID lies on the assumption of common trends, there might be observable characteristics resulting in different trends between the two groups. Therefore, the outcome estimation largely depends on how well the construction of the control group is performed. If there are observable characteristics that effect the trends between the treated banks and control banks, the estimation will be biased and the ATT becomes over- or underestimated.

⁵ In cases when banks experienced several credit rating changes during the same year, this study will use the last received rating for the year.

To correct for bias caused by these observable characteristics, one can combine the DID estimation with a matching procedure in order to pair treated banks and control banks with similar characteristics. Apergis, Payne and Tsoumas (2012) conduct this matching by assuming that banks with the same credit ratings can be seen as having similar characteristics. Therefore, Apergis, Payne and Tsoumas (2012) pair and compare treated banks and control banks that have the same credit rating, before treated banks face a credit rating change. However, this is a rather strong assumption since banks with the same credit rating is not likely to have the same observable characteristics and hence not the same trends.

In order to improve the construction of control banks, this research will conduct a Propensity Score Matching (henceforth PSM). PSM reduce bias by matching individual treated banks with control banks that have rather similar pre-treatment characteristics, so called covariates. (Heckman, Ichimura & Todd, 1997) This approach is estimated in three steps. The first step is to calculate the impact of the difference-in-differences approach before and after the treatment. Hence, for every financial accounting variable, we compute the change from t+1 relative to its value at t-1 to estimate the one-year treatment effect. For the two-year treatment effect we compute t+2 relative to the value a t-1.

The second step is the estimation of a propensity score, which is based on the pre-treatment covariates. The propensity score is defined as the probability (Pr) for a bank being treated (Tr) and receive a credit rating change, given its covariates. This can be expressed as:

$$\Pr(Tr=1 | z)$$

Where z is the covariates, including all the financial accounting variables used i.e. net income, non-interest income, transparent assets, opaque assets, trading assets, loan loss reserves, log of total asset, net income, non-interest income, leverage and net loans. All at their value before the treatment⁶. The results from each and every regression on the financial accounting variables, for both upgraded and downgraded banks, show similar results and will therefor not be presented.

The final step is to match each individual treated bank to a number of control banks, based on their propensity score value. Bertrand et al. (2004) argue that an average control bank should be calculated when dealing with panel data as well as the DID approach. For this reason, Kernel matching estimator is used for the matching procedure. Kernel matching estimation compute a weighted sum of control banks who have similar propensity score for

⁶ Since there are many variables that could serve as covariates, we also included the same lagged variables as Apergis, Payne & Thoumas (2012). However, no differences in the result could be observed.

every treated bank. Higher weight are given to banks with closest propensity score. The kernel weight is estimated as:

$$W_{ij} = G((P_j - P_i)/\alpha_n) / \sum_{k \in G} G((P_k - P_i)/\alpha_n)$$

Where the weights (W_{ij}) are the distance between P_i (propensity score for treated banks) and P_j (propensity score for control banks). k denotes all the control banks used to match the treated banks. α_n is a bandwidth parameter - referring to the estimated density closets to the true density. $G(\cdot)$ is the kernel function.

The final model to estimate the ATT for each and every financial account variables, for both the one and two year outlook, is defined as:

$$ATT = E[X_t | Tr=1, p(z)] - E(X_{t-1} | Tr=1, p(z)) - E[X_t | Tr=0, p(z)] - E(X_{t-1} | Tr=0, p(z))$$

Where X is the financial accounting variable of interest at time t . $Tr = \{0,1\}$ is a dummy variable, taking the number 1 if the bank is treated. z is a vector including all the pre-treatment characteristics of the banks. $p(z)$ is the propensity score matching.

One drawback concerning the PSM is the fact that the method only count for observable characteristics, while other factors that might effect the outcome, cannot be counted. However, to deal with bias caused by observable characteristics as well as time-invariant non-observable characteristics, the combination of the DID approach together with the PSM procedure is a well proven approach. The DID approach deal with the time-invariant non-observable characteristics that might effect the estimated outcome and the PSM approach reduces the observable characteristics and time-variant factors, which increase the reliability of the common trend assumption of DID. Hence, the combination of DID and PSM work as a reliable method in order to control for bias. In addition, by estimating the governance effect from a credit rating change on the whole sample period, it is possible to measure the average effects over time. Further, by also estimating the effects over different time periods, we obtain a robustness check concerning time trends between treated and control banks. The effects may have an asymmetric distribution due to different time trends and by controlling for differences in the governance effect from different periods, we can feel confident in our results.

5.3 Sample

This study's sample will consist of banks operating on the European banking market. The identification of banks was carried out in the world banking information source Bankscope. The search strategy in Bankscope included active commercial banks, savings banks and bank holding companies within eastern and western Europe, resulting in the amount of 3 828 banks. However, the total amount of banks within Europe at present is 7 380, but after excluding banks with no traditional banking business, namely central banks, investment banks, securities firms and clearing & custody institutions, we obtained a list of 3 828 banks, sorted by banks' total assets in million Euros in the year of 2011. Subsequently, based on this compilation, we manually matched banks that both were included in the list from Bankscope and also held a credit rating from S&P.

In practical terms, we reviewed bank by bank on the list from Bankscope and thereafter searched for each bank in S&P's ratings database in order to identify positive matches. The total amount of banks holding a S&P's Local Long Term Issuer Credit Rating on the European banking market is at present 281. However, the lacking availability of balance sheets and income statements for smaller banks made it untenable to include each and every bank. The matching process generated a sample comprising 202 banks with total assets ranging from around 2 000 000 Million Euros, down to 5 000 Million Euros (see Appendix 1 for the final sample of banks). Despite the fact that all of the 281 banks are not included in this sample, we were able to obtain both major and minor banks, representing a majority of the countries within Europe. A final sample of 202 banks, ranging from immense banks to smaller banks all over Europe, enables the results to absorb a representative view of rated banks on the European banking market. Further, we selected a time period in the sample that extends between 1997-2011. Credit ratings from S&P was available dating back to 1987, but financial accounting variables from banks' balance sheet and income statement was only available from the year 1997. However, this time period provides us with a period of 15 years, which makes it possible to study the relationship between credit ratings changes and banks' financial accounting variables over time, as our sample include both periods of lower economic activity as well as periods with higher economic activity.

5.4 Data Description

Since Apergis, Payne & Tsoumas (2012) is the first research on the subject, it is justified to adapt the variables used in their study in order to examine the governance effects from credit rating changes on banks within the European banking market. Further, by using the same variables as Apergis, Payne & Tsoumas (2012), we are able to increase the comparability of

our findings. In addition, by examining numerous different variables, a better overall picture of the effects from a credit rating change can be obtained. The majority of the financial accounting variables are derived from banks' balance sheet, except for measures of profitability. Apergis, Payne & Tsoumas (2012) argue that these financial accounting variables are relevant to examine in view of their relationship with credit rating changes. Further, banks' balance sheet variables can be influenced by managerial decisions, implying that a significant change in any of the variables, in the event of a credit rating change, indicates that banks' management has taken measures and that the credit rating change has a governance effect. However, a change in balance sheet variables and profitability, in the event of a credit rating change, may not only stem from managerial decisions. Instead it can be a combination of actions taken by banks' management, along with changes affected indirectly by the credit rating change or other events which are out of the banks control such as macroeconomics factors. Given that we examine the European banking market, there is a need to implement a minor modification of the used variables. Apergis, Payne & Tsoumas (2012) include a variable that measures foreclosed real estate. Because borrowers of mortgage loan in most European countries lack the ability to foreclose their real estate in the event of an inability to meet loan commitments, the variable that measure foreclosed real estate will not be possible to include in this research.

S&P's Local Long Term Issuer Credit Rating, denoted *CR*, for banks within Europe will be used when identifying banks that received a credit rating change between 1997-2011. The S&P's Local Long Term Issuer Credit Rating is a "current opinion on an issuer's overall capacity to pay its financial obligations" (Standard and Poor's, 2001:61). The credit ratings will then be converted at the end of each year from alpha signs into a numerical scale which gives; AAA=1, AA=2, A=3,..., D=22, hence a high number on the numerical scale corresponds a low credit rating. The credit rating can be regarded as a measure of banks' overall credit quality and therefore have a positive relationship with the likelihood of a credit rating downgrade (Apergis, Payne & Tsoumas, 2012). One thing that should be clarified is that this research do not account for non-linear effects that could stem from the fact that different credit rating changes may not affect banks equally. More specifically, a downgrade from AAA to AA+ may not affect banks in the same manner as a downgrade from BBB to BB+. Furthermore, this research treat a one-step downgrade equally as a multiple-step downgrade. With this being clarified, this research estimate the average effect of the respective credit rating change.

The financial accounting variables comprises nine different variables, derived from banks' reported balance sheet and income statement in Bankscope. The variables are presented in Table 2 below. Variables *Net-Loans*, *LLR*, *Trade*, *Opaque*, *Transp.* and *Size* refers to various asset items from each bank in the end of every year. These variables provide measures that indicate changes in the composition of banks' assets over time.

Variable *Net-Loans* measures the amount of assets being invested in banks' loan portfolio. By using Net Loans, instead of Gross Loans, it is possible to measure the actual sum of loans outstanding, without allowing for other factors such as loan losses to affect the interpretations. Net Loans proxy for the size of banks' loan portfolio. In this research, an increase (decrease) in this variable indicates that banks receiving a credit rating change expand (reduce) their credit portfolio more than banks that do not receive a credit rating change.

Variable *LLR* refers to Loan Loss Reserves, which indicates the amount of capital set aside by management to cope with predicted losses on bad loans. This variable proxy for the credit quality and stability of banks' loan portfolio. Apergis, Payne and Tsoumas (2012) argue that a change in Loan Loss Reserves indicates that bank management change their reserves for loan losses, which may suggest that the management has implemented a more cautious or optimistic credit policy and a more optimistic or pessimistic risk management. This indicates that bank management has taken a decision to change the risk in their loan portfolio, by changing Loan Loss Reserves in the event of a credit rating change.

Variable *Trade* refers to Trading Assets, which shows the amount of capital being invested in banks' trading portfolio, which makes it a proxy for the the size of this portfolio. An increase (decrease) in this variable, in the event of a credit rating change, imply that banks' increase (decrease) the size of their trading assets.

Variables *Opaque* and *Transp.* refers to two different asset classes, namely Opaque Assets and Transparent Assets respectively. Opaque Assets comprises assets that are more difficult for investors to value and monitor, i.e. fixed assets, at-equity investments in associates, goodwill, other intangibles and other assets. Since this variable includes a large fraction of solid assets, it can be used as a proxy for banks' capability to cope with potential downturns (Apergis, Payne and Tsoumas, 2012). These assets can therefore be viewed as collateral in the event of potential losses in banks' different portfolios such as trading or credit portfolios.

Transparent Assets comprises assets that are more easy to value and monitor, i.e. cash and due from banks, held to maturity securities, available for sale securities, loans and advances to

banks along with government securities held. This asset class, in contrast to Opaque Assets, includes large fractions of liquid assets and can therefore function as a proxy for banks' liquidity situation. Changes in these two asset classes, in the event of a credit rating change, imply that banks take measures and re-allocate capital.

Variable *Size* refers to Log of Total Assets, which proxy for the change in growth of banks' Total Assets. Apergis, Payne & Tsoumas (2012) argue that this variable is of interest in view of its ability to proxy for changes in banks' size as well as banks risk-taking behaviour. An increase (decrease) in log of total assets in the event of a credit rating change shows that banks' size and risk-taking increase (decrease).

Variable *Lev.* refers to Total Liabilities divided by Book Value of Equity, which measures banks' leverage. This variable can act as an indicator of the riskiness of banks' operations through its function to display the fraction of assets being financed by debt instead of equity capital.

Finally, variables *Net-Income* and *Non-Interest* refers to income statement variables, namely Net Income and Non-Interest Operating Income respectively. Net Income display the profitability of banks' operations and indicates the ability of banks' assets to generate profits. Apergis, Payne & Tsoumas (2012) argue that even if banks' profitability do not indicate a direct change in banks' behaviour, it still provide interesting information regarding CRAs impact on banks' profitability. Further, Non-Interest Operating Income displays the fraction of banks' incomes that do not stem from the traditional lending activities. Instead, this variable shows banks' income derived from commissions and fees. Stiroh (2004) argue that a change in income derived from commissions and fees indicates that banks modify its exposure towards risk associated with lending activity such as credit risk.

Every banks financial accounting variables, except *Size* and *Lev.* are divided by total assets. By doing so, differences in banks' economic size do not affect findings and interpretations.

Table 2. *Definition of variables used in the sample*

Variable	Definition	Measures
CR	S&P's Local Long Term Issuer Credit Rating at the end of each year	Credit Rating
Net-Loans	Net Loans / Total Assets	Size of Loan Portfolio
LLR	Loan Loss Reserves / Total Assets	Quality of Loan Portfolio
Trade	Trading Assets / Total Assets	Size of Trading Assets
Opaque	Fixed Assets + At Equity Investments in Associates + Goodwill + Other Intangibles + Other Assets / Total Assets	Size of Opaque Assets
Transp.	Cash and Due from Banks + Loans and Advances to Banks + Held to Maturity Securities + Available for Sale Securities + Government Securities / Total Assets	Size of Transparent Assets
Size	Log of Total Assets	Bank Size
Lev.	Total Liabilities / Book Value of Equity	Leverage
Net-Income	Net Income / Total Assets	Profitability
Non-Interest	Non-Interest Operating Income / Total Assets	Profitability derived from Non-Interest Incomes

Note: Variables are derived from Bankscope, S&P's RatingsDirect and own calculations

5.5 Data Collection

Since this research will conduct a quantitative approach, a large amount of data will have to be collected. The data regarding credit ratings will be collected from Standard & Poor's Capital IQ database *RatingsDirect* and S&P's Local Long Term Issuer Credit Rating will be used. S&P's credit rating is used for several reasons. First of all, S&P is the largest actor outside the U.S., with a larger amount of rated banks compared to both moody's and Fitch Ratings.⁷ Further, we were restricted to use credit ratings from S&P due to Moody's and Fitch Ratings unwillingness to provide us with data. In an initial stage, we contacted both S&P, Moody's and Fitch Ratings, but S&P was the only CRA who was willing to give us open access to their database. The world banking information source *BankScope* will be used in collecting European banks financial accounting variables. Bankscope is used because of its comprehensive amount of historical data, with up to 16 years of historical financial

⁷ Own search in Bankscope.

statements, from more than 30 000 banks, whereof 8 000 is located in Europe. Bankscope is independently reviewed in order to ensure high quality and authenticity. (www.bvdinfo.com)

In practical terms, we began by collecting banks' credit rating history from S&P's RatingsDirect. With regard to the sample in this research, we conducted a search in S&P's RatingsDirect on each bank. Thence, every banks credit rating history was exported using Excel and subsequently manually compiled into the data set. In some cases, the Excel export function was not available, resulting in a manual collection directly from the database for every bank concerned. Further, after collecting the credit rating changes, banks' balance sheet and income statement was collected from Bankscope. In practical terms, based on the banks in the sample, we manually searched for each bank in Bankscope. After identifying the correct bank, its balance sheet and income statement was exported using an Excel export function. Since all banks do not report accounting variables in the same currency, all data is converted into Euro at the end of each calendar year. Subsequently, after collecting balance sheets and income statements for every bank in the sample, we identified every item needed in order to compile all variables. The items needed was then imported in the final data set and thereby composed with the data concerning credit rating changes. By compiling the financial accounting sample with the credit rating sample for 202 banks over the time period 1997-2011, the final working dataset contains 2 539 bank-year observations.

Moreover, Apergis, Payne & Tsoumas (2012) argues that banks decision-making will not be the same in the event of a downgrade compared to an upgrade. A downgraded banks asset composition, as well as its profitability, will not be effected in the same manner and it should therefore not be estimated together. Therefore, the dataset is split up into two separate data sets, one containing downgraded banks together with their matched controls and one with upgraded banks together with their controls. Further, beside examining the objective of this thesis over the whole sample period between 1997-2011, the dataset will also be divided into two different time periods. The first time period range from 1997-2000, a period with high economic activity before the burst of the dot-com bubble. The second period range from 2007-2011, a period where the recent financial crisis occurred and contributed to low economic activity. By doing this, we can estimate and interpret if credit rating changes effect banks on the European banking market differently in times with higher versus lower economic activity.

5.6 Descriptive Statistics

Table 3 presents the descriptive statistics of the variables used in the sample and displays the number of observations, missing values, mean values, standard deviation as well as minimum and maximum values.

Table 3. *Descriptive statistics of variables in the sample*

Variable	Obs.	Missing Values	Mean	Std. Dev.	Min	Max
CR	2032	491	6.161979	3.154435	1	21
Net-Loans	2502	21	.5059533	.2154661	-.6275771	.9631158
LLR	2118	405	.0172524	.030004	-.0329733	.9831158
Trade	1663	860	.0923348	.1209617	0.00000284	.9277935
Opaque	2410	113	.0645018	.0706525	0.0001492	.9131071
Transp.	2403	120	.3389232	.2021996	.0001167	.9776873
Size	2520	3	10.64275	1.79891	4.27604	14.76579
Lev.	2490	33	20.16429	31.81644	-217.8901	1278.638
Net-Income	2409	114	.0042813	.1253456	-5.787485	.4234466
Non-Interest	2366	157	.0152865	.0263768	-.3004209	.4715542

Variable *Net-Loans* have a mean value of approx. 0,50, which show that the average banks net loans amounts to 50 percent of the banks total assets over time. Further, variable *LLR* shows that the mean amount of capital set aside for bad loans in banks' credit portfolio amounts to approx. 1,70 percent of total assets. Variables *Trade*, *Opaque* and *Transp.*, show that the average value of these assets in relation to total assets amounts to 9 percent, 6,6 percent and 34 percent respectively. Variable *Size*, which refers to the log of total assets, displays a mean value of 10,64. Further, variable *Lev.*, referring to Total Liabilities divided by Book Value of Equity, shows that the average bank on the European banking market have 20 times more liabilities than equity, confirming the fact that banks possess a very small percentage of equity in their balance sheet. In addition, variable *Net-Income*, shows that the average banks profit in relation to its total assets are 0,4 percent. Finally, variable *Non-Interest* shows that the average income, less interest, in relation to total assets are 1,5 percent.

The descriptive statistics have shown that the sample in this research has accumulated a wide range of banks in respect of their financial accounting variables. It is also possible, by

examining minimum and maximum observations, to observe extreme values in the sample. To reduce possible misleading results stemming from outliers, a one percent top and bottom trimming execution is performed, i.e. the one percent minimum and maximum values are deleted.

6. Results and Analysis

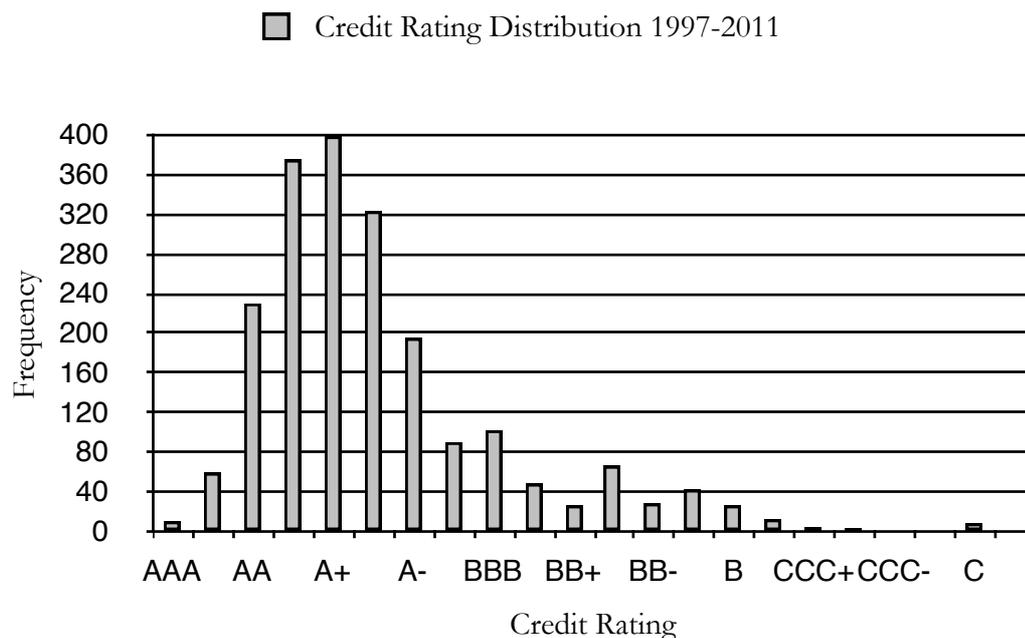
This chapter begins by presenting the credit rating characteristics on the European banking market. Further, this chapter will present the results from estimations performed, which will help in providing answers for the objective of this research. The analysis will be structured by first presenting and interpreting the results from the estimations performed and then a comparison with the U.S. banking market will follow.

6.1 Credit Rating Characteristics

The data of credit ratings gives a possibility to understand the characteristics of credit ratings and credit rating changes on the European banking market. The variable CR (see Table 3) shows that the mean credit rating is 6.16 for the average bank on the European banking market over the time period 1997-2011. This number corresponds to a credit rating that approximately equals an A in S&P's credit rating scale (see Appendix 2). This rating can be compared to the mean credit rating on the U.S. banking market, according to the data set provided by Apergis, Payne and Tsoumas (2012), which equals 6.08, also resulting in the S&P's credit rating A. This indicates that the European banking market and the U.S. banking market face the same average credit rating over time. Since a credit rating sign is a measure of creditworthiness, one can come to the conclusion that banks on the European banking market and the U.S. banking market, on average and over time, are equally creditworthy.

Further, Figure 1 presents the credit rating distribution of the sample used in this research. For a more detailed distribution, see Appendix 2. The chart indicates that the mode credit rating for banks on the European banking market during 1997-2011 is equal to an A+ S&P's credit rating. This result is also consistent with the mode credit rating on the U.S. banking market, which is A+ (see Apergis, Payne and Tsoumas, 2012). The figure of the credit rating distribution gives the possibility to observe other findings. The interval of credit ratings are mainly concentrated between AA and A-, providing evidence that the allocation of credit ratings of banks on the European banking market are concentrated on the higher end of the rating scale, with few banks holding lower credit ratings.

Figure 1. Credit Rating Distribution



In Appendix 2, where the credit rating distribution, split into separate year, is presented, one can observe that the distribution of credit ratings are rather steady over time. However, the allocation of credit ratings on the European banking market changes during certain time periods. The most obvious example can be drawn from time periods of lower economic activity, where the amount of higher credit ratings decreases, in favour for lower credit ratings.

This results are consistent with the condition of the European banking market during the recent financial crisis, where banks within Europe were seriously affected. In contrast, it is not possible to observe the same change in credit rating allocation during the dot-com bubble that occurred in the beginning of the 2000s. This may stem from the fact that the dot-com bubble did not result in such a severe banking crisis as in the recent financial crisis.

Further, by looking at Table 4 below, portraying the distribution of credit rating changes in the sample, it is possible to observe a similar pattern of allocation as in Appendix 2. In the whole sample, credit rating downgrades are more frequent compared to credit rating upgrades. In addition, credit rating downgrades are much more common during the recent financial crisis compared to other periods of time. In the years prior the financial crisis, credit rating upgrades are far more frequent. By comparing the change in allocation of credit rating changes between 2007 and 2008, one can observe a distinct change in allocation between credit rating upgrades and credit rating downgrades. Another characteristic of the credit rating sample are the increase in the total amount of credit rating changes from 1998-2011. This observation can be explained by the fact that CRAs and credit ratings have faced an increase

in popularity and importance during recent time, which can help in explaining the increase in issued ratings.

Table 4. *Characteristics of Credit Ratings Changes within the Sample*

Year	98	99	00	01	02	03	04	05	06	07	08	09	10	11	Total Changes
Downgrades	9	5	7	5	16	7	3	10	4	2	41	64	30	69	272
Upgrades	6	6	8	6	9	12	16	31	38	36	13	4	15	17	217
Total changes	15	11	15	11	25	19	19	41	42	38	54	68	45	86	489

6.2 Estimations of Credit Rating Changes Governance Effects on Banks

In the following section, the results from each estimation will be presented, together with interpretations and analyses of the results, which will provide evidence of credit rating changes governance effects on banks within the European banking market. Estimations will be presented in Table 5 and 8, where Table 5 and 6 refers to estimations of downgraded banks on a one and two year outlook between 1997-2011. Further, Table 7 and 8 refers to estimations of upgraded banks on a one and two year outlook between 1997-2011. All tables are structured in the same manner, providing information about the credit rating changes impact on each variable of interest. The first row shows the variables of interest, representing the difference between the variables value at t+1 relative to its value at t-1 for the one year outlook. For the two year outlook, the variables of interest refers to each variables value at t +2 relative to its value at t-1. The variables CRD and CRU respectively, are the estimation result of the variable of interest, showing the average treatment effect of the treated banks compared to the weighted control bank-year observations. Treated refers to the number of downgraded or upgraded bank-year observations in the estimation, where the controls refers to the weighted number of control bank-year observations.

6.2.1 Downgraded Banks - One and Two Year Outlook 1997-2011

In Table 5 below, results from the estimation of downgraded banks on a one year outlook is presented. As the results shows, the number of treated contains 206 bank-year observations, which is being compared to 1897 weighted bank-year control observations. In this estimation, a credit rating downgrade have a significant effect on two out of nine financial accounting

variables used in the estimation. Variable *LLR*, shows that a credit rating downgrade results in an increase in the loan loss reserves for the average bank, significant on the 10 % level. Further, variable *Size*, referring to Log of Total Assets, shows that a credit rating downgrade results in a decrease in size for the average bank on the European banking market, significant at the 5 % level.

Table 5. *Estimation of Downgraded Banks - One Year Outlook*

1997-2011	Net- Loans	LLR	Trade	Opaque	Transp.	Size	Lev.	Net- Income	Non- Interest
CRD	-0,05	0,007*	-0,003	0,002	-0,013	-0,083**	0,095	0,026	0,002
Treated	206	206	206	206	206	206	206	206	206
Controls	1897	1897	1897	1897	1897	1897	1897	1897	1897
Std. Err.	0,01	0,004	0,009	0,005	0,12	0,035	1,713	0,03	0,003

*Note: Time period: 1997-2011. Data is derived from Bankscope, S&P's RatingsDirect and own calculations. CRD refers to a Credit Rating downgrade, Treated and Controls refers to the number of treated bank-year observations and weighted control bank-year observations in the estimation, The significance level is denoted as follows; * (10 % level), ** (5 % level), *** (1 % level).*

First of all, these results indicates that when the average bank on the European banking market receives a credit rating downgrade, bank management take measure and increase loan loss reserves. This result provide evidence that bank management take a decision to set aside more capital for non performing loans and thereby reducing the risk in the banks loan portfolio. This shows that a credit rating downgrade on a one year outlook have a significant governance effect. It can be argued that the CRA predicted higher risks in the banks loan portfolio and thereafter took action by issuing a credit rating downgrade, which resulted in actions taken by bank management. From this perspective, the credit rating downgrade seemed to be justified, since bank management acknowledged the downgrade and took actions accordingly. Furthermore, since a credit rating downgrade also increase banks risk premium, which leads to higher borrowing costs in the future, actions may be taken by bank management in view of their desire to achieve an improved credit rating in the future.

Secondly, downgraded banks decrease in size one year after the credit rating downgrade. In view of this results, the credit rating change can once again be seen as having a governance effect that reduce the size and consequently the risk of treated banks compared their control

banks. However, every treated bank allocate their asset composition, on average, in an unique way, which can explain the insignificance of the other assets in the estimation. Therefore, it is not possible to observe where this decrease in size stems from. A possible explanation, at least in part, can stem from the fact that CRAs act as a reputation intermediary and that a credit rating downgrade can effect the banks reputation negatively, which can result in a situation where treated banks' capital contributors reallocate their capital to banks with a better credit rating.

Compared to the U.S. banking market, a credit rating downgrade on a one year outlook have the same effect on treated banks' loan loss reserves. However, a credit rating downgrade on a one year outlook affect treated banks on the European banking market to a greater extent because of the decrease in size. A change that can not be documented on the U.S. banking market. Besides the decrease in loan loss reserves for U.S. banks, the only other significant variable are foreclosed real estate, which increase in the event of a credit rating downgrade. This indicates that U.S. banks, in the event of a credit rating downgrade, clean out bad loans and in return, they foreclose real estate as collateral. This is a possibility that banks on the European banking market lacks.

Turning to the two year outlook, Table 6 below portrays results from the estimation of downgraded banks.

Table 6. *Estimation of Downgraded Banks - Two Year Outlook*

	Net-						Net-		Non-
1997-2011	Loans	LLR	Trade	Opaque	Transp.	Size	Lev.	Income	Interest
CRD	0,005	0,004	0	-0,006	0	-0,241***	5,935	0,026	0,001
Treated	206	206	206	206	206	206	206	206	206
Controls	1897	1897	1897	1897	1897	1897	1897	1897	1897
Std. Err.	0,02	0,003	0,009	0,007	0,015	0,008	6,405	0,029	0,002

*Note: Time period: 1997-2011. Data is derived from Bankscope, S&P's Ratings Direct and own calculations. CRD refers to a Credit Rating downgrade, Treated and Controls refers to the number of treated bank-year observations and weighted control bank-year observations in the sample, The significance level is denoted as follows; * (10 % level), ** (5 % level), *** (1 % level).*

In this estimation, only the variable *Size* is significant. This indicates that on a two year outlook, the size of treated banks continue to decrease in contrast to the control banks, providing evidence that the size and risk continuing to decline two years after a credit rating

downgrade. Loan Loss Reserves, that increased on a one year outlook after a credit rating downgrade, is not significant on the two year outlook.

These results imply that treated banks continue to decrease the overall asset composition and capital contributors may still reallocate capital to banks with a better credit rating. Further, the insignificant results on treated banks loan loss reserves on a two year outlook imply that the quality of banks credit portfolio have been stabilised on a longer outlook, since these banks set aside less capital for non performing loans.

On the two year outlook, differences can be observed by comparing the effects of a credit rating downgrade on the U.S. banking market and the European banking market. First of all, only on the U.S. banking market do the loan loss reserves continue to increase two years after a credit rating downgrade. Apergis, Payne and Tsoumas (2012) also find evidence that the risk-taking in treated bank increase through an increase in leverage and size compared to control banks. The authors argue that their finding is surprising, since a credit rating downgrade rationally should lead to a decrease in size and risk, providing evidence that a credit rating downgrade only disciplines banks short-term on the U.S. banking market. Therefore, the results from the estimation in this research can be seen as more rational compared to the findings of the U.S. banking market. However, earlier research has shown that the European banking market comprises a large amount of governmental owned banks, which tend to have a higher risk-taking incentive stemming from the fact that they are most likely to enjoy governmental protection. The results from this research shows that the average bank on the European banking market do not take contradictory actions and increase risk on a two year outlook after a credit rating downgrade. With this in mind, the results from this study, in comparison with the findings on the U.S. banking market, is rather unexpected. Based on this reasoning, the results should be opposite, with an increase in risk for banks on the European banking market and not for banks on the U.S. banking market.

6.2.2 Upgraded Banks - One and Two Year Outlook 1997-2011

In Table 7 below, results from the estimation of upgraded banks on a one year outlook is presented. The number of treated bank-year observations is 203 and the number of weighted controls are 1892 bank-year observations. In this estimation, just as in the event of a downgrade on a one year outlook, two financial accounting variables are significant. First of all, variable *Opaque* indicate that a credit rating upgrade results in a decrease in opaque assets, significant at the 1 % level. Further, the variable *Size* is significant at the 1 % level, indicating an increase in size for treated banks compared to control banks in the event of a credit rating upgrade.

Table 7. *Estimation of Upgraded Banks - One Year Outlook*

1997-2011	Net-						Lev.	Net-	Non-
	Loans	LLR	Trade	Opaque	Transp.	Size		Income	Interest
CRU	0,002	-0,002	-0,033	-0,016***	-0,024	0,207***	0,765	-0,03	0,03
Treated	203	203	203	203	203	203	203	203	203
Controls	1892	1892	1892	1892	1892	1892	1892	1892	1892
Std. Err.	0,016	0,002	0,026	0,004	0,015	0,036	0,688	0,002	0,004

*Note: Time period: 1997-2011. Data is derived from Bankscope, S&P's Ratings Direct and own calculations. CRU refers to a credit rating upgrade, Treated and Controls refers to the number of treated banks and weighted control banks in the sample, The significance level is denoted as follows; * (10 % level), ** (5 % level), *** (1 % level).*

These results indicates that an upgraded bank on a one year outlook tends to have a more optimistic view of the banks condition. The decrease in opaque assets imply that banks' management re-allocate capital and thereby decrease the fraction of solid assets. In turn, this indicates that upgraded banks reduce their capability to cope with downturns from different portfolios, providing evidence of a more optimistic view of the future.

Furthermore, upgraded banks experience an increase in total assets, which shows that these banks increase more in size compared to control banks. Since the growth in total assets are higher for upgraded banks compared to control banks, it indicates that treated banks becomes riskier institutions. A possible explanation could be that upgraded banks face lower borrowing costs, which could serve as an incentive for these banks to borrow additional capital at a lesser expense. This capital could then be used in order to increase earning assets. However, the estimation do not observe any significant change in earnings assets such as Net Loans, which makes it impossible to draw any credible conclusions. A more likely explanation can be that treated banks reputation becomes affected, just as in the case with downgraded banks. However, a credit rating upgrade, in contrary to a credit rating downgrade, may result in an improved reputation, which may cause an attraction of capital contributors from banks with poorer credit ratings.

The above reasoning regarding an attempt to increase earnings assets can however be observed on the U.S. banking market, where treated banks increase their net loans, which leads to an increase in earnings compared to control banks. Further, treated banks in the U.S. tend to decrease their loan loss reserves, which in total imply that they consider a credit rating upgrade as a possibility to expand credit policy in order to become more profitable. This shows that a credit rating upgrade tend to affect the two different banking markets differently

and that treated banks on the European banking market are more conservative in their credit policy.

Turning to the two year outlook, Table 8 presents the estimation of upgraded banks.

Table 8. *Estimation of Upgraded Banks - Two Year Outlook*

1997-2011	Net- Loans	LLR	Trade	Opaque	Transp.	Size	Lev.	Net- Income	Non- Interest
CRU	0,019	-0,001	-0,001	-0,012**	0,001	0,246***	1,535	-0,004	0,001
Treated	203	203	203	203	203	203	203	203	203
Controls	1892	1892	1892	1892	1892	1892	1892	1892	1892
Std. Err.	0,02	0,002	0,039	0,006	0,022	0,06	1,464	0,003	0,007

*Note: Time period: 1997-2011. Data is derived from Bankscope, S&P's Ratings Direct and own calculations. CRU refers to a credit rating upgrade, Treated and Controls refers to the number of treated banks and weighted control banks in the sample, The significance level is denoted as follows; * (10 % level), ** (5 % level), *** (1 % level).*

As the table above documents, the change in variable *Opaque* is significant at the 5 % level and continue to decrease on a two year outlook. In addition, variable *Size* is also significant, but at the 1 percent level. This indicates that in the event of a credit rating upgrade, bank size continue to increase in the two year outlook, providing evidence that the effects of a credit rating upgrade is long lasting. This finding is also consistent with the effects on the U.S. banking market, where bank on a longer horizon experience a continued increase in bank size, along with an increase in net income.

In summary, for downgraded banks on the European banking market, the decrease in loan loss reserves on a one year outlook and the depreciation of total assets on both one and two years imply that credit rating downgrades seems to function as a governance mechanism, affecting real economic decisions in banks. This is in line with the findings on the U.S. banking market, however U.S. banks seems to increase in size and leverage after two years, which points to that U.S. banks have a higher appetite for risk, possible stemming from a desire to regain a higher rating. Therefore, Apergis, Payne and Tsoumas (2012) argue that credit rating downgrade only discipline banks on a shorter horizon in the U.S. context.

Furthermore, upgraded banks on the European banking market experience a decrease in opaque assets along with an increase in total assets. An observable difference between the two

banking markets is that upgraded banks in the U.S., both on a one and two year horizon, enjoys an increase in profitability. Apergis, Payne and Tsoumas (2012) do not discuss the possible ordinations of this increase in profitability, but it may stem from lower borrowing costs and an enhanced reputation, which in turn improves banks business. However, effects on the profitability stemming from a credit rating change can not be observed in any of the estimations in this research, providing evidence that credit rating changes do not impact banks profitability on the European banking market.

6.3 Estimations from Different Time Periods

This section will compare estimations from two different periods, namely 1997-2000, representing a period with higher economic activity and 2007-2011, representing a period with lower economic activity. The aim with these estimations is to examine if there is certain changes in credit rating changes governance effects stemming from different time trends. The estimation output is presented in Appendix 3 and Appendix 4.

6.3.1 Downgraded and Upgraded Banks - One and Two Year Outlook - 1997 - 2000

As Appendix 3 indicates, only the variable *Opaque* is significant at the 10 % level and decrease in the event of a credit rating downgrade on a one year outlook between 1997-2000. Turning to the two year outlook, the decrease in Opaque Assets do not continue and no other financial accounting variables are significant, indicating that a credit rating downgrade during a period of higher economic activity have modest governance effects.

For upgraded banks between 1997-2000, Appendix 3 displays that, on a one year outlook, neither of the financial accounting variables are significant, indicating that a credit rating upgrade do not affect treated banks more than control banks between 1997-2000. Turning to the two year outlook, variables *LLR* and *Non-Interest* are significant at the 5 % level. Both loan loss reserves and non-interest operating income decrease for upgraded banks in the two year outlook, providing evidence that bank management set aside less capital for non performing loans and at the same time experience a drop in profitability from non-interest operating income.

6.3.2 Downgraded and Upgraded Banks - One and Two Year Outlook - 2007-2011

In the time period between 2007-2011, Appendix 4 shows that the variable *LLR* are significant and increase on a one year outlook. Further, the variable *Size* is significant at the 1 % level, indicating that a credit rating downgrade results in a decrease in size for treated banks

compared to their control banks. Finally, variable *Non-Interest* is significant at the 1 % level, providing evidence that treated banks increase their profitability from non-interest operating incomes more than their control banks. Turning to the two year outlook, treated banks continue to decrease their loan loss reserves, along with a continued increase in non-interest operating income, both significant at the 1 % level.

Upgraded banks, between 2007-2011, increase in the size compared to their control banks on a one year outlook, significant at the 5 % level. This increase in the size continue on a two year outlook, providing evidence that upgraded banks experience a constant increase in size, two years following the credit rating change, both significant at the 5 % level.

6.3.3 Comparison of the Different Time Periods

In summary, these results from two different periods of time, comparing one period, 1997-2000, with higher economic activity and one period, 2007-2011, with lower economic activity, shows that credit rating downgrades generally tend to have a greater impact on banks in times with lower economic activity compared to a period of higher economic activity. By examining the changes in variable *LLR* and *Size*, it is possible to observe that downgraded banks tend to only take measures during periods with lower economic activity. This indicates that during a recession, downgraded banks seems to be more conservative in their actions in contrast to periods with higher economic activity. This results may stem from the fact that during periods of lower economic activity, there is greater uncertainty and the average bank seems to be more cautious. In contrary, during a period of higher economic activity, downgraded banks seems to be more optimistic in their actions, since neither of variable *LLR* or *Size* are significant.

This is also the situation for upgraded banks, wheres in a period of higher economic activity, upgraded banks set aside less capital for potential bad loans, in contrast to an upgraded bank during a period of lower economic activity, wheres upgraded banks do not seem to manage their loan loss reserves. This finding give further evidence for the reasoning that banks in general are more optimistic during a period of higher economic activity. With this reasoning in mind, it is a bit surprising that upgraded banks during a period of lower economic activity compared to upgraded banks during a period of higher economic activity increase in size by the variable log of total assets. However, this finding is in line with the total sample estimation, showing that upgraded banks in general tend to increase in size.

In addition, the estimations from two different time periods shows a significant change in profitability from non-interest operating income. A credit rating downgrade results in an

increase in profitability and in contrary, a credit rating upgrade results in a decrease in profitability derived from non-interest operating income. A possible explanation for this finding is that banks experiencing a credit rating downgrade faces higher borrowing costs, resulting in declining profit margins. In an attempt to handle the decreasing margins, banks seems to increase the fraction of non-interest operating income through price bundling. This strategy would also signify that downgraded banks decrease their exposure towards risks associated with traditional lending such as credit risks. In addition, this reasoning is consistent with the results for upgraded banks, providing evidence that a credit rating upgrade results in a decrease in profitability derived from non-interest operating income. This indicates that upgraded banks may experience an increase in profit margins stemming from lower borrowing costs, which may serve as an incentive to focus more on traditional banking lending activity.

It should be addressed that the results from this section containing estimations from different time periods should be interpreted with prudence, since the amount of bank-year observations differ considerably, both in contrast to the estimations of the whole sample, but also between the earlier period of higher economic activity and the recent period of lower economic activity. However, the results from this estimation still points out some observable findings and differences, but its generalizability can be questioned.

7. Conclusions and Implications

In this last chapter, the results from our analysis will be summarized and conclusions will be drawn based on the findings of the analysis. The possible implications of the thesis will be presented, as well as suggestions for further research.

The objective of this research was to examine the governance effects of a credit rating change on banks within the European banking market. This is achieved by using a novel and comprehensive data set comprising credit rating changes and financial accounting variables of 202 banks on the European banking market between 1997-2011.

The results from this research provide numerous findings regarding CRAs role as a governance mechanism on the European banking market. First of all, credit rating changes seems to have a consistent governance effect on decision-making in the average bank on the European banking market. The governance effects are most evident on two different financial accounting variables in banks, namely loan loss reserves and changes in total assets. In specific, a credit rating downgrade results in a decision by bank management to increase capital set aside for non performing loans, which reduces the risk in the banks loan portfolio. In addition, the significant decrease in size in the event of a credit rating downgrade indicate that downgraded banks decrease the overall asset composition and become less riskier institutions. These effects are consistent on both a shorter and longer outlook. Downgraded banks do however cease the increase in loan loss reserves on a two year outlook, implying that the quality of banks credit portfolio stabilises over time. Furthermore, a credit rating upgrade result in a re-allocation of assets as well as an increase in bank size. Both results consistent on a shorter and longer outlook. This result indicate that an upgraded bank tend to have a more optimistic view of the future and experience a high growth rate.

Moving on to credit rating changes governance effects on different time periods, downgraded and upgraded banks seems to have a more conservative attitude in times with lower economic activity compared to times with higher economic activity. In accordance, during times with higher economic activity, both downgraded and upgraded banks seems to be more optimistic in their actions. These finding suggest that the governance effects stemming from credit rating changes seems to diverse between different time trends.

In comparison with earlier research on the U.S. banking market, this research provide evidence regarding both differences and similarities between credit rating changes effects on banks within the two markets. In both markets, credit rating changes have a governance effect on

both downgraded and upgraded banks. However, banks within the European market tend to have, on average, a more conservative attitude towards risk-taking behaviour in the event of a credit rating change. The results in this research documents that the governance effects on banks within the European banking market seems to be long lasting, especially when comparing downgraded banks on the two markets. U.S. banks seems to have a greater appetite for risk since they increase their risk-taking behaviour on a two year outlook following a credit rating downgrade. Finally, the significant effect on the profitability of U.S. banks in the event of a credit rating change can not be observed on the European banking market, where no significant effect on banks net income can be documented.

The findings in this research provide evidence that credit rating changes have a governance effect on banks within the European banking market. These results broaden the field of academic research on CRAs function as a governance mechanism and provide new insights on how the European banking market is affected by credit rating changes. Since this research is the first of its kind, examining the European banking market, it serves as a great empirical contributor. Further, the findings confirm the existing literature, arguing that CRAs do function as a governance mechanism. This also confirm that the increasing use and reliance on CRAs on the governance scheme of banks are justified and that the regulatory discipline and market discipline may rely on them as a disciplinary mechanism of banks on the European banking market. However, regulators and supervisors should evaluate downgraded banks during periods with higher economic activity since they do not seem to take measures, which indicates that they tend to have a rather more optimistic view than reflected in the credit rating change.

7.1 Suggestions for future research

During the process of implementing this research, numerous insights and ideas regarding future research has arose. First of all, since this research is the first of its kind in an European context and only one complementing research exist in a U.S. context, further research on the subject is needed. A complementing study on the European banking market, using a qualitative research approach could benefit the understanding of the fundamental decisions taken in banks in the event of credit rating changes. This research put focus on the governance effects from a credit rating change on an aggregated level of the European banking market and a more detailed study, focusing on the behaviour of a minor amount of banks would improve the knowledge of this subject. In addition, a new study may consider other econometric approaches and matching procedures in order to examine if new insights or confirming results can be found. Further, a complementing study, using different variables,

can provide more evidence of the governance effects from credit rating changes. In specific, since credit rating changes have a large impact on banks' size, a more detailed decomposition of banks asset could give answer to where this increase in assets stem from.

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Appendix

Appendix 1

European banks in the sample sorted in alphabetic order

A	
AIB Group (U.K.) PLC	AXA Bank Europe S.A.
Alfa-Bank OJSC	Argenta Spaarbank N.V.
ABN Amro France	Alpha Bank A.E.
Allied Irish Banks PLC	Ageas S.A./N.V.
B	
BNP Paribas	Banca Carige SpA
Barclays Bank Plc	Banco Bilbao Vizcaya Argentaria S.A.
Barclays PLC	Banque et Caisse d'Epargne de l'Etat, Luxembourg
Banque Federative du Credit Mutuel	Banco Espirito Santo de Investimento S.A.
BPCE	Banco do Brasil S.A
Banco Financiero y de Ahorros S.A.	Barclays Private Clients International Ltd.
Bankia S.A.	Bank VTB24 CJSC
Belfius Bank SA/NV	Barclays Bank S.A.
Banco Comercial Portugues S.A.	Banco di Napoli SpA
Bankinter S.A.	Banco BPI S.A.
Banco Espanol de Credito S.A.	BRE Bank S.A
Banco de Sabadell S.A.	Banque Internationale a Luxembourg
Banca Nazionale del Lavoro SpA	Bank of Khanty-Mansiysk
Banco BPI S.A.	Bilbao Bizkaia Kutxa, BBK
BancApulia SpA	Banca Popolare Commercio e Industria SpA
BANCA CARIM	BANK ROSSIYA
Bank URALSIB (OJSC)	Bank Handlowy w Warszawie S.A.
Banque et Caisse d'Epargne de l'Etat, Luxembourg	BGL BNP Paribas S.A.
Bank of Tokyo-Mitsubishi UFJ Ltd.	Bank Polska Kasa Opieki S.A.
Bank of Ireland	BNP Paribas BGL

Banca Monte dei Paschi di Siena SpA	Bank Millennium Capital Group
Banco Santander S.A.	Banco Bilbao Vizcaya Argentaria S.A.
C	
Credit Mutuel Arkea	Caja de Ahorros y Pensiones de Barcelona
Credit Agricole Corporate and Investment Bank	Credit Suisse AG
Credit du Nord S.A.	Credit Industriel et Commercial
Commerzbank AG	Credit Lyonnais
Caixa Geral de Depositos S.A.	Caja de Ahorros y Pensiones de Barcelona
Clydesdale Bank PLC	Co-operative Bank
Credit Suisse Group AG	Cassa di Risparmio di Parma e Piacenza SpA
Caja de Ahorros y Monte de Piedad de Zaragoza, Aragon y Rioja-Ibercaja	Ceska Sporitelna A.S.
Ceskoslovenska Obchodni Banka A.S	Cassa Centrale Banca Credito Cooperativo del Nord Est SpA
Citibank Europe PLC	Commerzbank International SA
Credit Suisse (International) Holding AG	Cassa di risparmio in Bologna SpA
Credito Bergamasco	Citibank International PLC
Citibank Europe PLC	Credito Emiliano SpA
Commercial Bank Petrocommerce OJSC	
D	
Danske Bank A/S	Dexia
Deutsche Bank AG	Dexia Credit Local
Deutsche Postbank AG	Deutsche Bank Luxembourg S.A.
Danske Bank PLC	DZ PRIVATBANK S.A.
DekaBank Deutsche Girozentrale	
E	
Erste Group Bank AG	Eurobank Ergasias S.A
F	
F. van Lanschot Bankiers N.V.	Fortis Bank SA/NV-BNP Paribas Fortis
Findomestic Banca SpA	Frankfurter Sparkasse
G	

Gazprombank

Glitnir Bank

H

HSBC Holdings Plc

HBOS PLC

HSBC Bank PLC

HSBC France

Hypo Alpe-Adria Bank AG

HSBC Holdings Luxembourg S.A.

Hypo Alpe-Adria Bank International AG

HSBC Bank A.S.

HSBC Private Banking Holdings (Suisse) S.A.

I

ING Groep N.V.

ING Bank N.V.

ING Belgium S.A./N.V.

Intesa Sanpolo SpA

Ibercaja Banco S.A.

Irish Bank Resolution Corporation

International Bank of Saint-Petersburg

Iccrea Holding SpA

J

Jyske Bank A/S

K

KBC Group N.V.

KBC Bank N.V.

KfW IPEX-Bank GmbH

KBC Bank Ireland PLC

Kasseler Sparkasse

L

Lloyds TSB Bank PLC

Lloyds Banking Group PLC

La Banque Postale

Landesbank Hessen-Thüringen Girozentrale

Lansforsakringar Bank

Lehman Brothers Holdings Plc

LeasePlan Corporation N.V.

M

Migros Bank

Morgan Stanley Bank International Ltd.

MDM Bank

MKB Bank ZRT

N

National Westminster Bank PLC

Nordea Bank AB

Nykredit Realkredit A/S

Natixis S.A.

Nykredit Bank A/S

Nykredit Bank A/S

Nordea Bank Danmark A/S	NIBC Bank N.V.
Nomura Bank International PLC	Norddeutsche Landesbank Luxembourg S.A.

Nova Kreditna Banka Maribor d.d	National Bank of Greece S.A.
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Nassauische Sparkasse	Nordea Bank Norge ASA
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Nordea Bank Finland PLC

O

OTP Bank PLC	OJSC Promsvyazbank
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P

Permanent TSB PLC	PrivatBank
-------------------	------------

Pohjola Bank PLC	Piraeus Bank S.A.
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Powszechna Kasa Oszczednosci Bank Polski S.A.

R

Raiffeisen Bank International AG	Raiffeisenbank ZAO
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RCI Banque	Raiffeisen Bank International AG
------------	----------------------------------

Raiffeisen Zentralbank Oesterreich AG

S

Standard Chartered PLC	Societe Generale
------------------------	------------------

Santander UK PLC	SEB AB
------------------	--------

Svenska Handelsbanken AB	Swedbank AB
--------------------------	-------------

SNS Bank N.V.	Sumitomo Mitsui Banking Corp. Europe Ltd.
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SEB AG	SNS REAAL N.V.
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Societe Generale Bank & Trust	Santander Totta SGPS
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Schroders PLC	Slovenska Sporitelna A.S.
---------------	---------------------------

Swedbank AB Villnius	Storebrand Bank ASA
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T

The Royal Bank of Scotland PLC	Turkiye Is Bankasi AS
--------------------------------	-----------------------

Turkiye Halk Bankasi A.S.	T.C. Ziraat Bankasi A.S.
---------------------------	--------------------------

TeamBank AG Nuernberg	The Royal Bank of Scotland Group PLC
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The Royal Bank of Scotland N.V.	The Bank of New York Mellon S.A./N.V.
---------------------------------	---------------------------------------

Turkiye Vakiflar Bankasi TAO

Tatra Banka a.s.

The Royal Bank of Scotland PLC

Turkiye Garanti Bankasi A.S.

U

UniCredit Bank AG

UBS AG

Unipol Banca SpA

UniCredit Bank Austria AG

Ulster Bank Ltd.

Ulster Bank Ireland Ltd.

Unicredit Luxembourg S.A.

UniCredit SpA

UniCredit Bulbank AD

V

Virgin Money PLC

Vontobel Holding AG

Vseobecna Uverova Banka a.s.

W

Wells Fargo Bank International

Y

Yapi ve Kredi Bankasi A.S.

Z

ZAO UniCredit Bank

Zagrebacka banka dd

Appendix 2

Characteristics of credit ratings within sample

Credit Rating	Conv.	97	98	99	00	01	02	03	04	05	06	07	08	09	10	11	Total (%)
AAA	1	3	2	1	1	1	1	0	0	0	0	1	0	0	0	0	10 (0,49)
AA+	2	4	6	4	2	2	1	2	3	1	1	4	4	3	3	4	44 (2,17)
AA	3	9	9	13	14	14	11	14	17	20	26	30	18	15	16	4	230 (11,32)
AA-	4	14	13	12	18	20	23	27	27	30	34	38	41	32	24	22	375 (18,45)
A+	5	9	18	21	23	25	24	24	28	28	28	29	36	36	40	31	400(19,69)
A	6	7	10	11	12	14	16	18	17	24	26	26	32	33	34	43	323(15,9)
A-	7	4	2	5	6	7	11	12	14	18	17	12	13	21	28	25	195(9,6)
BBB+	8	2	1	1	2	4	5	5	7	4	7	8	9	9	9	17	90(4,43)
BBB	9	2	3	5	5	4	3	5	5	8	9	9	9	11	11	13	102(5,02)
BBB-	10	5	3	4	2	2	4	4	4	1	1	1	2	5	3	7	48(2,36)
BB+	11	0	2	1	1	3	1	2	2	1	1	2	2	3	3	2	26(1,28)
BB	12	1	1	3	3	4	5	6	4	4	5	3	2	5	12	8	66(3,25)
BB-	13	0	0	0	0	1	0	0	3	4	3	3	7	3	1	3	28(1,38)
B+	14	0	0	0	0	0	1	1	2	1	5	6	3	8	7	8	42(2,07)
B	15	0	2	3	3	1	1	3	2	2	1	1	1	1	1	4	26(1,28)
B-	16	0	0	0	0	0	2	2	1	1	1	1	1	1	1	1	12(0,59)
CCC+	17	0	0	0	0	0	0	0	1	1	1	0	0	0	0	1	4(0,20)
CCC	18	0	0	0	1	0	0	1	0	0	0	0	0	0	0	1	3(0,15)
CCC-	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 (0,00)
CC	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0 (0,00)
C	21	0	0	0	0	0	0	0	1	1	1	1	1	1	1	1	8(0,39)
D	22	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0,00
Total		60	72	84	93	102	109	126	138	149	167	175	181	187	194	195	2032

Appendix 3

Estimation of Downgraded Banks - One Year Outlook

1997-2000	Net- Loans	LLR	Trade	Opaque	Transp.	Size	Lev.	Net- Income	Non- Interest
CRD	-0,031	-0,001	-0,016	-0,019*	-0,008	-0,02	-0,293	-0,001	0,001
Treated	22	22	22	22	22	22	22	22	22
Controls	247	247	247	247	247	247	247	247	247
Std. Err.	0,031	0,004	0,013	0,009	0,022	0,097	1,73	0,002	0,003

Estimation of Downgraded Banks - Two Year Outlook

1997-2000	Net- Loans	LLR	Trade	Opaque	Transp.	Size	Lev.	Net- Income	Non- Interest
CRD	-0,054	-0,002	-0,007	-0,015	-0,007	0,084	-1,159	-0,001	-0,003
Treated	22	22	22	22	22	22	22	22	22
Controls	247	247	247	247	247	247	247	247	247
Std. Err.	0,036	0,005	0,012	0,011	0,028	0,118	2,047	0,001	0,002

Estimation of Upgrade Banks - One Year Outlook

1997-2000	Net- Loans	LLR	Trade	Opaque	Transp.	Size	Lev.	Net- Income	Non- Interest
CRU	-0,031	-0,014*	0,023	-0,023	0,033	0,2	1,719	-0,002	-0,009
Treated	21	21	21	21	21	21	21	21	21
Controls	346	346	346	346	346	346	346	346	346
Std. Err.	0,054	0,008	0,019	0,022	0,044	0,243	1,794	0,002	0,007

Estimation of Upgrade Banks - Two Year Outlook

1997-2000	Net- Loans	LLR	Trade	Opaque	Transp.	Size	Lev.	Net- Income	Non- Interest
CRU	-0,042	-0,017**	0,027	0,008	0,011	-0,153	0,016	-0,001	-0,01**
Treated	21	21	21	21	21	21	21	21	21
Controls	346	346	346	346	346	346	346	346	346
Std. Err.	0,061	0,008	0,018	0,025	0,052	0,307	2,277	0,002	0,005

Appendix 4

Estimation of Downgrade Banks - One Year Outlook

	Net-							Net-	Non-
2007-2011	Loans	LLR	Trade	Opaque	Transp.	Size	Lev.	Income	Interest
CRD	0	0,011**	0,009	0,004	0,002	-0,138***	-0,566	0,044	0,003***
Treated	212	212	212	212	212	212	212	212	212
Controls	683	683	683	683	683	683	683	683	683
Std. Err.	0,01	0,004	0,007	0,007	0,012	0,03	3,739	0,043	0,001

Estimation of Downgrade Banks - Two Year Outlook

	Net-							Net-	Non-
2007-2011	Loans	LLR	Trade	Opaque	Transp.	Size	Lev.	Income	Interest
CRD	0,027	0,007*	0,007	-0,012	0,002	-0,077	8,992	0,039	0,002*
Treated	212	212	212	212	212	212	212	212	212
Controls	683	683	683	683	683	683	683	683	683
Std. Err.	0,026	0,004	0,009	0,009	0,018	0,115	9,603	0,038	0,001

Estimation of Upgrade Banks - One Year Outlook

	Net-							Net-	Non-
2007-2011	Loans	LLR	Trade	Opaque	Transp.	Size	Lev.	Income	Interest
CRD	-0,038	-0,002	-0,079	-0,009	-0,034	0,119**	2,602	0,003	-0,007
Treated	65	65	65	65	65	65	65	65	65
Controls	535	535	535	535	535	535	535	535	535
Std. Err.	0,04	0,004	0,068	0,01	0,036	0,055	2,132	0,014	0,005

Estimation of Upgrade Banks - Two Year Outlook

	Net-							Net-	Non-
2007-2011	Loans	LLR	Trade	Opaque	Transp.	Size	Lev.	Income	Interest
CRD	-0,051	0	-0,061	-0,006	0,017	0,293**	4,575	-0,007	-0,003
Treated	65	65	65	65	65	65	65	65	65
Controls	535	535	535	535	535	535	535	535	535
Std. Err.	0,043	0,004	0,073	0,012	0,057	0,141	4,321	0,007	0,004



Linnaeus University – a firm focus on quality and competence

On 1 January 2010 Växjö University and the University of Kalmar merged to form Linnaeus University. This new university is the product of a will to improve the quality, enhance the appeal and boost the development potential of teaching and research, at the same time as it plays a prominent role in working closely together with local society. Linnaeus University offers an attractive knowledge environment characterised by high quality and a competitive portfolio of skills.

Linnaeus University is a modern, international university with the emphasis on the desire for knowledge, creative thinking and practical innovations. For us, the focus is on proximity to our students, but also on the world around us and the future ahead.

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